



**BASIQ INTERNATIONAL
CONFERENCE**

New Trends in Sustainable Business and Consumption

2021

CONFERENCE PROCEEDINGS

**3 – 5 June 2021
Foggia, Italy**

**ISSN 2457- 483X
ISSN-L 2457- 483X**





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Conference institutional partners:



ISSN 2457-483X
ISSN-L 2457-483X



Editura ASE
Piața Romană nr. 6, sector 1, București, cod 010374 www.ase.ro, editura@ase.ro,
www.editura.ase.ro

The papers included in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. The papers published in these proceedings reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from this book:

Author(s), "Title of Paper". In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp.

ISSN 2457 – 483X
ISSN-L 2457 – 483X

Editura ASE

Piața Romană nr. 6, sector 1, București, România cod 010374
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KEYNOTE SPEAKERS

Professor Donald Huisingh

Donald Huisingh, professor of Cleaner Production and Sustainable Development, is the founder and Editor in Chief of the Journal of Cleaner Production (2020 impact factor: 7.24) and Co-Founder of the “Erasmus International Off-Campus Ph.D. Programme on Cleaner Production, Cleaner Products, Industrial Ecology and Sustainable Development”. His professional affiliations include Unitelma Sapienza University, Linköping University, University of TN, Knoxville, Lund University, Erasmus University, Central European University. Involved in multi-dimensional approaches to “Accelerate the Transition to Equitable, Sustainable, Livable, Post-Fossil Carbon Societies”, Donald Huisingh has authored more than 300 professional publications addressing issues such as the philosophical, ethical, and political implications of improper eco-system management, human population growth and human capacity building.

Hugo Hollanders

Hugo Hollanders is an Economist and Senior Researcher at UNU-MERIT (Maastricht University). He has over 25 years of experience in innovation studies and innovation statistics. He is the lead author of the European Commission’s European Innovation Scoreboard, which introduces a new focus on sustainable innovation in its 2021 edition. Since 2012 he has been involved in redesigning the questionnaire for the Community Innovation Survey. He has been a member of several expert groups on measuring innovation for the European Commission, is a member of the Advisory Board of the Global Knowledge Index, he contributed to various editions of the UNESCO Science Report and has published in academic journals.

Professor Zenon Foltynowicz

Zenon Foltynowicz (professor of economics, Ph.D. and DSc in chemistry) has over 40 years’ experience in science and engineering, management of technology and innovation (new packaging materials), environmental sciences (product and industrial ecology, waste management, plastics recycling), sustainability and IP protection. Full professor in Institute of Quality Science at Poznan University of Economics and Business/Poland. For two terms he served as dean of the Faculty of Commodity Science. He patented over 30 inventions, published about 300 papers, delivered lectures at international conferences, promoted 13 Doctors and over 180 Masters. Completed scientific internships in many foreign research centers. Member of a number of scientific societies (including Athiner, BASIQ, IGWT), scientific committees of journals and foreign member of the Italian ASN Committee 13 / B5 - Commodity Science.

Associate Professor Marco Platania

Marco Platania Ph.D is Assistant Professor in Applied Economics at the University of Catania (Italy) where he teaches Tourism Economics. He is Visiting Research Fellow at the University of Winchester (UK). His research interests are Tourism Economics, Applied Economics and Food Economics. He serves as Reviewer for different journals and has published more of 90 contribution in scientific journals, proceedings, and chapter books. In addition, he is a consultant for tourism development for different local and regional authorities.

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Use of Accommodation Capacity in the South-Muntenia Development Region, Romania, in the Second Decade of the XXI Century

Cosmin Nicolae Mirea¹, Puiu Nistoreanu² and Alexandra Maria Sârbu³

¹⁾²⁾³⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: cosminnicolaemirea@gmail.com; E-mail: puiu.nistoreanu@com.ase.ro

E-mail: alexandramariasarbu@gmail.com

Please cite this paper as:

Mirea, C.N, Nistoreanu, P. and Sârbu, A.M., 2021. Use of Accommodation Capacity in the South-Muntenia Development Region, Romania, in the Second Decade of the XXI Century. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. *2021.7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 20-26 DOI: 10.24818/BASIQ/2021/07/001

Abstract

The balance between effort and effect is a challenge for many areas, not just tourism. This study aims to find out whether the accommodation capacity in the South-Muntenia Development Region of Romania is used efficiently, given the statistic analysis of the number of over night stays, the number of tourists, accommodation capacity in operation, average stay and net index use of accommodation capacity in operation. Across the region, there is an increase in the net utilization index of the accommodation capacity in operation in the period 2010-2019 and faster growth rates for the number of tourists and for the accommodation capacity in operation compared to the number of overnight stays. The results can be taken into account by the accommodation units, but also by the local authorities insofar as they want to make investments in finding solutions regarding the increase of the number of overnight stays.

Keywords

Efficiency, net capacity utilization index in operation, South Muntenia, accommodation capacity.

DOI: 10.24818/BASIQ/2021/07/001

Introduction

In the business world, competitiveness has always been the driving force behind the development of a business. Regarding the tourism competitiveness index, it seems that the most competitive development region in Romania is the Center Region, and the least competitive is the South-West Development Region (Mahika, et al., 2014). Within Central and Eastern Europe, in 2017, Romania was at an average level in terms of competitiveness in tourism (Popescu, et al., 2018). Many times, competition for economic advantages and mismanagement of activities has brought some tourism businesses and not only to the brink of financial collapse. For this reason, tourism enterprises and not only should focus on the concept of efficiency. Like individuals who want to meet as many needs as possible with as little expense as possible, businesses should achieve the best possible results with the least investment possible. Thus, economic efficiency can be seen as a comparison between efforts and effects (Vasiliu and Dobra, 2014). In general, increasing efficiency can be an important goal to be achieved for any field of activity, including tourism.

Due to specific activities such as transport service, accommodation service or food service, the economic efficiency in the field of tourism is considered to be complex (Cristache, 2008). Regarding the efficiency of tourism, Minciu (2004, p. 288) states that "rational management" of resources such as labor, electricity, and the full use of tourism capacity is efficiency. Thus, the present study considers

the analysis of the efficiency of the accommodation capacity in operation and of the tourist circulation in the South-Muntenia Development Region. According to the Agency for Regional Development South-Muntenia, the development region is not a territorial administrative unit, but represents several counties united by conventions of county councils, and the South-Muntenia Development Region is composed of counties: Argeş, Călăraşi, Dâmboviţa, Giurgiu, Ialomiţa, Prahova and Teleorman.

Review of the scientific literature

Various studies have shown that efficiency in tourism can be influenced by several factors, including the process of auditing tourism activities (Barisic and Vukovic, 2014) or the economic situation of the tourist destination (Yongquan, et al., 2020). Also, among the factors that can influence the efficiency in tourism are the geographical position of the tourist reception units, the number of overnight stays and tourists, the average stay, but also the legislation in force (Alberca and Parte, 2020). Efficiency in tourism is very important, given that this notion requires rigorous and rational management of resources and that tourism is one of the largest areas consuming resources. This has been the basis for many studies that have found that tourism is a major consumer of electricity and is a major generator of carbon emissions (Xiaoping, et al., 2017; Chengcai, et al., 2018). In this sense, the efficiency of resource consumption is an imperative objective to be achieved for the field of tourism, as is the full use of accommodation capacity.

Among the most important indicators of tourist activity is the accommodation capacity, which can be treated in relation to certain indicators of tourist traffic, such as the number of arrivals (Untaru, 2008) or the number of nights spent (Gheorghe, 2015). Thus, the accommodation units must attract as many tourists as possible through the specific endowments and the quality of the services in order to register a use of the accommodation capacity in operation as close as possible to the percentage of 100%. The net index of utilization of the accommodation capacity in operation is a very important indicator, as behind the values of this indicator can be aspects such as the capacity of local communities to capitalize on tourism potential, the level of investments made by tourist reception units, the level of seasonality or involvement local authorities in tourism development. These aspects can be seen through the differences between localities, development regions or even countries in terms of this indicator.

In Romania, there are development regions in which the net index of capacity utilization in operation is higher than at the national level. In this situation is the South-East Development Region, at least in the period 2007-2015 (Roşu and Voicilas, 2019). The net capacity utilization index was also used by other authors to analyze the differences between the development regions of Romania, the results indicating that the South-East Development Region registers the highest value in terms of the analyzed indicator, and the North-East Development Region registers the lowest value (Arionesei, et al., 2016) or to analyze the tourist activity in different counties (Roşu, 2016).

Research methodology

The purpose of this research is to find out whether the accommodation capacity in operation in the South-Muntenia Development Region of Romania is used efficiently in relation to the number of overnight stays, the number of tourists, the number of accommodation days and the average stay. In order to analyze the efficiency of the accommodation capacity in operation and of the tourist circulation in the South-Muntenia Development Region, the calculation methodology from the paper "Statistical methods with applications in tourism management" was used (Cristache, 2008). Thus, for the calculation of the net utilization index of the accommodation capacity in operation and for the analysis of the tourist circulation, data from the period 2010-2019 were used, because the year 2010 represents a transition year, in the sense that the national economy is in full process recovery after the economic-financial crisis of 2008, and 2019 is the last year for which data were found in the statistics of the National Institute of Statistics.

The analyzed elements were the accommodation capacity in operation, the overnight stays, the net capacity utilization index, the number of tourists arriving in the South-Muntenia Development Region

and the average stay. The statistical indicators used were the dynamic statistical indicators, the average statistical indicators and the Spearman and Kendall correlation coefficients.

In order to carry out the statistical research, several steps were followed:

- Collection of data from the website of the National Institute of Statistics (online tempo statistics): accommodation capacity in operation by region and counties, expressed in millions of places-days; overnight stays by region and counties, expressed in millions; the number of tourists by counties;
- Calculation of the net utilization index of the accommodation capacity in operation by counties for the years 2010 and 2019 and by region for the period 2010-2019;
- Establishing the correlation between the accommodation capacity in operation and the number of overnight stays by region, using the Spearman and Kendall coefficients.
- Calculation of the average stay and the number of days of accommodation by counties.

Results

We note the net utilization index of the accommodation capacity in operation with IUCF which is calculated as a ratio between the number of overnight stays and the accommodation capacity in operation. After studying and processing the statistics regarding the accommodation capacity in operation and the number of overnight stays by counties, we obtained the following results:

Table no. 1. Net index of capacity utilization in operation by counties

No.	County	Number of nights (y)		Accommodation capacity in operation (places-days)-(f)		Net capacity utilization index in operation% - (x)	
		2010	2019	2010	2019	2010	2019
		y0	y1	f0	f1	x0	x1
						%	%
1	Arges	206235	409227	1164642	1745240	17	23.45
2	Calarasi	27570	66986	191570	282745	14	23.69
3	Dambovita	218526	289510	885204	1061492	24.69	27.27
4	Giurgiu	84968	46577	236821	287496	35.88	16.20
5	Ialomița	199574	184076	573151	506494	34.82	36.34
6	Prahova	799048	1302244	3606562	4369945	22.16	29.80
7	Teleorman	28776	19916	223678	209197	12.86	9.52
8	TOTAL	$\sum y_0 = 1.56$ million	$\sum y_1 = 2.31$ million	$\sum f_0 = 6.88$ million	$\sum f_1 = 8.46$ million	-	-

Source: data processed based on data retrieved from www.insse.ro (National Institute of Statistics, online tempo, accessed 20 december 2020)

$$IUCF_0 = \frac{\sum y_0}{\sum f_0} \quad (1)$$

$IUCF_0$ - net index of capacity utilization in operation for the reference year, 2010

$\sum y_0$ - the sum of the number of overnight stays for the reference year, 2010

$\sum f_0$ - sum of places-days for thereferenceyear, ie 2010

Thus $IUCCF_0 = \frac{\sum y_0}{\sum f_0} = \frac{1.56}{6.88} = 0.2267$, percentage 22.67%

$$IUCF_1 = \frac{\sum y_1}{\sum f_1} \quad (2)$$

$IUCF_1$ - the net index for the use of accommodation capacity in operation for 2019

$\sum y_1$ - the sum of the number of overnight stays for 2019

$\sum f_1$ - sum of places-days for 2019

Thus, $IUCF_1 = \frac{\sum y_1}{\sum f_1} = \frac{2.31}{8.46} = 0.2730$, percentage 27.30%

In order to establish the average efficiency of the use of the accommodation capacity in operation for 2019 compared to 2010, the average net utilization index of the accommodation capacity in operation (\bar{IUCF}) will be calculated:

$$IUCF = \frac{IUCF_1}{IUCF_0} \tag{3}$$

Thus, $IUCF = \frac{IUCF_1}{IUCF_0} = \frac{27.30}{22.67} = 1.2042$, percentage 120.42% - 100% = 20.42%

$$\Delta IUCF = IUCF_1 - IUCF_0 \tag{4}$$

$\Delta IUCF$ - absolute difference of the net capacity utilization index in operation

Thus, $\Delta IUCF = IUCF_1 - IUCF_0 = 27.30\% - 22.67\% = 4.63\%$

The average efficiency of using the accommodation capacity in operation in 2019 compared to 2010 increased by 20.42%, which means that it increased by 4.63 percentage points. In conclusion, the use of accommodation capacity in operation for 2019, compared to 2010 is relatively efficient. To determine the influence of effort on the effect, the Spearman and Kendall correlation coefficients were calculated as follows:

Table no. 2. Correlation between accommodation capacity in operation and number of nights spent

Years	(f)	(y)	Rf	Ry	Rfgrowing	Ry/Rfgrowing	di(Rfgrowing-Ry/Rfgrowing)	di2	Pi	Qi	Si=Pi-Qi
2010	6.88	1.56	1	1	1	1	0	0	9	0	9
2011	7.19	1.67	2	2	2	2	0	0	8	0	8
2012	7.80	1.77	3	5	3	5	-2	4	5	2	3
2013	8.06	1.71	4	3	4	3	1	1	6	0	6
2014	8.18	1.71	5	4	5	4	1	1	5	0	5
2015	8.52	1.90	8	6	6	10	-4	16	0	4	-4
2016	8.58	1.99	9	7	7	9	-2	4	0	3	-3
2017	8.75	2.06	10	8	8	6	2	4	2	0	2
2018	8.50	2.24	7	9	9	7	2	4	1	0	1
2019	8.46	2.31	6	10	10	8	2	4	0	0	0

Source: data processed based on data retrieved from www.insse.ro (National Institute of Statistics, online tempo, accessed 20 december 2020).

f - Accommodation capacity in operation - million places-days

y - Number of nights - millions

Rf - ranks of accommodation capacity in operation (variable f)

Ry - ranks of number of nights spent (variable y)

Rfgrowing - the ranks of the variable f ordered in ascending order

Ry/Rfgrowing - the ranks of the variable y ordered according to the ranks of the variable f ordered ascending

di - the difference between the ranks of the variable f in ascending order and the ranks of the variable y ordered according to the ranks of the variable f in ascending order

Pi = concordance between ranks

Qi = discordance between ranks

Si = score (difference between concordance and discordance)

The Spearman correlation coefficient, denoted by C_s is calculated as follows:

$$C_s = 1 - \frac{6\sum di^2}{n(n-1)} \tag{5}$$

Thus, $C_s = 1 - \frac{6 \cdot 38}{990} = 0.77$, and $C_s^2 = (0.77)^2 = 0.59$, meaning 59%

The Kendall correlation coefficient, denoted by C_k is calculated as follows:

$$C_k = \frac{2 \cdot \sum Si}{n(n-1)} \tag{6}$$

Thus, $C_k = \frac{2 \cdot 27}{90} = 0.6$, and $C_k^2 = (0.6)^2 = 0.36$, meaning 36%

Based on the Spearman and Kendall coefficients, it is found that there is a direct correlation between the ranks of accommodation capacity and the ranks of overnight stays, of medium intensity and that the connection between them is direct. Also, the influence of the accommodation capacity in operation in the variation of overnight stays is between 36% and 59%. This means that an increase in overnight stays will lead to an increase in accommodation capacity in operation, but with a slower growth rate. At the same time, based on the value of the influence of the effort (accommodation capacity in operation) in varying the effect (overnight stays), it can be deduced that there are other effort factors that influence the value of the effect, given that only 59% of overnight stays are generated by accommodation capacity.

Data on the number of tourists, the number of accommodation days and the average stay and their processing are presented in the following table:

Table no. 3. Efficiency of tourist traffic based on average stay

Y	(x)		(a)		(y)		b		
	2010	2019	2010	2019	2010	2019	(x)	(a)	(y)
	x0	x1	y0*x0	y1*x1	y0	y1			
A	111254	267349	205819.9	409043.97	1.85	1.53	2.40	1.99	0.83
B	10600	27472	27560	67246.4	2.60	2.44	2.59	2.44	0.94
C	56204	122107	218633.56	518161.53	3.89	2.37	2.17	2.37	0.61
D	28217	26540	84933.17	148633.04	3.01	1.75	0.94	1.75	0.58
E	36480	43567	199545.6	844077.88	5.47	4.23	1.19	4.23	0.77
F	318810	585785	800213.1	1776473	2.51	2.22	1.84	2.22	0.88
G	11347	11471	28821.38	50149.20	2.54	1.74	1.01	1.74	0.69

Source: data processed based on data retrieved from www.insse.ro (National Institute of Statistics, online tempo, accessed 20 december 2020).

Y - Counties

A: Arges; B: Calarasi; C: Dambovita; D: Giurgiu; E: Ialomita; F: Prahova; G: Teleorman; x - Number of tourists

a - Number of accommodation days (tourists days); y - average stay

b - Dynamics of indicators 2019/2010

Analyzing the number of tourists in 2010 and 2019, respectively, significant increases are observed for the counties of Călărași (159%), Argeș (140%), Dâmbovița (117%), Prahova (84%), Ialomița (19%). Also, there is a constancy in the case of Teleorman county (1%) and a decrease for Giurgiu county (6%). The average stay in 2019 compared to 2010 registers decreases in all seven counties, the decrease being due to the faster increase of the number of tourists compared to a slower increase of the number of overnight stays. Decreasing the average stay at the level of the entire development region may mean decreasing the efficiency of use of accommodation capacity.

In analyzed period (table no. 4) it can be observed that the highest increase of the net utilization index of the accommodation capacity in operation is registered in 2019 compared to the reference year 2010, the increase being by 4.63 percentage points, which means an increase of 1.20 times, transposed by an average increase of 20%. Also, the largest decrease is recorded in 2014 compared to the reference year

2010, the decrease being 1.77 percentage points, which means a decrease of 0.92 times, transposed by an average decrease of 8%.

Table no. 4. Net index of capacity utilization in operation by total region

Years	A%	B		C		D%	
		An-A1	An-An-1	An/A1	An/An-1	(An/A1-1)*100	(An/An-1-1)*100
2010	22.67	-	-	1	-	-	-
2011	23.22	0.55	0.55	1.02	1.02	2	2
2012	22.69	0.02	-0.53	1	0.98	0	-2
2013	21.21	-1.46	-1.48	0.94	0.93	-6	-7
2014	20.90	-1.77	-0.31	0.92	0.99	-8	-1
2015	22.30	-0.37	1.4	0.98	1.07	-2	7
2016	23.19	0.52	0.89	1.02	1.04	2	4
2017	23.54	0.87	0.35	1.04	1.02	4	2
2018	26.35	3.68	2.81	1.16	1.12	16	12
2019	27.30	4.63	0.95	1.20	1.04	20	4

Source: data processed based on data retrieved from www.insse.ro (National Institute of Statistics, online tempo, accessed 20 december 2020).

A - Net operating capacity utilization index; B - Absolute indicators; C - Indices of dynamics; D – Rhythms

Conclusions

The efficiency indicator must have a super unit result, then the result must be as high as possible. In this study, the net capacity utilization index in operation in the South-Muntenia Development Region (Romania) meets the first condition, while the second condition is partially met, given that, during the analyzed period, the indicator does not exceed the percentage of 27.30% (registered in 2019). Regarding the component counties, at the level of 2019, only the counties of Ialomița and Prahova exceed the percentage of 27.30%. Thus, at regional level, the two counties mentioned above are the most efficient in terms of using the accommodation capacity in operation.

The predominantly upward evolution of the number of overnight stays and the accommodation capacity in operation, from the analyzed period, shows that the efficiency of the use of accommodation in operation tends to increase at the level of the entire development region, supported by the six years in which the index is increasing, which means a 60% probability that the efficiency of the use of accommodation in operation will increase in the coming years. In conclusion, we can say that in order to be more efficient with regard to the use of accommodation capacity in operation, accommodation units must find solutions to balance the growth rates regarding the number of tourists, the number of over night stays and the accommodation capacity in operation.

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Key Sustainability Tendencies That Will Concern Business Managers in the Next Decade

Carmen Valentina Radulescu¹, Iulian Gole², Alexandru Dumitru Bodislav³ and Florina Bran⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: carmen-valentina.radulescu@eam.ase.ro; E-mail: iuliangole@yahoo.com

E-mail: alex.bodislav@ase.ro; E-mail: florinabran@yahoo.com

Please cite this paper as:

Radulescu, C.V., Gole, I., Bodislav, A.D. and Bran, F., 2021. Key Sustainability Tendencies That Will Concern Business Managers in the Next Decade. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 27-33 DOI: 10.24818/BASIQ/2021/07/003

Abstract

The first decade of the 21st century finished in a note of global warming activism, introducing of digitization in all sectors, financial innovation, etc. During time, researchers studied the connection between human activity and ecosystem health. All governments' policies are on the way to be adapted to bring more positive changes into society. At local level, there are a rising number of politicians, CEOs, and consumers who are aware that few problems, from social and environmental area, become so big that almost cannot be controlled if we continuing our actual style of living. Being under the pressure to adapt to new realities, some companies saw an opportunity by transforming themselves and they chose to be proactive in changing their way of doing business. After the Covid-19 pandemic spreading all over the world, the reality change again and, despite the terrible negative effects, the situation will entail a series of opportunities in innovation, investment, finance which will have greater consequences on companies market share. Using descriptive and comparative analysis, we will try to identify what new tendencies in sustainable businesses are, taking in account a series of the uncertainties that medical urgency could bring. It is clear that in an extended and longer pandemic, the sustainability is shadowed by priority of saving lives and jobs, but we demonstrated why supporting new sustainable measures will bring huge opportunities for innovation and investment.

Keywords

sustainable investments, responsibility, global warming.

DOI: 10.24818/BASIQ/2021/07/003

Introduction and status of knowledge in the field

We cannot talk about sustainability if we don't take into consideration the global warming problem. Climate change is directly linked to greenhouse gas emissions produced by human activity which is a real multiplier of biological threats. There is a direct link of human action against the nature and this aspect is highlighted by a number of researchers, even starting from the end of nineteenth century, who tried to explain in different models the connections between human and ecosystem health as well as their interrelationships.

The first one was Blum in 1974, followed by many others (Lu, et al., 2020 being the last one). Overall, among the highest risks scaled by World Economic Forum Global risks report 2020, the first 5 out of 10 risks are related to global warming. Maybe this is an explanation about the fact that people generally perceive the climate change danger but still they don't see it as being imminent and deadly – we know the risks and we start to get used the idea.

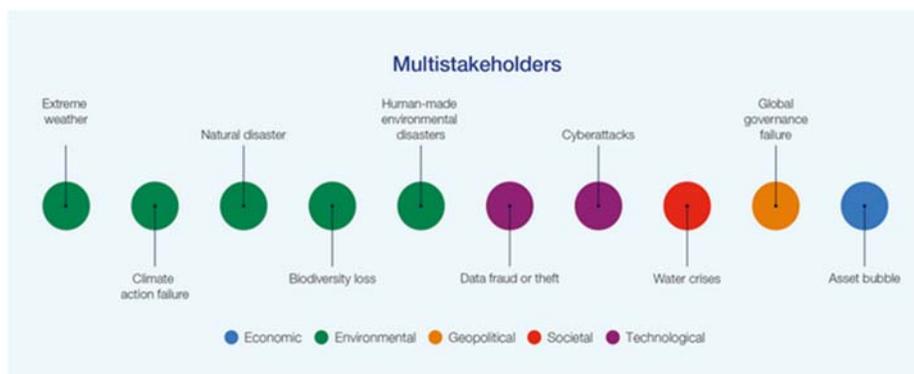


Figure no. 1. Top 19 risks over the next 10 years. Long-Term Risk Outlook: Likelihood
 Source: WEF. Global Risk Report. 2020

In the following part, we will approach few ideas that we believe might concern not only managers but also simple people and consumers.

Research methodology

Using descriptive and comparative analysis we tried to exemplify with real data what new tendencies in sustainable businesses are for the next decade. We started our paper work explaining why a sustainability strategy is important, will continue with ESG development, the important shift of China towards ecology, we'll have look on hoe family business can have a major impact on social and environmental issues and we'll fished by a short analyses of textile industry. We reviewed data from different sources to understand the causal contribution of different factors that can have a major contribution for sustainable development in the next decade.

Transforming the sustainability strategy into a sound business model

To deal with the impacts of global warming all companies must integrate sustainability into corporate strategy. Some steps are already done, at different levels.

For example, few companies started to consider their strategy by taking into account the consumer's awareness regarding the product's carbon footprint, which represents the value of total greenhouse gas emissions associated with the product/ service/ industry/ nation, etc. Because end consumers started to put more value in this aspect, producers were obliged to accept sustainability as a pillar of the economic strategy (Hristov and Chirico, 2019).

Other companies decided to be proactive and assume greater responsibilities in becoming a promoter of sustainability even though their strategic position on the market is dominant. One of the best examples is OCP Group of Morocco; a company which is the "custodian of 70% of the world's phosphate reserves" decided to assume the mission "to feed the soil to feed the world". OCP started as a simple mine in 1920 but today the strategy of the company is not only to increase the phosphate production to satisfy the growing demand but also to "understanding the different soil and crop requirements and supporting the farmers' sustainable use of fertilizer". It is probably one of the best chances for Africa to develop its huge agricultural potential. OCP also invests in new technologies to increase efficiency by using and reusing phosphate, conducting soil mapping and analysis to deliver performing products. They are fully dedicated to supporting sustainable development goals.

Sustainable finance

More and more investors around the world are becoming interested in using their financial resources in long-term and sustainable projects rather than short-term oriented, extractive, and polluting operations. Despite this fact, it is still very difficult for different private stakeholders to understand how

sustainable are in reality their investments and what the impact on the environment and society is (Cao and Zheng, 2016). During the time, in the financial sector, the criteria of the ESG sustainability rating (E - environment, S – social, G - governance) have become known as a key assessment indicator that could give more transparency in the investment decisions.

Bank of America Merrill Lynch estimates that assets under management in ESG equity funds based in Europe will rise by €1trn by 2030. The analysts predict also that one-third of European equity funds will invest in ESG by the end of the decade. According to the same paper, it is also important to mention that over the last two years, investments in ESG funds have increased by 8 times, while more than 1000 ESG funds are active in the financial market, which represents a 40 times increase in the last 10 years. EU is an example from this point of view, but even in the European Union, ESG funds represent only just 7% of total assets.

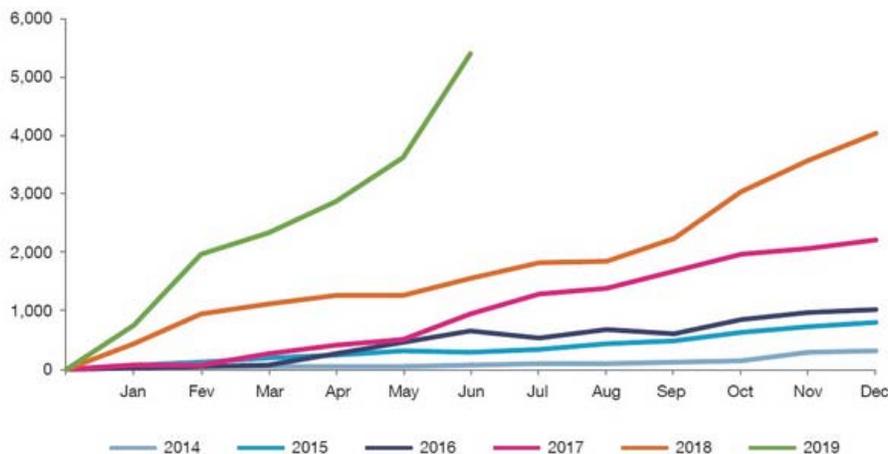


Figure no. 2 Cumulative net new assets invested in ESG ETF (exchange traded funds) in Europe (€m, by year).

Source: Lyxor ETF, Bloomberg, data from 01/01/2014 to 30/06/2019

We could see from the Bloomberg graphic above that in the last 5 years the number of investments in ESG assets is growing constantly. EU regulations are also part of the reasons since there is continuing pressure on funds to take ESG into account. Since 2017, more than 6000 EU companies were required by EU Non-Financial Reporting Directive to publish ESG data in their yearly reports.

The rise of ESG investments is steamed by other factors (Cornell, 2020) as follows:

- the growing of ecologist parties, during the last decade, at the national level and consequently with an increasing number of seats in the European Parliament;
- the structure of clients is changing, more and more young investors are entering into the financial markets and the since the advantages of ESG stocks have been tenaciously explained, it is somehow normal to see more and more people interested in these aspects;
- bringing ESG shares into portfolio could create a diversity of investment which finally will enable improved profitability and returns of companies, in every area of the economy; ultimately this will improve the quality and longevity of the businesses.

China's political trend is shifting towards ecology

There is no possible significant initiative in the near future without China. Neither U.S. (despite the new administration) nor E.U. could advance solely in fighting global warming. Some facts cannot be diminished when we talk about sustainability:

- The contribution of Chinese leadership in Amazon fires in Brazil. China is today the only country with a real influence on the internal policy of Brazil. A few decades ago, the U.S. and Europe had an important influence over Brazil, as “Paris Club” members, at some point, there were discussions about a swap of debt forgiveness in exchange for protecting the rain forest. Today, for Brazil, China became the most important partner of business. For China, Brazil became a market of 30 billion USD investments during the last decade. China is the largest buyer of agricultural exports, especially after the trade war with the US. In 2018, Brazil exports 75% (51 million tons) of Chinese soy purchases, and 44% of Brazil’s total beef exports.

- China has become the second-largest contributor to United Nations (12,005%) and is full beneficiary from United Nations Environmental Programme and, at the same time, is struggling to unite the forces of UNEP and Belt and Road initiative into an International Green Development Coalition. But the country is working hardly on the environmental effects by technocratic and market-based measures (Zhang, 2018).

- After economic effects due to the Covid pandemic, China results to be one of the less affected economies. With GDP positive growth of around 3% (according to various sources) China is the only major economy in the world to avoid a contraction last year, all the other countries suffering from containing the consequences. This situation will give more power of influence to the Chinese government.

Taking into account all these aspects we believe that the next year (if not years) the Chinese diplomacy will be an important partner. The question is if other countries will want to engage with China. The new administration of the U.S. seems to revert to better sentiments regarding the fight against global warming by returning to Paris Agreement, it remains to see how this situation will bring positive effects.

The new generation of family business can have a better environmental impact

Family businesses represent 2/3 of all companies from the entire world and contribute 70-90% of annual global GDP. According to Family Firm Institute, family businesses create 50 to 80% of all jobs worldwide. In the U.S, 1/3 of SandP 500 firms are owned/controlled, and/or managed by the founding family. Family businesses generate 89% of total tax returns and 64% of GDP; also, 62% of total employees are working for them.

In Europe, the situation is similar, according to Forbes, half of the businesses from Top 500 Family Businesses in the World are based in Western Europe, which makes family businesses a real economic power.

In India the economic landscape is also dominated by family businesses, with 111 publicly-listed family-owned businesses, the country is in the third position in the world, from this perspective. Despite its political organization (most of the companies are state-owned), China has 159 such companies followed by the US with 121.

These companies can play an important role in addressing some of the world’s most pressing challenges.

Currently, despite several positive examples that we already have mentioned before, there is a permanent focus on short-term results in the company’s management board of non-family businesses. Short-term vision, continuous growth, and profit and loss are the main indicators scrutinized by every director and this leads to a generalized situation of risk-averse. “Stay safe” seems to be these days the main preoccupation for individuals but also for most companies. At the same time, the family companies have enough resources to afford a long-term view and this allows them to have a larger perspective, they could look for long-term growth, margins, and returns.

This situation has various consequences for the owners of a family business. For example, there is a lower need for external funding since all the profit is reinvesting regularly into the business. Giving the conservative spirit of every family business, there is a permanent control of the company’s financial situation. They will rarely take advantage of leveraging or increasing their debts. The focus is rather protecting their loyal people or investing in RandD as a raincoat for bad weather. There is also an

important stock of knowledge, gathered from generation to generation. These people saw many financial crises and economic booms so they will never react harshly or speculate. There is an important experience built during decades or centuries and they know how important is to have a certain positive attitude to succeed.

Ineluctably there is a new generation inline to inherit the business but there is also a matter of personal pride to create a sound legacy for each of the future stakeholders. At some point, the question of growth and profit is less important. Once arrived at this point, we believe that family business managers could play a higher role in changing the business model by bringing more sustainability measures into the strategy.

Corporate Social Responsibility and philanthropy are very important at all times but transforming the business model through a sustainability perspective is maybe most efficient because it will have a real impact on the people and the planet. Due to their direct connection to businesses, family owners and their enterprises are in a privileged situation to manage this challenge.

Realignment of textile and luxury goods industry

Some of the traditional industries will have to adapt the way they were working if they want to remain competitive in the eyes of clients. According to the United Nations Environment Programme, for each pair of jeans 3,781 t of water is necessary, along the entire production chain – starting from the production of the cotton until when the final product is waiting for the client, on a shelf of a store. The process is equivalent to the emission of around 33.4 kilograms of carbon in the atmosphere. Starting from this everybody could calculate the environmental impact of his wardrobe.

By comparison, the amount is higher than all international flights and maritime shipping combined, and the emission growing at a steady pace.

A research regarding the environmental impact of the textile industry in China (one of the big producers worldwide) came up with the conclusion that the fashion sector contributed 4 to 8 billion tons of GHG (for the considered period).

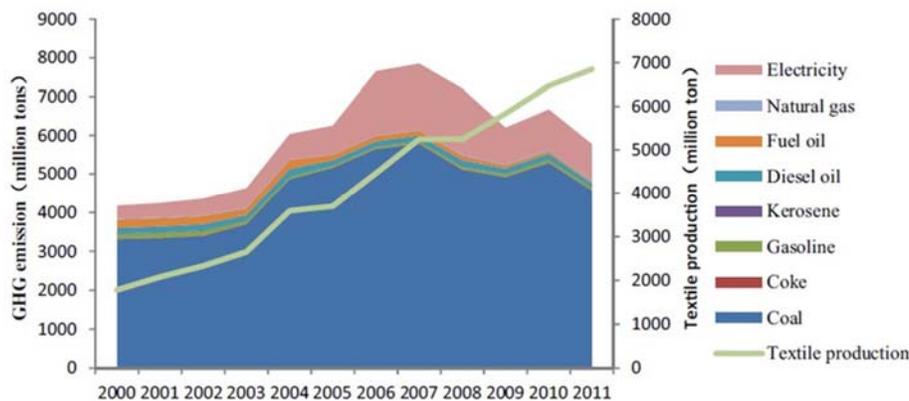


Figure no. 3. GHG emissions from the fashion industry and other sources, in China.

Source: Source: Huang, et al. (2016)

UNEP and the Ellen MacArthur Foundation came up with other data to realize the full environmental impact of the clothing industry:

- The entire consumption of water, each year, is around 93 billion cubic meters – this equivalent with to the need for consumption of five million people.
- The production operations of the fashion industry (for example dyeing and treatment) are responsible for 20 % of wastewater worldwide.

- 87% of the entire production of fibers used by the fashion industry is disposed of or buried in a landfill.

- 10% of annual greenhouse gas emission is generated by the fashion industry and if the rhythm of growth is maintained may rise by more than 50% by 2030. By comparison, the amount is higher than all international flights and maritime shipping combined.

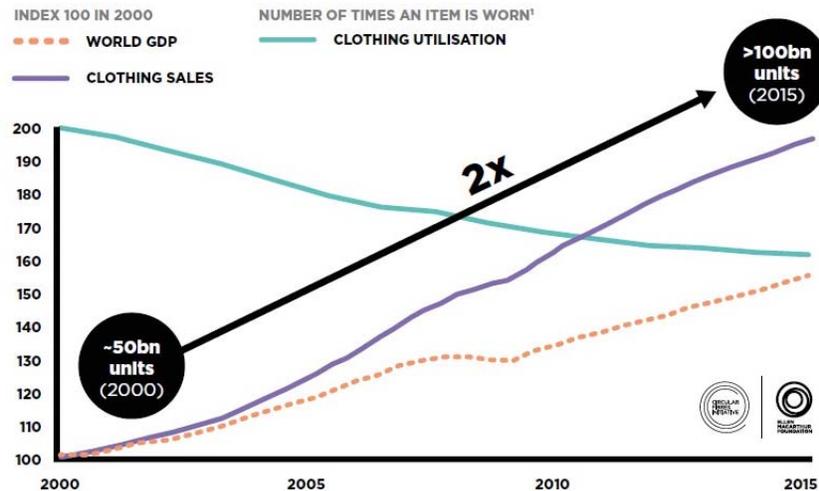


Figure no. 4. Growth of clothing sales and decline of utilisation since 2000.
 Source: Euromonitor, (2017)

We can see that during 15 years, the production of clothes has almost doubled due to growing revenue per capita and consequently to a rise of middle-class population. As we speak of fast-food we can speak also about fast-fashion, phenomena characterized by a quicker shift of new styles so therefore a higher number of collections offered per year.

By comparison, the amount is higher than all international flights and maritime shipping combined, and the emission growing at a steady pace. The problem of this industry is huge and cannot remain without effects. For a larger and even growing number of end consumers, the environmental impact is no longer acceptable.

It is obvious that the time of a significant realignment of industry arrived and a few of the future measures or areas to search could be:

- a slowdown of the generalized production and focus to manufacture based on order, to avoid the waste;
- increasing the use of second-hand products, already many companies are present on the market with this type of business;
- the engagement of textile companies to reduce the carbon footprint;
- since e-commerce is more and more present in our way of doing shopping, it is time to analyze its impact from the climate change point of view.

In any case, the time of change has arrived for the fashion industry and shoppers who are on the way to change their behavior regarding environment impact will make them adapt.

Conclusions

The next decade will be critical because companies are already under pressure to realign to new standards imposed by environmental urgency. We just described a few of the new trends that we consider as being important but the reality could always be surprising. The pandemic almost stopped the economy and many businesses have to adapt to the realities.

The managers have to change the way their companies are doing business if they want to survive on the market by accepting, embracing, and implementing new methods of production; being more innovative but less polluting is the only chance to address the world's urgent challenges.

Undoubtedly supporting new sustainable measures will bring huge opportunities for innovation and investment but at the same time greater image and positive publicity and finally market share. Taking into consideration the urgency of the situation, trying to produce sufficiently with fewer damages to the planet is the only way of success.

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Using a Hybrid Economic Indicator (BADEM) to Evaluate the Retail Sector (R5N) and Consumption

Dumitru Alexandru Bodislav¹, Sorin Burlacu², Carmen Valentina Radulescu³ and Svetlana Platagea Gombos⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: alex.bodislav@ase.ro; E-mail: sburlacu@amp.ase.ro

E-mail: carmen-valentina.radulescu@eam.ase.ro; E-mail: svegombos@yahoo.com.sg

Please cite this paper as:

Bodislav, D.A., Burlacu, S., Rădulescu, C.V., Gombos, S.P., 2021. Using a Hybrid Economic Indicator (BADEM) to Evaluate the Retail Sector (R5N) and Consumption. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 34-42 DOI: 10.24818/BASIQ/2021/07/004

Abstract

This research is based on an algorithm developed for the American stock market for increasing the efficiency of closed funds. The secondary output of the research is creating a suitable and sustainable model that could be partially scaled to fit issues regarding automated decision making at government level. These elements being similar to a basic Business Intelligence solution that offers a solution in cutting to best suitable path for making a governmental decision, e.g.: if a country needs investment in road infrastructure, healthcare or education, by using the principles behind this simple model you could yield the results and come to the best solution or best fitted regarding the global economic output. The model is based on companies traded on NASDAQ and LSE because they offer the best suitable cases for transparency, credible auditing and also it emulates the economic sectors that form a nationwide economy. To create a better perspective, we created also an overview to analyze the evolution between BADEM (an indicator that simulates a nation-wide economy) and R5N (a micro-indicator that simulates the retail sector; R5N stands for *5 biggest retail companies on NASDAQ*) and we present the main findings in this paper. The research develops to round up the idea that there is a strong correlation between the growth of the retail sector and the long term evolution and quality of a developed economy.

Keywords

automated decision making, business intelligence, retail sector, sustainability.

DOI: 10.24818/BASIQ/2021/07/004

Introduction

There are concerns which may be requested on cyberspace by earning the spotlight that the concept of social inequality depending on the revenue of a organization's CEO and the brand new hired employees, this gap will be generally of 650 times larger, in training it signifies a non-ethical circumstance and underlines social disparities; along with the problem we've got the ineffective situation of earnings redistribution that rather than being dispersed for investment at the introduction of a much better social wellbeing, by establishing schools and improving the overall health care system, people incomes are still re-distributed for your payment of their financial shortage (Bran, et al., 2014).

The worldwide tendency is to make a corporate and societal media design (corporate governance condition incorporated) dependent on the options developed in a tiny scale and modeled for regional, national, marriage and worldwide execution, that have as execution stations the ministries that produce the authorities and its execution stations -- that the adopted economic policies (Bodislav, 2016).

Capitalism without democracy isn't feasible, thus we must bring to the dialogue that the concept of the performance of political warfare in perfect situation (Becker, 2003). This concept underlines the thought that a perfect democracy is just like the method of free enterprise in a specific marketplace, stressing the ideological convergence between capitalism and democracy (Bodislav, et al., 2021). The exemplification is performed on a single industry rather than on the whole market because based on this strategy on competition within a democracy we have similarities with all the relations between a market and its industries, in parallel using a company as well as the branches that produce this splitting in goal produces a better approach to acquire the output according to technical governance, and which can be accomplished by people from the company (division supervisors, division supervisors, etc.) and from individuals or work teams from the financial industries (ministry and state secretaries). For celebrating a particular branch of this model predicated on technological advancement (hardware and software) and then to up it as a change in the private sector involving the public sector and also using the procedure or methodology for picking and diluting created data for supplying some relevant choices or for reducing the amount of available choices towards a little one, however every remaining alternative being a viable solution for the marketplace. The objective of the research is to create corroboration between the evolution of the retail sector of companies that are publicly traded and a hybrid indicator that evaluates how the economy grows and if their trends are similar and correlated. We assumed that there could be a possible strong correlation between the retail sector and the evolution of a simulated economy and our main focus was that we wanted to highlight their similar trend, but the correlation and the result itself bypassed our supposition, because the trend and growth of the Retail sector was in line with the hybrid indicator, in absolute values growing at an accelerated pace, that couldn't be forecasted.

Literature review

The elements of service quality in the industry are classified by some research to determine their instrumentality for customer satisfaction using Fuzzy Kano questionnaires (Shokouhyar, 2018). To model both current and future behaviors as customer loyalty measures, to quantify the link between current and future behavior, some researchers have developed hybrid models that combine reflective and formative constructions, thus moving away from the traditional "only reflective" approach. (Baumann, 2011). The development of tools to highlight sustainable consumption involves identifying specific indicators. Studies show that the choice of clearer product-based indicators and stronger government regulation of unsustainable products would allow for further change in the choices of sustainability by retailers. The development of tools to highlight sustainable consumption involves identifying specific indicators. Studies show that the choice of clearer product-based indicators and stronger government regulation of unsustainable products would allow for further change in the choices of sustainability by retailers. (Gunn and Mont, 2014). The markets are also characterized by a series of specific indicators, the drawing of an aggregate indicator to highlight a general state being analyzed by current studies (Radulescu, et al, 2021). Methods such as the semantic differential method or the rank ordering method can be used to interpret the results (Burlacu, et al., 2021). Other models can be estimated by applying the least estimated least squares panel (EGLS) method, weighted by the cross-section weight option (Dobre et al., 2019). There are also studies that use empirical methods of data collection and analysis (Orzan, et al., 2020). There are also studies that propose hybrid indicators such as the "socio-economic indicator for the bioeconomy" (SEIB) which measures the socio-economic performance of the bioeconomy sectors (D'Adamo, et al., 2020).

Research that has introduced hybrid models that combines support vector regression (SVR) and integrated autoregressive moving average (ARIMA) to be applied in crime rate forecasts considers that SVR would be very robust, with small training data and large problems and ARIMA would have the ability to model several types of time series. The limitations of these models would be given the accuracy of the SVR model data and would depend on the values of its parameters, while ARIMA would not be robust to be applied to small data sets (Alwee, Shamsuddin and Sallehuddin, 2013).

We also agree that, any method must be documented and accompanied by the state of knowledge in the field for a correct interpretation of the resulting data (Sarbu et al., 2021). Some researchers believe that developing an analytical framework based on business performance economics can provide a

quantitative perspective on the link between a company's business model choices and the consequences of their profit. Their analysis suggested that the effectiveness of a particular business model would depend not only on its design but perhaps especially on its implementation (Brea-Solís, Casadesus-Masanell and Grifell-Tatjé, 2015).

Business-Automated Data Economy Model (B.A.D.E.M.) – Synergy between Business Intelligence and Financial Data Analysis

The growth of interdisciplinary creation is pushed by sub-layer technology from the world wide web. Much like Gordon Moore's rule which informs the simple fact power processing halves at each 18 months, making us to worry out that the expense of business tendency that's developed on Moore's law has just 1 conclusion: will tend to zero (Bodislav, 2011). 40 years ago, that the Caltech professor, Carvey Mead, recognized the corollary by Moore's rule of boundless development of computing power. At each 18 months, Mead found that the purchase price of all transistors halves. That was the way it had been, moving from tens of thousands of dollars from 1960 into approx. 0,000001 penny nowadays, the price of every transistor that's discovered on the hottest Intel chip with octa-core technologies. Mead underlined the thought that transistors have to be squandered. Waste is an embarrassing idea and this was legitimate for the IT world throughout the '70. A whole generation of specialists had been educated that their occupation was to create computers utilizing tools illogically. Obviously, computers were not for free afterward and are not at no cost. However, what Mead knew was that the simple fact that transistors, nuclear processing units, may grow to be a lot of that their price will get to the stage of (Bhide, 2006). In the year 1986 the purchase price of a pc was of roughly 20 million USD, currently being discovered 15.000 times quicker and 30.000 times more economical in the instance of an iPhone 12 Pro Max, leading to a 450 million occasions increase in calculating power for each US dollar invested.

Methodology for creating BADEM

How can you create a nation in a practical fashion rather than by employing unification procedures, national awareness and historic dependence. Macroeconomic performance demonstrates in a comparative manner how economic development is triggered in a nation, but also the high quality and life regular are significant details in the route of development.

In a universe that provides customers investment vehicles which do not have any actual base there's the urge to make new systems which operate dependent on the actual market, with its bottom point function as manufacturing activity that's covered by the monetary side, but at a ratio of 1:1. To confirm the arrangement of the notion which reflects a fresh vantage point on the conventional perspective on economic development it's been adopted the concept to come up with a pseudo-economy that reproduces a nation during its minimum benchmark and for that there have been utilized companies which are a part of those industries that could imitate a market paced in creating manner.

Table no. 1. BADEM – companies that form the hybrid model and the 2011 – 2020 evolution

No.	Company Name	Indicator	03.10. 2011	02.10. 2012	02.10. 2013	02.10. 2014	02.10. 2015	02.10. 2016	02.10. 2017	02.10. 2018	02.10. 2019	02.10. 2020
1.	Schweitzer-Mauduit International	SWM	27,57	32,45	59,47	40,14	35,24	37,92	41,20	35,03	37,23	30,39
2.	Paramount Gold and Silver Corp.	PZG	2,17	2,59	1,30	0,88	1,12	1,85	1,36	1,06	0,65	1,08
3.	Goldcorp Inc	GG	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
4.	First Majestic Silver Corp	AG	14,90	22,86	11,58	7,84	3,58	8,23	7,35	5,67	9,66	11,50
5.	SPDR Gold Trust	GLD	160,96	172,10	127,06	116,74	108,99	119,74	121,09	113,80	141,90	181,64
6.	Telefonica SA	TEF	18,38	13,53	16,03	15,10	12,01	9,64	10,51	7,98	7,48	3,92
7.	Stamps.com	STMP	19,36	22,86	45,83	32,11	73,91	94,35	216,25	216,41	75,91	220,93



8.	OpenTable	OPEN	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
9.	Google Inc. / Alphabet Inc.	GOOG	495,52	756,99	887,99	570,08	626,91	775,08	978,89	1157,35	1209,00	1591,04
10.	Watco	WSO	51,31	76,92	94,01	87,35	119,74	144,32	162,55	173,00	164,07	238,31
11.	Town Sports International Holdings	CLUB	6,87	13,22	12,46	6,25	2,71	2,82	6,70	9,05	1,62	0,40
12.	Steven Madden	SHOO	28,36	43,87	35,93	32,21	24,03	23,17	28,47	32,77	34,43	21,48
13.	Ross Stores	ROST	38,21	65,95	74,01	75,81	48,73	64,28	65,99	94,63	108,93	93,32
14.	Nordstrom	JWN	45,37	55,63	56,80	68,83	75,12	54,83	44,31	60,26	32,49	16,28
15.	Men's Wearhouse	MW	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
16.	Maidenform Brands	MFB	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
17.	LuLulemon Athletica	LULU	44,80	76,35	74,46	42,36	51,12	58,29	61,30	153,84	193,12	361,41
18.	Watson Pharmaceuticals	WPI	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
19.	Techn Corporation / Bio-Techn Corporation	TECH	65,29	73,38	80,57	93,64	93,54	110,96	122,56	192,20	201,40	246,22
20.	On Assignment / ASGN Inc	ASGN	6,75	19,95	33,01	26,58	36,41	36,96	55,48	71,67	59,28	70,73
21.	Jazz Pharmaceuticals	JAZZ	37,35	58,76	90,28	154,55	137,50	122,81	146,47	162,67	125,85	131,70
22.	Cross (A.T.) Company	ATX	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
23.	Western Refining	WNR	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
24.	Sunoco Logistics Partners / Sunoco LP	SXL	29,46	49,00	66,46	47,88	33,82	28,38	31,73	29,83	31,25	25,67
25.	Patterson-UTI Energy	PTEN	15,83	15,80	22,39	30,27	14,26	23,02	20,75	17,82	8,29	3,66
26.	Exxon Mobil Corporation	XOM	71,15	91,72	86,08	93,30	75,88	86,74	81,71	85,34	68,97	36,90
27.	Alon USA Energy Inc.	ALJ	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
28.	Templeton Russia Fund	TRF	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
29.	Tanger Factory Outlet Centers	SKT	24,73	32,02	33,08	32,95	33,33	36,75	24,82	21,58	14,56	5,87
30.	Rayonier Inc.	RYN	35,65	48,65	55,78	31,14	22,66	25,51	29,17	31,32	28,32	28,77
31.	Plum Creek Timber Company	PCL	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
32.	Medallion Financial Corp.	TAXI	8,91	11,97	14,92	11,75	7,67	4,48	2,30	7,23	5,81	2,95
33.	CME Group Inc	CME	49,70	57,11	73,97	80,42	90,57	103,82	137,20	181,69	216,02	169,62
34.	Berkshire Hathaway (1/100)	BRK/A	1047,01	1332,27	1715,00	2062,50	1955,00	2166,40	2810,00	3295,00	3125,24	3274,01
35.	Bank of America Corporation	BAC	5,53	8,93	14,06	16,88	15,38	16,13	26,21	30,23	28,37	26,54
36.	American Campus Communities Inc	ACC	36,15	43,49	34,31	36,29	36,56	47,99	44,84	41,00	48,85	35,82
37.	Westinghouse Air Brake Technologies Corporation	WAB	50,15	81,38	63,43	77,91	87,87	81,48	75,60	104,30	65,49	69,04
38.	MasTec	MTZ	16,93	20,55	30,54	29,60	16,22	29,55	45,95	41,73	63,31	44,93
39.	GSI Group / Novanta Inc	GSIG / NOV	7,27	8,79	9,47	11,60	12,68	17,24	45,50	65,29	80,78	102,51
40.	Grupo Aeroportuario del Sureste	ASR	48,94	89,90	115,43	125,21	155,27	151,33	182,62	197,64	155,80	112,50
41.	General Electric Company	GE	14,69	22,79	24,33	25,12	24,48	27,95	23,44	12,67	8,57	6,42



42.	Embraer- Empresa Brasileira de Aeronautica	ERJ	24,67	26,22	33,73	37,95	25,67	17,97	22,71	19,90	17,45	5,53
43.	Colfax Corporation	CFX	19,07	36,12	57,66	57,10	29,69	30,26	42,16	35,43	28,53	33,72
44.	Boeing Company	BA	58,25	69,53	117,84	124,17	132,56	133,85	258,58	386,47	375,70	171,05
45.	Bae Systems Plc	BAESY	15,78	21,60	29,13	29,47	27,27	27,06	32,61	32,31	27,13	27,32
46.	3M Company	MMM	70,93	93,54	119,20	138,67	143,20	171,33	216,52	213,19	155,82	165,77
47.	Goldman Sachs Income Builder Fund A Shares	GSBX	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
48.	Ultratech	UTEK	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
49.	Stratasys	SSYS	18,00	56,55	103,50	115,05	26,60	23,27	23,64	22,05	19,95	14,04
50.	Microsoft Corporation	MSFT	24,53	29,66	33,92	45,76	45,57	57,80	76,00	112,13	138,12	214,25
51.	j2 Global	JCOM	25,50	32,78	50,25	50,18	71,49	64,73	75,34	77,28	91,00	69,48
52.	International Business Machines Corporation	IBM	173,29	209,84	184,96	186,91	144,58	155,67	146,48	149,03	142,99	122,30
53.	Intel Corporation	INTC	20,62	22,84	22,89	33,52	30,51	38,10	39,63	47,03	50,92	50,08
54.	CACI International	CACI	46,81	52,31	68,90	70,88	74,57	101,37	142,20	185,02	228,41	226,83
55.	Apple Inc *	AAPL	374,57	661,29	487,97	699,30	772,80	798,56	1087,24	1569,96	1589,00	3386,88
56.	ACI Worldwide	ACIW	25,26	42,20	55,19	18,79	21,12	19,21	23,87	26,82	30,57	29,11
57.	3D Systems Corporation	DDD	13,50	34,21	55,22	43,71	11,21	17,53	13,47	17,97	7,86	5,41
58.	American Water Works	AWK	29,27	36,82	41,53	48,01	55,63	70,64	82,77	89,04	125,78	143,17
	TOTAL		3465,32	4847,29	5521,93	5782,76	5644,78	6239,37	7935,54	9633,69	9381,88	11830,50
	DELTA chain		100,00	39,88	13,92	4,72	-2,39	10,53	27,18	21,40	-2,61	26,10
	DELTA base				59,35	66,88	62,89	80,05	129,00	178,00	170,74	241,40

Source: the author, by using the NASDAQ OMX stock exchange and trading platform and Bloomberg Professional Service.

After picking all of the businesses which emulate the technical element of a nation, the choice originally being done at the August -- September 2011 interval, the implementation period for the design has been selected, beginning from the thought that the worldwide market is at a constant muddling through procedure and believing the model's implementation relies on inventory flow onto a competitive marketplace generated specially for them. The inventory' costs include investors' optimism as well as the simple fact that nearly all selected companies are part of the US business sectors. To reevaluate the led growth acquired in 2 stagnating markets (European and American stock markets) with assumptions for a new downturn, a rise of 25 percent per year was required for the design to be confirmed and reflect beauty as an investment finance with low to moderate risk, also since a validation model for the intervention of corporate governance at country government for generating policies and executing and implementing economic units.

The reason for selecting this interval? To do the fiscal exercise it had been launched in the insecure element found in the stock exchange in every October (this season signifies the "Revenue Season" which enables market players to produce fast cash by searching annual gains provided to investors). In the conclusion of 2011 and throughout 2012 there have been multiple significant occasions, be both economical, social or natural, in the Arab Spring", Japan's tsunami/earthquake or hitting the top limit of this financial peaks facilitated by George Bush Jr., that was extended with two decades over its interval from the Obama Administration, occasions which destabilized the global market and reduced expectations and market predictions, such as turning South that the growth of all businesses which are listed on stock markets worldwide.

To confirm the model's functionality and not to perceive it as a "black swan" exclusion (Taleb, 2010), the version has been circulated for ten years and that manner it comprised expectations which were diminished all around the world. Obtaining economic expansion that gravitates about zero worth sends a troubling message to most advanced markets, attaining the debt limitation for the US from 2013 and shooting the lid off out of the ceiling in an undefined period routed the entire world market in an unrealistic flourishing period, particularly fed from the FED. The used macroeconomic policies enabled with operations like "helicopter money" developed by the Congress led by the Trump Administration, that skyrocketed when the COVID19 virus hit developed economies, starting March 2020, but the model was empowered and also survived on the short run to a "reverse black swan" situation that the coronavirus turned out to be.

Analyzing the B.A.D.E.M. adjusted with the Retail sector

In this subchapter of this paper, we will analyze the Retail sector by choosing the best performing 5 companies from NASDAQ from their financial perspective and highlighting the evolution between this mini-indicator (R5N – Retail 5 NASDAQ) and the B.A.D.E.M. indicator. Their performance is highlighted by using the National Retail Federation’s classification for 2019.

Table no. 2. Retail sector best performers on NASDAQ

No.	Company Name	Indicator	03.10. 2011	02.10. 2012	02.10. 2013	02.10. 2014	02.10. 2015	02.10. 2016	02.10. 2017	02.10. 2018	02.10. 2019	02.10. 2020
1	Walmart Inc.	WMT	52,88	74,2	71,87	77,3	66,36	69,36	79	94,69	117,85	141,36
2	Amazon.com Inc.	AMZN	212,5	255,92	310,03	316,98	541,94	841,66	989,58	1864,42	1735,65	3190,55
3	The Kroger	KR	11,01	11,9	19,95	26,48	37,51	29,37	20,63	29,35	25,59	34,29
4	Costco Wholesale	COST	81,65	99,62	113,41	125,27	147,96	149,47	157,09	223,93	283,93	365,09
5	Walgreens Boots Alliance	WBA	32,85	36,36	55,19	59,84	84,44	80,3	73,2	74,15	54,7	37,07
	TOTAL		390,89	478	570,45	605,87	878,21	1170,16	1319,5	2286,54	2217,72	3768,36
	DELTA chain		100,00	22,29	19,34	6,21	44,95	33,24	12,76	73,29	-3,01	69,92
	DELTA base				45,94	55,00	124,67	199,36	237,56	484,96	467,35	864,05

Source: the author, by using the NASDAQ OMX stock exchange and trading platform and Bloomberg Professional Service

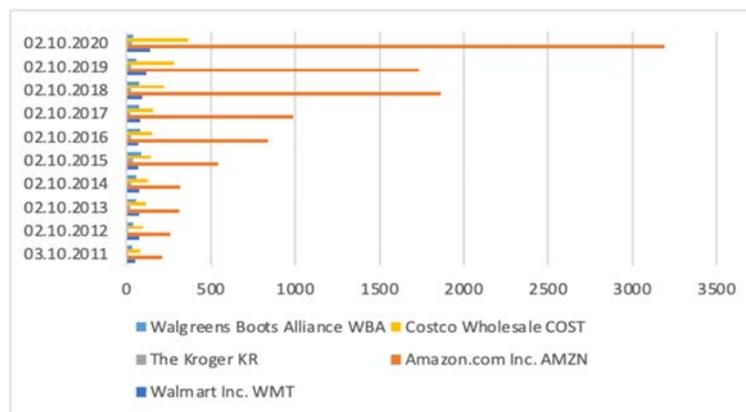


Figure no. 1. The evolution of the Retail sector – best performing 5 companies on NASDAQ

Source: National Retail Federation (2020) and the authors

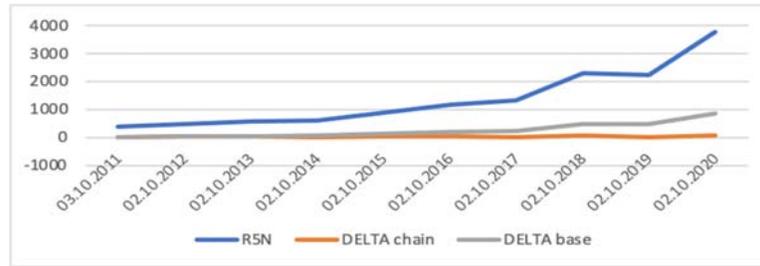


Figure no. 2. The evolution of the R5N and its deltas (chain and base)
 Source: National Retail Federation and the authors

The evolution of R5N shows that the transportation industry grew in the last 10 years to almost 3 times its value, especially during the actual pandemic, the COVID19 issue that influences the social and economic evolution of the global economy.

Next, we will analyse the evolution of a chain delta of the two indicators, chain delta being the percentage evolution year on year for the decade we developed the indicator.

Table no. 3. The parallel between R5N and BADEM – delta chain

DELTA chain	03.10.2011	02.10.2012	02.10.2013	02.10.2014	02.10.2015	02.10.2016	02.10.2017	02.10.2018	02.10.2019	02.10.2020
R5N	0	22,29	19,34	6,21	44,95	33,24	12,76	73,29	-3,01	69,92
B.A.D.E.M.	0	39,88	13,92	4,72	-2,39	10,53	27,18	21,40	-2,61	26,10

Source: the author, by using the NASDAQ OMX stock exchange and trading platform and Bloomberg Professional Service.

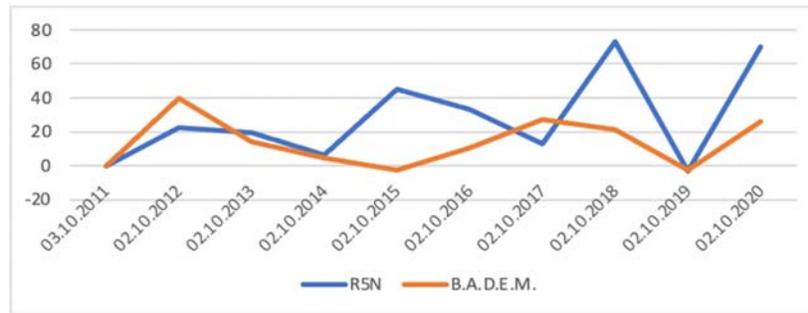


Figure no. 3. The parallel between R5N and BADEM – delta chain
 Source: National Retail Federation and the authors

This parallel between R5N and BADEM indicators shows what we stated earlier that they have the same financial movement in the 10 years we measured, but the BADEM indicator actually doesn't have the chainsaw movement with peaks and lows because its size and development allow a buffer that works at microeconomic level like how inflation works with purchase parity at macroeconomic level. To understand the trend of the two indicators we have the delta base values that show us the evolution of the indicators compared each year with base value of the starting point (2nd of October 2011).

Table no. 4. The parallel between R5N and BADEM – delta base

DELTA base	03.10.2011	02.10.2012	02.10.2013	02.10.2014	02.10.2015	02.10.2016	02.10.2017	02.10.2018	02.10.2019	02.10.2020
R5N	0	22,29	45,94	55,00	124,67	199,36	237,56	484,96	467,35	864,05
B.A.D.E.M.	0	39,88	59,35	66,88	62,89	80,05	129,00	178,00	170,74	241,40

Source: the author, by using the NASDAQ OMX stock exchange and trading platform and Bloomberg Professional Service.

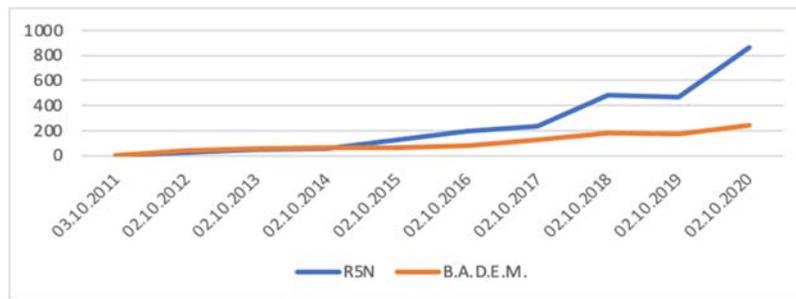


Figure no. 5. The parallel between R5N and BADEM – delta base

Source: National Retail Federation and the authors

We can observe that according to the figure above during the 10 year timeframe research R5N and BADEM indicators had the same trend, but since the quantitative easing procedures were initiated by the FED they pushed both indicators to grow almost at an unseen pace, but because the Retail sector is highly influenced by demand and especially by supply, it evolved to the 10 year peak of more than 860 percent increase, meanwhile the BADEM indicator because it simulates an entire economy, it grew „only” with almost 250% in 10 years. The pace became higher for the Retail sector when the QE reached in part the end consumer, which was at the beginning of Q4 of 2014.

Conclusions

The alignment of a business plan together with the economical one or the federal one contours the efficient implementation of suggested goals and also step by step adhering to the associates of their organization or to the people by minding the business's behavior or the federal conduct, that ought to be optimized based upon the existing or developed hazard and automated by utilizing principles of Business Intelligence and Machine Learning/Artificial Intelligence.

By testing different versions we can see that all theory followed and the outcomes got converged towards the notion of decision-making (not viewed as having determination in an automated mode through algorithms that are predetermined, but by sparking the concept of obtaining only some avenues to follow and stream proactivity in the job description). Decision automation represents a standard step from the circuit of understanding flow acquired from the quantic revolution, however as an intermediary stream which may have a large number of endings, that are determined by the user's function and also decision-making signifies one of the vital factors behind decreasing the negative externalities created by the black swan-like occasions (pandemics, economic catastrophe, international terrorism, natural disasters, and extremist policies developed from first world economies). To these ideas we can add the fact that one of the objectives is a comparison with the Retail sector and it shows us that the trend is similar, but because the global economy is still on a macro-trend of historical economic growth, we will have to wait until we will fully see a decrease in demand followed by a decrease in supply, and the reaction of both indicators.

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Level of Adult Education in the European Union

Sorin Burlacu¹, Sorin Petrică Angheluță², Mihaela Diana Oancea Negescu³ and Svetlana Platagea Gombos⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: sburlacu@amp.ase.ro; E-mail: sorin.angheluta@gmail.com

E-mail: mnegescu@yahoo.com; E-mail: svegombos@yahoo.com.sg

Please cite this paper as:

Burlacu, S., Angheluță, S.P., Oancea Negescu, M.D. and Platagea Gombos, S., 2021. Level of Adult Education in the European Union. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 43-51
DOI: 10.24818/BASIQ/2021/07/005

Abstract

Labor-market changes necessitate technological change products. The employment rate is influenced by the share of the young population. The economic environment is determined by the level of education of the population in a community. Thus, the labor market requires people with high skills. The article presents an analysis of the level of education of the population, related to three age groups. Knowing the level of education of the population is in favor of both the labor market and the education and training specialists. Job quality is higher when the population has a high level of education. At the same time, employment is more difficult for people with low levels of education. From this point of view, the article explores the evolution of the share of the population by education levels.

Keywords

European Union, adult education, level of education, training

DOI: 10.24818/BASIQ/2021/07/005

Introduction

The existence of people with high-level skills in a community is an advantage (Sarbu, et al., 2021). The experiences that those people have are important in making decisions (Androniceanu and Burlacu, 2017). Cooperation and interconnection contribute to the identification of solutions, as a result of specific or common challenges (UNESCO, 2019). Big cities have in mind social development, economic growth, equity and inclusion, as well as environmental sustainability. Thus, learning cities want to solve environmental problems and stimulate regional growth. It is considered that in order to achieve these goals it is necessary to increase the level of education of the adult population (Webb, et al., 2020). Considering population stratification by level of education, may be useful some intergenerational educational mobility (Gabay-Egoza and Yaishb, 2019).

Development of European regions can be influenced by the interest shown by each region for updating the skills of the population (Sarbu, et al., 2021). Failure to apply measures in this regard creates development gaps. The skills required by the labour market can be acquired through the participation of adults in education and training programs (Radulescu, et al., 2021). Thus, lifelong learning can lead to a higher quality of the education and training process, as well as to an increase in the attractiveness of education and training programs (Costache, et al., 2015).

The development and sustainability of vocational training programs can be achieved through an adequate understanding of the beliefs and attitudes of adult learners (Willis, 2021). Thus, certain adversities manifested in the educational process during childhood are later transmitted to adult education. For adults, an investment in education and an improvement in educational prospects can

lead to an extension of professional life and participation in the workforce at any age (Lorenti, et al., 2020).

To the extent that staff reductions are caused by increased automation, reorganization and retraining skills within a company is one of the important challenges. Large enterprises are considered to be better prepared for transformation than small enterprises. Recruitment of workforce to meet new demands is more difficult for small producers because they are usually located in rural, sparsely populated. Thus, they face difficulties for competent staff in terms of competition with larger companies. A solution that small businesses have on hand is the possibility of retraining existing staff (Rangraz and Pareto, 2020). Over time, educational practices have become increasingly effective. Integration of different perspectives in various fields has created the opportunity of modeling educational practices. Creating supportive environments, based on intensive training and equitable resources, can lead to a healthy and strong development of the educational process. Among the main beneficiaries of such a vision are adults, through education and training programs in which they can participate (Darling-Hammond, et al., 2020).

Literature review

It is considered that people with basic skills can easily identify and occupy an even more stable quality job (Burlacu and Jiroveanu, 2009). Thus, they are able to actively participate in economic and social life of a community. A feature that can still influence access to education and training, respectively to the labour market, is given by the domicile in rural areas. For them, access to quality infrastructure and services is important (Stoica and Burlacu, 2017). It is found that in an active life, a person changes his job or even his profession several times (Burlacu, et al., 2021). Thus, it becomes increasingly important adult participation in education and training programs held throughout life (Burlacu, et al., 2013).

Under these conditions, knowing the level of education of the population becomes very important. The analysis performed on different age groups can be a mirror of the situation in the field. Employment and economic performance are influenced by the demographic situation of each community (Radulescu, et al., 2020). It is believed that the economic, cultural and educational resources of parents can influence the socio-economic and educational outcomes of children. They also have a further influence on the manifestation of interest in adult education (Prix and Erol, 2017). It is believed that due to digitization and automation, some of the current jobs will disappear. People with a lower level of qualification will be more affected in finding and keeping a job (Profiroiu, et al., 2020). The use of information technology will be higher and higher. One of the advantages of participating in adult education programs is given by social progress. Thus, the growth of the knowledge economy can be achieved through adult education (Van Nieuwenhove and De Wever, 2021).

In the last year, blended learning is an increasingly used solution in the development of education and training programs (Burlacu, 2011-2021). This way of learning is recommended for people in rural areas, people in the workplace, prisoners with family responsibilities (Gjestvang, et al., 2021).

Parents with high levels of qualification pass on a certain interest in learning to their children as well. Thus, their subsequent degree of adaptation is positively influenced. Participation and involvement in various academic and non-academic experiences will allow a degree of adaptation and easier orientation to their entry into the labour market (Matsuoka, 2019). It is found, especially recently, that adult learning opportunities have increased through media and information literacy programs (Yang, et al., 2021). Especially in the current context, blended learning creates a symbiosis between formal learning and informal learning. The development of their own skills, of key competencies, will make people, regardless of the level of education, act sustainably (Cebrián, et al., 2020). Knowledge-based societies will transform skills and knowledge into today's societies. New technologies will change the way people work and live. This development will also influence adult education. The development of post-industrial societies depends on the solutions identified for social, technological and environmental problems. By developing creativity, educational systems can contribute to the generation of effective solutions (Gulliksen, 2018).

Methodology of research

The aim of this research was to provide a clear picture of the level of education of the adult population in the member countries of the European Union. An analysis of the level of education of the population for the period 2004-2019 is provided. It also presents the comparative situation of the level of education of the population between 15 and 64 years, for 2019. At the same time, an analysis of the evolution of the share of the population with levels 3-8 of education, for the period 2004-2019 was performed.

Results and discussions

It is becoming increasingly important to know the level of education of the population. Both employment and economic outcomes are influenced by the level of education of members of a community. The following table presents the comparative situation (2004-2019) of the share of the level of education of the population aged between 15 and 64 years (%).

Table no. 1. Comparative situation of the share of the level of education (15-64 years)

From 15 to 64 years	Less than primary, primary and lower secondary education (levels 0-2)		Upper secondary and post-secondary non-tertiary education (levels 3 and 4)		Tertiary education (levels 5-8)	
	2004	2019	2004	2019	2004	2019
European Union	35,6	25,7	46,2	46,3	18,2	27,9
Belgium	37,8	25,9	35,4	38,1	26,8	36,0
Bulgaria	34,0	21,9	48,1	53,5	17,9	24,7
Czechia	17,6	12,3	72,0	66,1	10,4	21,6
Denmark	25,3	26,1	46,7	40,8	27,9	33,1
Germany	23,6	19,5	55,3	54,5	21,1	26,0
Estonia	20,3	15,8	54,0	47,7	25,6	36,5
Ireland	38,3	21,0	36,8	38,3	24,9	40,7
Greece	40,9	25,9	41,6	46,3	17,5	27,8
Spain	54,5	39,6	21,0	25,3	24,5	35,1
France	36,3	23,4	41,0	42,9	22,7	33,7
Croatia	30,4	18,1	56,4	59,9	13,2	22,0
Italy	51,8	39,8	38,1	42,8	10,0	17,4
Cyprus	39,2	21,5	35,1	38,5	25,7	40,0
Latvia	24,5	14,9	59,0	53,8	16,5	31,4
Lithuania	21,6	11,1	56,8	51,0	21,6	37,9
Luxembourg	40,3	26,7	38,9	32,3	20,8	41,0
Hungary	29,3	20,0	56,5	57,6	14,2	22,5
Malta	74,0	41,3	15,8	32,1	10,2	26,7
Netherlands	33,3	25,5	41,1	39,7	25,7	34,8
Austria	24,7	18,7	59,8	50,2	15,4	31,1
Poland	23,0	13,3	64,2	58,5	12,8	28,2
Portugal	73,7	47,6	15,5	28,7	10,8	23,8
Romania	34,5	25,1	56,8	58,9	8,7	16,0
Slovenia	24,4	15,8	59,9	54,9	15,7	29,3
Slovakia	20,7	14,5	68,9	62,3	10,4	23,1
Finland	27,8	16,9	43,9	44,6	28,3	38,5
Sweden	21,5	20,8	53,8	41,5	24,7	37,8

Source: own processing according to data published by Eurostat (2021)

From the data presented in the previous table, compared to 2004, in 2019, it is observed that only in Denmark the share of the population with 0-2 education levels increased, in the other countries these values decreased. The most significant decreases were registered in: Malta (-32.7%), Portugal (-26.1%), Cyprus (-17.7%), Ireland (-17.3%), Greece (-15%), Spain (-14.9%). In 2019, approximately 40% of the population had a level of education between 0 and 2 in: Portugal (47.6%), Malta (41.3%), Italy (39.8%), Spain (39.6 %). Compared to 2004, in 2019, the largest increases in the share of the

population with an education level between 3 and 4 are registered in: Malta (+16.3%), Portugal (+13.2%), Bulgaria (+5.4%), Italy (+4.7%), Greece (+4.7%), Spain (+4.3%). At the same time, for the same period, there were decreases in values: Sweden (-12.3%), Austria (-9.6%), Slovakia (-6.6%), Luxembourg (-6.6%), Estonia (-6.3%). In the period 2004-2019, in all European Union countries there were increases in the share of the population with education levels 5-8. Increases of over 15% were recorded: Luxembourg (+20.2%), Malta (+16.5%), Lithuania (+16.3%), Ireland (+15.8%), Austria (+15.7%), Poland (+15.4%). Lower increases were: Germany (+4.9%), Denmark (+5.2%), Bulgaria (+6.8%), Romania (+7.3%), Italy (+7.4%). However, in 2019, in three countries, more than 40% of the population aged 15 to 64 had an education level of 5 to 8. These are: Luxembourg (41.0%), Ireland (40.7%) and Cyprus (40.0%).

The following table presents the comparative situation (2004-2019) of the share of the level of education of the population aged between 20 and 24 years (%).

Table no. 2. Comparative situation of the share of the level of education (20-24 years)

From 20 to 24 years	Less than primary, primary and lower secondary education (levels 0-2)		Upper secondary and post-secondary non-tertiary education (levels 3 and 4)		Tertiary education (levels 5-8)	
	2004	2019	2004	2019	2004	2019
European Union	22,6	16,5	66,1	66,6	11,3	16,9
Belgium	18,2	14,4	60,8	57,8	21,0	27,8
Bulgaria	23,9	15,6	69,7	78,2	6,4	6,3
Czechia	8,6	11,7	87,4	78,0	4,0	10,4
Denmark	23,8	24,4	70,5	66,7	5,7	8,9
Germany	27,2	22,5	68,6	68,6	4,2	8,8
Estonia	20,0	15,2	67,1	70,0	12,9	14,8
Ireland	14,7	5,9	59,1	66,8	26,2	27,3
Greece	16,6	5,5	75,2	84,1	8,2	10,4
Spain	38,9	26,0	39,8	50,4	21,3	23,6
France	17,3	11,5	53,9	56,2	28,8	32,4
Croatia	6,5	2,7	88,7	85,6	4,8	11,7
Italy	27,5	18,0	69,7	71,9	2,8	10,1
Cyprus	22,4	7,7	57,6	63,0	20,0	29,3
Latvia	21,7	12,9	67,3	76,4	11,0	10,8
Lithuania	14,5	7,5	69,9	73,6	15,6	18,9
Luxembourg	27,5	22,5	59,7	55,6	12,8	21,9
Hungary	16,5	13,4	76,8	78,8	6,7	7,7
Malta	49,0	21,9	37,6	56,0	13,4	22,1
Netherlands	25,0	17,8	60,8	61,2	14,2	21,0
Austria	14,6	12,7	79,1	58,4	6,3	28,9
Poland	9,1	9,2	84,0	78,0	6,9	12,8
Portugal	50,2	17,1	42,7	60,8	7,1	22,0
Romania	24,7	16,6	70,4	76,2	4,9	7,2
Slovenia	9,5	7,6	87,0	81,7	3,4	10,7
Slovakia	8,3	10,1	86,6	74,1	5,1	15,8
Finland	15,5	11,8	80,9	81,7	3,6	6,5
Sweden	14,0	15,4	75,7	65,5	10,3	19,1

Source: own processing according to data published by Eurostat (2021)

From the previous table, compared to 2004, in 2019, it is observed that the share of the population with education levels 0-2 increased in: Czechia (+3.1%), Slovakia (+1.8%), Sweden (+1.4%), Denmark (+0.6%), Poland (+0.1%). In the other countries these values have decreased. The largest decreases were registered in: Portugal (-33.1%), Malta (-27.1%), Cyprus (-14.7%), Spain (-12.9%), Greece (-11.1%), Italy (-9.5%). In 2019, less than 10% of the population had an education level between 0 and 2 in: Croatia (2.7%), Greece (5.5%), Ireland (5.9%), Lithuania (7.5%), Slovakia (7.6%), Cyprus (7.7%), Portugal (9.2%). Compared to 2004, in 2019, the largest increases in the share of the population with

an education level between 3 and 4 are registered in: Malta (+18.4%), Portugal (+18.1%), Spain (+10.6%), Latvia (+9.1%), Greece (+8.9%), Bulgaria (+8.5%). At the same time, for the same period, there were decreases in values: Austria (-20.7%), Slovakia (-12.5%), Sweden (-10.2%), Czech Republic (-9.4%), Poland (-6.0%).

In the period 2004-2019, in all European Union countries there were increases in the share of the population with education levels 5-8, less in Latvia (-0.2%) and Bulgaria (-0.1%). At the same time, the lowest increases were recorded in: Hungary (+1.0%), Ireland (+1.1%), Estonia (+1.9%), Greece (+2.2%), Spain (+2.3%), Romania (+2.3%). The highest increases were recorded in: Austria (+22.6%), Portugal (+14.9%), Slovakia (+10.7%), Cyprus (+9.3%), Luxembourg (+9.1%), Malta (+8.7%). However, in 2019, in five countries, more than 25% of the population aged 20-24 had a level of education between 5 and 8. These are: France (32.4%), Cyprus (29, 3%), Austria (28.9%), Belgium (27.8%), Ireland (27.3%).

Table no. 3. Comparative situation of the share of the level of education (55-64 years)

From 55 to 64 years	Less than primary, primary and lower secondary education (levels 0-2)		Upper secondary and post-secondary non-tertiary education (levels 3 and 4)		Tertiary education (levels 5-8)	
	2004	2019	2004	2019	2004	2019
European Union	47,1	29,0	37,6	48,4	15,3	22,6
Belgium	54,7	32,8	25,3	36,4	20,0	30,8
Bulgaria	44,6	18,8	38,2	57,6	17,2	23,6
Czechia	17,8	8,6	72,0	73,7	10,2	17,7
Denmark	24,5	24,5	48,7	44,8	26,8	30,8
Germany	21,1	13,4	56,1	59,6	22,8	26,9
Estonia	20,6	7,9	50,9	52,3	28,5	39,9
Ireland	61,0	31,9	23,2	35,9	15,9	32,2
Greece	68,0	40,1	20,7	36,8	11,3	23,1
Spain	78,7	52,3	9,0	21,0	12,4	26,7
France	50,6	30,6	34,6	45,0	14,9	24,4
Croatia	46,0	25,5	39,4	56,4	14,6	18,1
Italy	71,8	49,7	20,7	37,5	7,5	12,8
Cyprus	60,6	31,2	25,0	41,3	14,3	27,5
Latvia	29,0	5,9	52,4	66,3	18,6	27,8
Lithuania	31,8	3,5	50,8	66,1	17,3	30,4
Luxembourg	49,6	33,5	34,6	35,7	15,8	30,8
Hungary	42,9	19,3	42,7	61,5	14,4	19,2
Malta	87,0	68,1	4,5	19,0	8,5	12,9
Netherlands	41,5	30,9	34,6	38,1	24,0	31,0
Austria	30,9	19,6	54,7	55,2	14,4	25,2
Poland	33,7	10,6	54,2	73,4	12,1	16,0
Portugal	88,4	69,5	4,9	15,4	6,7	15,1
Romania	55,8	25,8	36,0	64,8	8,2	9,4
Slovenia	31,5	18,6	53,3	59,7	15,1	21,7
Slovakia	26,8	11,5	62,6	72,4	10,6	16,1
Finland	41,2	14,6	33,1	44,5	25,7	40,9
Sweden	29,5	18,3	46,4	49,6	24,0	32,1

Source: own processing according to data published by Eurostat (2021)

Compared to 2004, in 2019, it is observed that only in Denmark the share of the population aged between 55 and 64, with education levels 0-2, remained unchanged. In the other countries these values have decreased. The most significant decreases were registered in: Romania (-30.0%), Cyprus (-29.4%), Ireland (-29.1%), Lithuania (-28.3%), Greece (-27.9%), Finland (-26.6%), Spain (-26.4%). In 2019, over 50% of the population aged 55 to 64 had a level of education between 0 and 2 in: Portugal (69.5%), Malta (68.1%), Spain (52.3%).

Compared to 2004, in 2019, the largest increases in the share of the population aged between 55 and 64, with an education level between 3 and 4, are registered in: Romania (+28.8%), Bulgaria (+19.4%),

Poland (+19.2%), Hungary (+18.8%), Croatia (+17.0%). Denmark is the only country where the share of the population aged 55-64, with an education level between 3 and 4, has decreased (-3.9%). Moderate increases were: Austria (+0.5%), Luxembourg (+1.1%), Estonia (+1.4%). In the period 2004-2019, in all European Union countries there were increases in the share of the population aged between 55 and 64, with education levels 5-8. Increases of over 10% were recorded in: Ireland (+16.3%), Finland (+15.2%), Luxembourg (+5.0%), Spain (+14.3%), Cyprus (+13.2 %), Lithuania (+13.1%), Greece (+11.8%), Estonia (+11.4%), Austria (+10.8%), Belgium (+10.8%).

Lower increases (less than 5%) had: Romania (+1.2%), Croatia (+3.5%), Poland (+3.9%), Denmark (+4.0%), Germany (+4.1%), Malta (+4.4%), Hungary (+4.8%). However, in 2019, countries where over 30% of the population aged 55 to 64 had an education level between 5 and 8 are: Finland (40.9%), Estonia (39.9%), Ireland (32.2%), Sweden (32.1%), Netherlands (31.0%), Belgium (30.8%), Denmark (30.8%), Luxembourg (30.8%), Lithuania (30.4%).

Often people's participation in adult education is influenced by certain experiences they have had in the educational process during childhood or adolescence. There are situations in which the student-teacher relationship has allowed an individualized study, as is the case of certain rural communities (Starrett et al., 2021). For 2019, the comparative situation of the level of education of the population between 15 and 64 years is presented in the following figure.

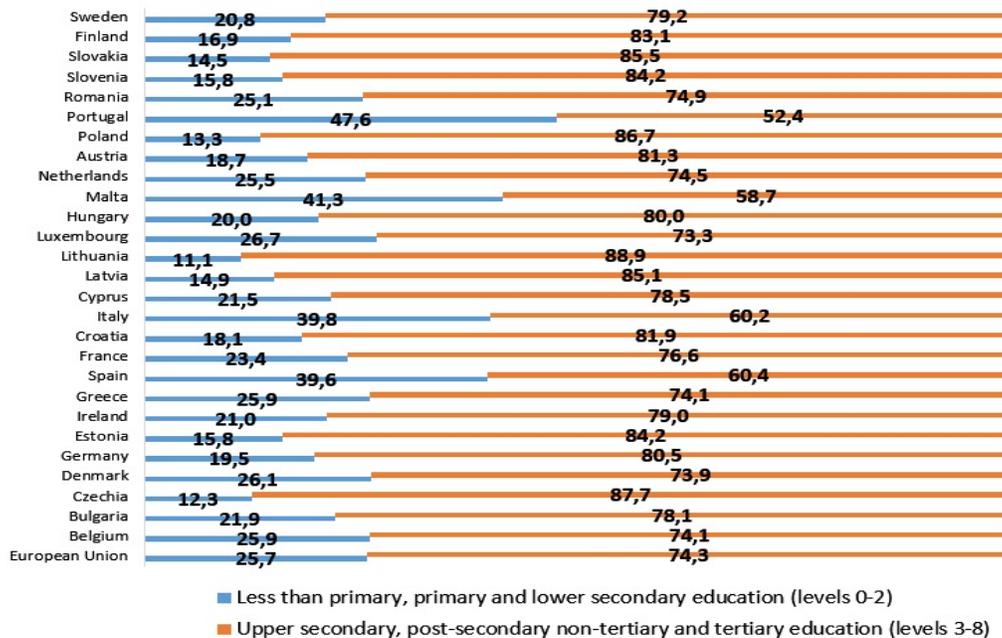


Figure no. 1. Comparative situation of the level of education of the population 15-64 years

Source: own processing according to data published by Eurostat (2021)

Thus, for 2019, it is observed that over 30% of the population aged 15-64 has a level of education between 0 and 2 (Less than primary, primary and lower secondary education) in: Portugal (47.6 %), Malta (41.3%), Italy (39.8%), Spain (39.6%). Also, over 85% of the population aged 15-64 have a level of education between 3 and 8 (Upper secondary, post-secondary non-tertiary and tertiary education) in: Lithuania (88.9%), Czechia (87.7%), Poland (86.7%), Slovakia (85.5%), Latvia (85.1%). For the European Union, the following figure shows the evolution of the share of the population with levels 3-8 of education (2004-2019).

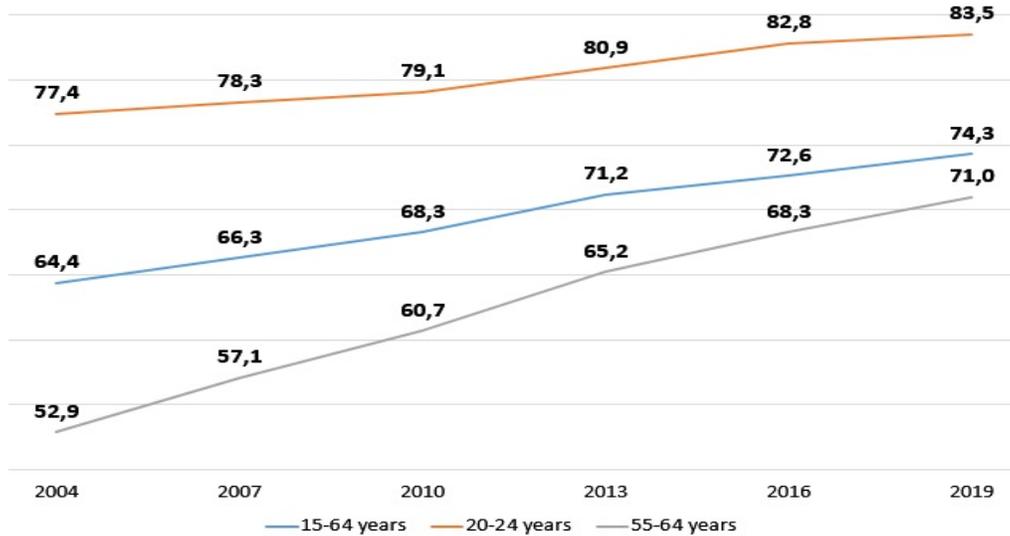


Figure no. 2. Evolution of the share of the population with levels 3-8 of education, for the period 2004-2019, European Union (15-64 years, 20-24 years, 55-64 years)

Source: own processing according to data published by Eurostat (2021)

From the data presented, it is observed that for each age group the weights recorded increases in values. Thus, for the age group 20-24 years, compared to 2004, in 2019 the increase was 6.1%. For the age group 15-64 years, compared to 2004, in 2019 the increase was 9.9%, and for the age group 55-64 years, compared to 2004, in 2019 the increase was 18.1%. Even if there is a small increase for the age group 20-24 years, still the population in this age group, in 2019, registers the highest values (83.5%).

Conclusions

Automation and digitization have influenced jobs. For this reason, the need arose to acquire new skills or to update those skills that people already had. The results of the analyses show that, compared to 2004, in 2019, it is observed that the share of the population with education levels 0-2, regardless of age, decreased in most countries in the European Union. But in 2019, in four countries about 40% of the population aged 15 to 64 had a level of education between 0 and 2 (Portugal, Malta, Italy, Spain). For the same period of time, in most European Union countries there have been increases in the share of the population with education levels 5-8. In 2019, in three countries, over 40% of the population aged between 15 and 64 had an education level between 5 and 8 (Luxembourg, Ireland, Cyprus).

A high share of the population with a high level of education allows active participation in the economic and social life of the communities of which it is part. To ensure high productivity, the maximum use of the skills of employees is a desire of any company. Maintaining high labor productivity, as well as increasing it, can only be achieved with people with high skills (OECD, 2013). It is found that computer use in the workplace allows people to have higher levels of competence. For this reason, communities should be more involved in facilitating access to learning opportunities for people who do not fall into the category of people who have access to computers (Ertl et al., 2020).

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The Transition of Corporate Social Responsibility to Environmental, Social, and Governance

Iulian Gole¹, Laurentiu Gabriel Francu², Olivia Balu³ and Petronela-Evelina Balu⁴

¹⁾²⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

³⁾ *University of Geneva, Geneva, Switzerland.*

E-mail: iuliangole@yahoo.com; E-mail: laurentiu_francu@yahoo.com

E-mail: olivia_balu@yahoo.fr; E-mail: evelina.balu@yahoo.com

Please cite this paper as:

Gole, I., Francu, L.G., Balu, O. and Balu, P.E., 2021. The Transition of Corporate Social Responsibility to Environmental, Social, and Governance. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 52-58
DOI: 10.24818/BASIQ/2021/07/006

Abstract

From a certain time, the concept of Environmental, Social and Governance - ESG is frequently used, a situation that somehow put in shadow the existence of Corporate Social Responsibility (CSR). The purpose of this paper is to see what are the differences and similarities between these two concepts. Using comparative analysis and different databases we showed that CSR is rather a tool of reporting long time used to express publicly that companies ethically conduct their business. Basically, it means how companies are taking into consideration their social, economic, and environmental impact and human rights. In the last years, investors became more and more attentive to environmental aspects and they want to place their money in companies that share the same values. That is why ESG arrived on the market as a new instrument for investors and in this paper we want also to see what is different and what the amplitude of this concept is. We demonstrated that providing capital for ESG funds is today perceived as being primarily conditioned by understanding a company's purpose, strategy, and management quality. The originality but also the practical value is coming from the comparative analyses of the two tools that allow investors, from international institutions to simple individuals, to pursue their investment goals but not at any costs; they want to evaluate corporate behavior and to determine the future financial performance of companies. Nothing is for granted, all financial investments embedded an element of risk and consequently, the value of the investment and the benefit from it will vary.

Keywords

CSR, ESG, sustainable investments, responsibility.

DOI: 10.24818/BASIQ/2021/07/006

Introduction and status of knowledge in the field

The first signs of CSR appeared in the U.S. in the 1970s, when first the concept of the "social contract" between business and society was used by a governmental committee. This social contract was built under the idea that business functions because of public acceptance and so, somehow the business leaders have a moral obligation to constructively serve the needs of society. During the time the idea was transformed into a duty from the producer side, to bring more benefits to society than just offering its products for selling.

In the beginning, the so-called "social contract" included three main obligations:

- 1) Running well a business will succeed in providing jobs and economic growth;

- 2) Managing always fairly a business by thinking to employees and customers;
- 3) Be positively and honestly involved in improving the conditions of the community and environment in which it operates.

By the end of 2000, CSR had become an important strategic tool for many companies and they incorporated the concept into the business process, from the low level till multi-million dollar companies, such as Pepsi, Coca-Cola, Walt Disney, and Pfizer. There are many interpretations about if CSR is improving company performance or a better CSR is helping a business to maintain on the market (Crifo and Forget, 2015).

Since then, many of the big companies adapted the CSR mechanism to their own business and therefore each CSR chart may look different from one enterprise to another. Generally speaking, a basic CSR representation includes at least three P areas (planet, profit, people) where Profit represents the economy and all the other indicators related to business, Planet represents the efforts that the company is doing in term of environment, ecology, and sustainability and People stands for social activities, human rights, welfare, etc.

Of course, these areas are intertwined, many activities being attributed to two Ps or even to all three. As we said, other companies decided to put more weight into different areas. Newman and all explained that western markets are inclined to do more business with companies engaged in CSR activities.

The problem with the CSR approach is that letting the liberty of companies to decide which type of CSR wants to present and what areas, letting the enterprise to decide what corporate responsibility is. The problem consists also in the difference between CSR reporting and commitment (del Mar Miras-Rodríguez, et al., 2020).

This is also happening because, at the end of the day, it was never established in a set of clear principles what it means to be a responsible business and what are the indicators to report or the goals to overcome in order to be publicly accepted as being a real CSR company. Corporate social responsibility is whatever companies want it to be or how they want to be perceived by external people. We will not be going into details but there are plenty of companies which are presenting themselves as being champions of CSR but in the reality, they were largely different or even the opposite.

Still, some researcher (Hill, 2020) found out that there are valuable theories and empirical evidences that prove the effectiveness of ESG especially in investment by various vehicles.

Research methodology

In order to see what are the main differences but also the similarities between CSR and ESG, as research methodology we will be using as methods the comparative analysis and information from different databases and from a questionnaire-based survey.

End of CSR, beginning of ESG

From a different point of view, labels such as “bio”, “organic” or “fair-trade” for food are also common for customers but they represent something more than a CSR report because to have such a stamp on a product, is usually strictly regulated by government law. On the contrary, a large variety of definitions and CSR reports make the people skeptical, although some companies were totally honest and did all the efforts to contribute to better relations with the people, planet, and the investors. These uncertainties, combined with steady market growth in sustainable investment products triggered by the new investors’ willingness to place their money in a healthy business, had pushed the financial authorities to tighten their regulations on sustainable investing. This is the reason we are speaking today about ESG (environment, social, and governance).

It is very important that investors understood that sustainable investing is more about placing money in economic progress, and companies dealing with an environmental problem could be a challenge that

will allow them later on to grow. It is the right time to promote doing business in a different but better way and create the knowledge and energy that will inspire more people to choose how to do business in a clean environment and better future. Stakeholder engagement is probably the only way to intensify both business environmental policy and sustainable development (Campanella, et al., 2020).

That is why, by a mix of different approaches as a traditional investment, environmental, social and governance (ESG), a variety of investors coming from different global financial institutions to individuals are taking the responsibility of considering the sustainable approach a real method in achieving their objectives.

Worldwide, the amounts of assets related to sustainable investing strategies have increase in logarithmic pace, and this is only the beginning since there is no sign of slowing down. Of course, the situation after the pandemic it remains to be seen but there are signs that knighting changed.

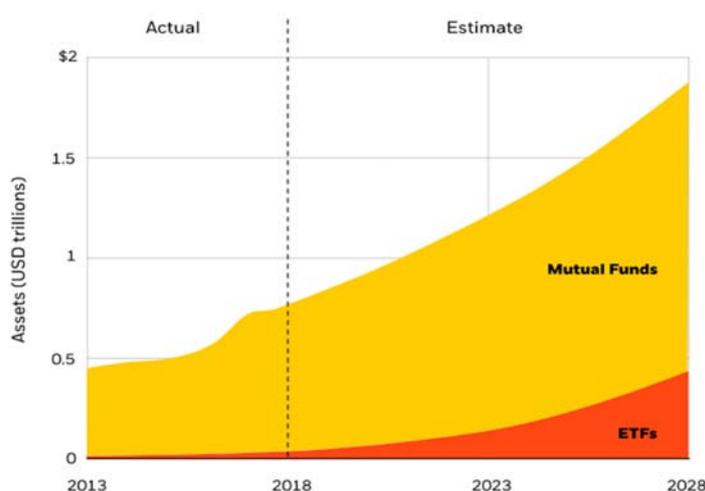


Figure no. 1. Investment value in ESG mutual funds and ETFs

Source: BlackRock, with data from Broadridge/Simfund, June 2018.

In the chart above, according to data from BlackRock with data from *Broadridge/Simfund*, we can see the total value of assets under management in ESG mutual funds (MFs) and ETF (exchange-traded funds) worldwide. From the graphic, we could realize the amplitude that ESG investing is growing.

But let's first see what an ESG fund is. It is, first of all, a portfolio of equities or bonds (or a mix of both) that have in their ADN environment, social, and governance factors; in other words, those equities and bonds which are part of the fund have already passed serious tests concerning the sustainability of the company regarding to its ESG standards.

An ESG fund should be composed only of securities with a top sustainability classification and definitely would exclude companies that would have low classification on environment pollution, social conflicts, or management practices. The same standards should be applied by governments when they make decisions to invest money or help a company. Using this type of assessment before investing will at least lead to better analysis and ultimately to a fundamental decision.

This also may be the reason why sustainability funds are having better results than non-sustainable ones. For example, a company with low carbon emissions certified standard will be confronted with the low regulatory, environmental, or societal risks than a real and recognized polluter (e.g. a mining company). If we consider the predictability of the shares over time is clear that the low carbon footprint company will have an advantage for investors.

ESG became with the time a fashionable investment because it is good marketing to be seen as a contributor in saving the environment by fighting against global warming, contributing to human right

development in complicated countries, having guided by best governance principle; and all this by not even compromising the financial returns.

As we already said the investors consider an extremely large range of range of data to understand if a company is based on environmental, social, and governance criteria. Despite the regulatory requirements, the issue of transparency is still important (McBrayer, 2018). The first set to analyze is the environmental criteria which may include:

- Source of energy used;
- Waste and recycling;
- Pollution (air, water, land but could also be noise, heat, light or specific to plastic or radioactive materials);
- Natural resource conservation strategies, procedures, and policies;
- Treatment of animals (worthless to mention these days how many zoonotic diseases - appears because of how humans treat animals and what could be the consequences – Covid-19 being one of the viruses that passed from animals to human).

The criteria we mentioned above are undoubtedly part of an evaluation of the environmental risks of every company, but the problem is how they might deal with them and what the strategy to face them is. The analyses could go in other different areas as ownership of contaminated land, the management of hazardous waste, how to deal with toxic emissions, or what are the companies' possibilities to comply with government environmental regulations and what the lobby possibilities are (Choi, et al., 2020).

Social criteria are another set of indicators to be taken into consideration and this because it involves a company's business relationships, such as:

- Are they work downward or upward of the chain of suppliers with companies that share the same values as they pretend to defend?
- Are there a willing or facts regarding donations a part of the profit, to local charities or other social causes?
- Is the safe and health of own employees an important issue for the company?
- Are the working conditions taken seriously by the company?
- The employees are encouraged to volunteer in different activates to help the local community?
- Are the other stakeholder's interests considered from a social point of view?

In what concerns the governance area it is obvious that the investors want to know:

- if a company uses accurate, standardized, and transparent accounting methods;
- if they report real data;
- if stockholders are granted with the opportunity to vote on important issues;
- if the company avoid conflict of interest between board members;
- if use methods to gain favourable treatment (political contributions, conspiracy, etc.);
- if engage in illegal practices to gain unfair advantages (corruption).

It is very important for investors to have all data to do an in-depth analysis to decide what is most important to them, because not all the companies may correctly have answers to every question from what was mentioned.

It exists today many possibilities to assess a company's performance with ESG metrics that are comparable across thousands of enterprises. The difficulties consist not only in analysing correctly the

data but also in collecting them properly during years, to develop proprietary investment strategies. There are few important players on the market; among them we could mention MSCI, Vigeo Eiris, Sustainalytics, and RobecoSAM who are proposing methods of assessments. Unfortunately, each has its own way of seeing the business, own method of calculating, and consequently the results could vary from different reasons (Dimson and all, 2020). Even though the final conclusion cannot be completely contradictory still, the conclusion for investors could be quite unclear so their decision of investing in ESG companies might be postponed or even disrupted.

As we said, one of the ESG analysts is MSCI ESG Metric who creates a specific tool in order to assess the company results and activity, a set of specific indicators grouped in 8 branches. The main directions of assessments and few of the indicators are presented as follows:

- Climate change KPIs - geographic exposure to carbon regulation; geographic exposure to climate vulnerable region; reliance on carbon-intensive supply chain.
- Natural capital KPIs - business exposure to operations with land or ecosystem disturbance; geographic exposure to fragile ecosystems; geographic exposure to water stressed regions.
- Pollution and waste KPIs - business exposure to operations producing high levels of packaging waste; business exposure to operations producing high levels of toxic emissions and waste.
- Environmental opportunities KPIs - alternative energy products and services, energy efficiency products and services, sustainable water products and services.
- Human Capital KPIs - geographic exposure to poor workplace safety standards, reliance on highly-skilled workforce, business exposure to labour-intensive operations.
- Product liability KPIs - geographic exposure to chemical safety regulations, exposure to business prone to data breaches or handles high volumes of customer data.
- Stakeholder Opposition KPIs - social impacts on communities' controversies, social impacts of raw materials controversies, human rights concerns controversies.
- Corporate behaviour KPIs - geographic exposure to corruption and instability, Business exposure to operations commonly associated with corrupt practices.

Source: MSCI ESG METRICS.

It is clear that the better is the score obtained after a SGE assessment the higher is probability for the business to continue its activity on long-term, to become involved in the development of research and innovation sectors, to base its decisions in strategic thinking and more important to have in mind the ultimate objective of long-term value creation and sustainability. Of course, such analyses could be used not only externally by new investors but also internally, by the management, in order to realign in accordance with stakeholders willing.

On the other side, when we look at the data regarding the performance of ESG during the last years, we cannot say that the pieces of evidences are so clear.

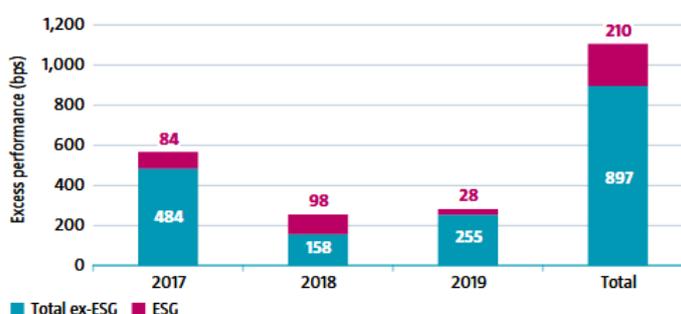


Figure no. 2 ESG performance

Source: RobecoSAM

Taking into consideration all the principles or criteria stated above, it is still difficult to measure the effect of ESG integration on the performance of a fund or portfolio. This is happening mainly because the portfolio decisions are based not only on a set of principles but rather on a completely integrated analysis. According to Sustainable Global Stars Equity, 20 % of the outperformance, during the 2017-2019 time periods, is the result of sustainability investments.

The main findings

In this paper, we tried to explain what the main differences between CSR and ESG are but the reality is, despite the divergence, that both concepts are suffering from alignment. In a way, CSR overshadows the credibility and performance of the ESG; as a consequence, even the entire transition to a sustainable business model is questionable. For example, Edelman's Trust Barometer in 2017, discovered that only 37% from the 33,000 people who answered to a survey (people coming from 28 countries, between the ages of 25–64, found in the upper quartile of household income for their age in their country), have trust in a company's CEO.

Maybe part of mistrust is justified and there is ground for it but much can be adjusted by an imposing of a clear set of indicators and an honest reporting system about the company strategy.

As a solution for the lack of synergy between CSR and ESG, during the last time, many companies (almost 85% from S & P 500) have started to publish both reports (CSR and ESG). It is appreciable that companies decided to publish more data and be transparent about their intentions and facts in sensitive areas as sustainability, social responsibility, etc. but at the same time, it is also clear that not all of them have the resources and knowledge to create valuable reports. The whole responsibility is put under the CSR team and sometimes not all data are transmitted or incorporated in the final report, a fact that may generate not only confusion but misunderstandings.

There are two main ideas from which the problems may arrive:

- CSR and ESG reports address to different stakeholders, internal and external;
- While ESG reports are created with support from the business units, based on quantitative data, with a concise style, CSR reports are rather concentrated on qualitative data, pictures and videos, storytelling style.

Conclusion

Therefore we believe that companies should work more in creating aligned reports, otherwise the general impression might be perceived as a lack of management or strategy. Although CSR and ESG have a lot in common they are quite different but necessary tools for stakeholders. Both instruments could be used together because are addressing different perspectives. We are living times when tons of information is available, from what the company is willing to share to NGOs reveals, internet, social media content (from traditional news reporting to blogs, vlogs, etc.) so there are plenty of opportunities for ESG analysts to get data and create relevant rankings. Our conviction is that with the help of machine learning technology all information should be confronted with a standard and all scores should be easily comparable. Otherwise the risk of transforming ESG into a new CSR tool is quite big.

The ESG approach represents a tool that could help companies seeking to do the right thing rather than thing right. Companies have to understand that there is a time of change that has arrived and so a reset of corporate governance is absolutely necessary.

Corporations need to restore public trust, but at the same time, they have to carry on being in line with changing economical perspectives and social expectations. If stakeholders are pushing the shift of business strategy the society is asking from companies, the Board of managers is responsible for the integration of the ESG agenda in all industry sectors and all countries. Undoubtedly, it is a sure path to create long-term sustainable value for shareholders as well as for stakeholders at the same time.

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Use of Internet-Based Services in EU in 2019 and 2020

Victor-Marian Dumitrache¹, Maria Loredana Popescu², Mihaela Diana Oancea-Negescu³ and Amelia Diaconu⁴

¹⁾²⁾³⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

⁴⁾ *Artifex University, Bucharest, Romania.*

E-mail: victor.dumitrache@gmail.com; E-mail: popesculrldn@yahoo.com

E-mail: mnegescu@yahoo.com; E-mail: diaconu.amelia@gmail.com

Please cite this paper as:

Dumitrache, V.M., Popescu, M.L., Oancea-Negescu, M.D. and Diaconu, A., 2021. Use of Internet-Based Services in EU in 2019 and 2020. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 59-65.
DOI: 10.24818/BASIQ/2021/07/007

Abstract

The consumption of internet-based services may vary among the EU countries and regions as they have different economic and demographic profiles. Since the consumption of this kind of services is crucial for the development of the EU digital economy, understanding the differences among countries, in terms of internet-based services consumption, may be crucial. The findings may support companies to adjust their business strategies and increase their competitiveness in the current economy that is moving online. Also, the findings may support policies that could stimulate the economy to become more digital.

The purpose of this paper is to point out the major differences between EU countries in terms of internet-based services usage.

We will perform a comparative analysis of the indicators aggregated under *Take up of internet services* indicators group of the Digital Economy and Society Index, among EU countries (Italy France and Ireland excluded due to the lack of data).

This article may add value by increasing the awareness regarding the importance of internet-based services consumption and the importance of digital economy. The degree of novelty is high considering the context of COVID-19 pandemic that made many markets totally or partially dependent on technology, where both the citizens/consumers, and the staff of the private and public organizations were forced by the circumstances to consume and to provide goods and services via online. At the same time, based on well-defined statistical data, an analysis of the impact of Internet use at EU level in the main socio-economic branches is performed.

Keywords: *Internet-based services, digital economy, internet.*

DOI: 10.24818/BASIQ/2021/07/007

Introduction

There are multiple reasons, both social and economic, for which individuals use internet. Also, the purposes of using internet are multiple, e.g. shopping, research, entertainment, to start or run a business, to work etc. Digital technology and internet have penetrated almost all socioeconomic fields, including those that are considered person-centred like healthcare. (Laar, et al., 2019)

As defined by Thomas Mesenbourg (2001), the concept of Digital Economy has 3 main components, as following: 1) E-business infrastructure (human capital, networks, software, hardware, telecom, etc.); 2) E-commerce (online commercial transactions); 3) E-business (any process that is mediated by a computer and/or a network in an organization and, generally, the way businesses are conducted).

There are a lot of internet-based services that are free of charge, e.g.: accessing information about goods and services, finding and applying for jobs, participating in social networks, using internet storage space and even online banking. For these kinds of services and many others, the digital consumers need only an internet connection. (Donnelly, et al., 2020).

Tkaczyk, J., 2016. focuses on the upward trends of digital consumption, while innovating through the perspective of impact in the fields of management and marketing.

Neubert, J., et al., 2015 focuses on assessing the skills of the 21st century in industrial and organizational psychology, on complex problem solving and collaboration.

Another approach in the field is the work of Van de Oudeweetering, K., Voogt, J., 2018, which emphasizes the conceptualization and implementation of skills in the 21st century, respectively exploring the dimensions for new programs.

Unlike in the traditional economy, the available quantity of many services specific to the digital economy does not decrease as the services are used by more individuals.

In 2015, the European Commission started to use Digital Economy and Society Index (DESI) to measure the digital economy. The most recent report is based on 2019 data and it was published in 2020. It can be considered an assessment of the status of the EU digital economy and society.

DESI purpose is to monitor Europe's overall digital performance and tracks the progress of European countries regarding their digital competitiveness (EC, 2020). Measuring the digital economy and tracking its progress is essential since the Commission wants a European Society powered by digital solutions that work for people and respect the EU core values, as stated in the *Shaping Europe's digital future* communication. (EC, 2020). DESI is an aggregated indicator having 5 dimensions:

- Connectivity: fixed broadband coverage, fixed broadband take-up, mobile broadband, and broadband prices
- Human capital: internet user skills and advanced skills
- Use of internet: Citizens' use of internet services and online transactions
- Integration of digital technology: Business digitisation and e-commerce
- Digital public services: e-Government

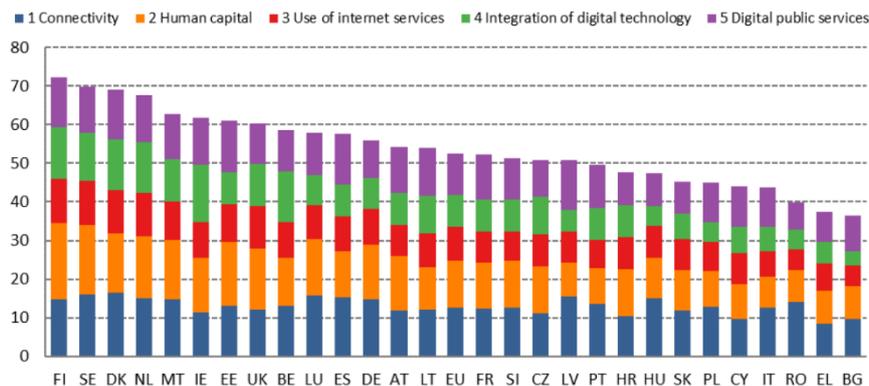


Figure no. 1. Digital Economy and Society Index, 2020

Source: DESI 2020, European Commission, p. 14

Figure no.1 presents us the EU countries sorted by DESI index, with Finland, Sweden and Denmark having the most advanced digital economies in EU. They are above the EU average in all the 5 dimensions of DESI. Also, the figure indicates that the least advanced digital economies in EU are Bulgaria, Greece, and Romania. Taking the case of Romania, access to the internet or connectivity, which is the prerequisite of the digital economy, does not seem to be the cause of the low aggregated score since Romania's connectivity is above the EU average. The dimension that seems to have a

negative impact on the aggregated score is *Use of internet services* where Romania has the poorest performance among the EU countries.

This kind of data reveals, among others, the potential of the e-commerce. In a recent study, Kuceba (et al, 2021) found out that the development of e-retailing is directly proportional with internet usage regardless of other factors.

We consider these as strong reasons to take a closer look some of the indicators aggregated under *Use of internet services* dimension of DESI 2020. The next section of the article gives as an in depth understanding of the internet-based services concept.

Review of the scientific literature

Having digital services and goods developed by tech providers is not enough to boost the EU digital economy. Having digital consumers willing to take advantage more of the internet-based services is equally important for the digital economy development as technology and innovation. A digital consumer can be defined as an individual being aware of his/her needs, searching for and buying services and goods on the Internet, consuming online content, willing to simplify the decisions they have to make (Tkaczyk, et al, 2016). The contemporary society is not characterized only by technological advancements, but also by globalization and accelerated accumulation of knowledge (van de Oudeweetering, et al, 2018) which makes searching information on the internet one of the most used services ever.

In the digital economy, according to van Laar, et al. (2019) people (either in a domestic or work environment) use information communication technologies to access and spread information, to interact and exchange experiences with experts in learning communities, and to generate and refine their ideas. ICT is also used for searching and applying for jobs, searching information about products, online banking, e-learning and many more.

An increasing number of consumers are replacing traditional marketing channels with electronic ones and becoming loyal to e-retail (Donnelly, et al., 2020). Regarding consumers' purchasing decision-making in the context of e-commerce, it is certain that the future commercial outcomes of the Internet depend, to some degree, upon whether current and future users will continue to use and increase their use of this medium for shopping activity. The impact of demographic factors, education, economic development, modern technology, etc., on understanding the process of Internet purchasing is evident. (Ristevska and Temjanovski, 2019; Sanap, 2020; Donnelly, et al., 2020; Deka and Borman, 2020)

Recent studies show that the typical Internet consumers belong to the age group ranging from 18 to 34 (87.8%), more than half are women (66%), with higher education (64.8%) and living in urban areas (74.1%), in which the country of origin of the respondents is relatively uniform. (Koncar, et al., 2021). Also, the correlation between the use of the Internet and the number of individuals who purchased on the Internet has been proved to be very high, positive and statistically significant. In case that a country has a higher level of Internet usage, accordingly, there are a growing number of consumers who purchase on the Internet regardless of the development of e-retailing in a certain country. (Kuceba, et al., 2019)

Research methodology

The current analysis that compares 24 EU countries (Italy, France and Ireland excluded due to the lack of data) is based on Digital Economy and Society Index 2020 (DESI 2020) raw data that are available at <https://digital-agenda-data.eu/datasets/desi/visualizations>. The graphics are generated by the authors using the advanced data visualization tool on the platform.

Considering the purpose of this analysis:

- we chose the age group (25-54) that is the most active in society and economy and which is also hard to change and therefore predictable.

- we selected four indicators aggregated under *Use of internet services* dimension of DESI based on which we compared the 24 EU countries: 1) Individuals looking for information about goods and services online in 2020; 2) Individuals using online banking in 2020; 3) Individuals looking online for a job or sending a job application in 2019; 4) Individuals doing an online course in 2020.

Results and discussion

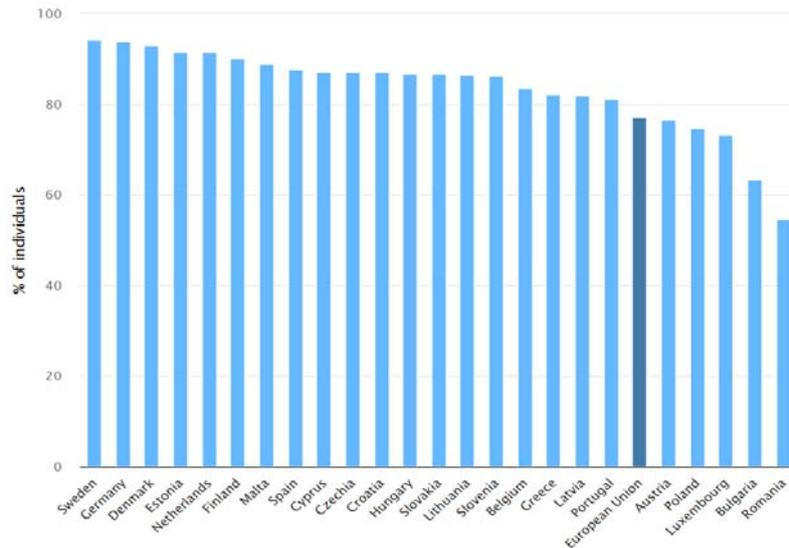


Figure no. 2 Individuals looking for information about goods and services online in 2020

Source: data visualization tool on www.digital-agenda-data.eu

Figure no. 2 presents the percentage of individuals (age 25-54) who have used Internet, in the last 3 months, for finding information about goods and services. These individuals are the only who may buy online using e-commers platforms. Sweden, Germany, Denmark, Estonia, Netherlands, and Finland are the countries where almost all individuals (90 – 95%) are looking for information about goods and services online. The countries with the lowest rates are Bulgaria (63.3%) and Romania (54.7%). These are the countries where e-commerce may struggle to grow because individuals do not use Internet to gain information about goods and services which is the first step in online purchasing.

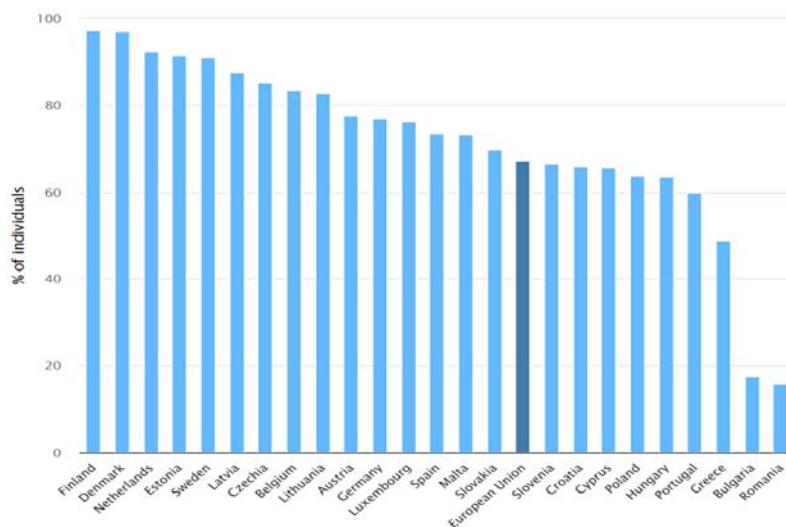


Figure no. 3. Individuals using online banking in 2020

Source: data visualization tool on www.digital-agenda-data.eu

Figure no. 3 presents the percentage of individuals (25-54) who have used Internet, in the last 3 months, for online banking. In 5 EU countries (Finland, Denmark, Netherlands, Estonia, and Sweden) almost all individuals (90.9 – 97.2%) use online banking. The countries with the lowest rates are Bulgaria (17.6%) and Romania (15.9%). These scores reflect the market potential of banks in Romania and Bulgaria where the transition from traditional bank services to online banking, which is more cost effective) is hard due to the low interest or skills of individuals in using online banking.

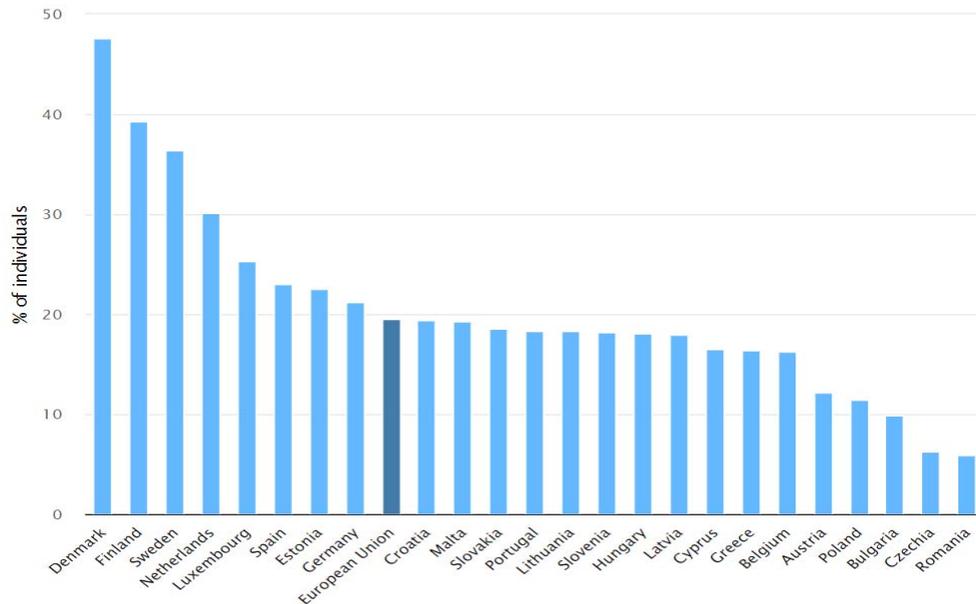


Figure no. 4. Individuals looking online for a job or sending a job application in 2019

Source: data visualization tool on www.digital-agenda-data.eu

In Figure no. 4 we can see the percentage of individuals (age 25-54) who have used Internet, in the last 3 months, looking online for a job or sending a job application. The top 3 countries are Denmark (47.7%), Finland (39.3%) and Sweden (36.4%). The countries with the lowest scores are Austria (12.2%), Poland (11.4%), Bulgaria (9.84%), Czech Republic (6.21%) and Romania (5.9%). These low scores may reflect the labour market profile associated with low level of digital skills, the low employee turnover rates, and the success of traditional methods to find and apply for jobs (exp.: through recommendations).

In Figure no. 5 we can see the percentage of individuals (age 25-54) have used Internet, no more than 3 months prior to the survey, for doing an online course of any kind. The top 4 EU countries are Finland (32%), Spain (30.7%), Sweden (27.2%) and Estonia (26.3%). The countries with the lowest scores are Czech Republic (9.2%), Poland (7.9%), Bulgaria (5.93%) and Romania (2.21%). These scores reflect on one hand, the low potential of online courses market and, on the other hand, the fact that the population is not taking part in lifelong learning activities that may suggest a high percentage of jobs that require low level of skills, not specific to the digital economy.

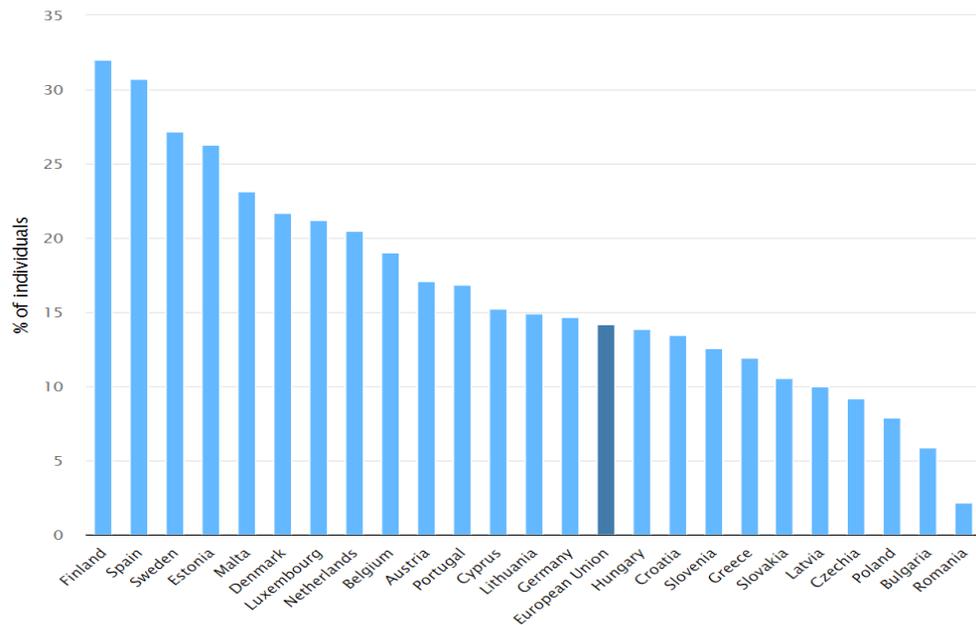


Figure no. 5. Individuals doing an online course in 2020

Source: data visualization tool on www.digital-agenda-data.eu

Conclusions

Considering the context and characteristics of digital global economy, the consumption of internet-based services must be stimulated. The consumption of such services is as important as innovation and the adoption of new technologies in industry.

Western and Northern EU countries give a boost to the digital EU market through their high percentage of individuals using internet-based services. Finnish, Swedish, Dutch and Danish are among the top EU digital consumers while Romanians, Bulgarians and Greeks are the least. In these markets, both the private sector and the governments must stimulate the consumption of internet-based services as the current consumption rate does not make the Romanian/Bulgarian/Greek markets attractive for investments in internet-based services.

To boost e-commerce, the EU has agreed on a range of measures, from removing unjustified cross-border barriers and facilitating cheaper cross-border parcel deliveries, to ensuring the protection of online consumer rights and promoting cross-border access to online content.

Connectivity has improved, but much remains to be done to meet the rapidly growing needs. Member States are working to transpose the new EU rules adopted in 2018 into national law, in order to promote investment in high-capacity networks, both fixed and mobile.

Although the pandemic caused a sharp increase in internet use, this trend was already present before the crisis, with 85% of the population using the internet at least once a week (up from 75% in 2014). The use of video calling has increased the most, from 49% of internet users in 2018 to 60% in 2019. Banking and internet shopping are also more popular than in the past, being used by 66% and, respectively, 71% of internet users.

The main limitation of this research is related to its level of generalization. Even if the data refers to a specific age group, more relevant data breakdowns can be based on residency, employment status and level of education. Further research may consider these breakdowns.

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Perspectives of Rural Tourism in the European Tourism Market

Ovidiu Andrei Cristian Buzoianu¹, Laurentiu Gabriel Frâncu², Petruț Cristian Vasilache³ and Carol Cristina Gombos⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: buzoianuovidu@yahoo.com; E-mail: gabriel.francu82@gmail.com

E-mail: cristian@vpcpartners.ro; E-mail: svegombos@yahoo.com.sg

Please cite this paper as:

Buzoianu, O.A.C., Frâncu, L.G., Vasilache, P.C. and Gombos, C.C., 2021. Perspectives of Rural Tourism in the European Tourism Market. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 66-72.
DOI: 10.24818/BASIQ/2021/07/008

Abstract

This paper addresses in a complex, multidimensional way, the issue of measuring the activity of rural tourism. It aims to address the "key" coordinates of the scope of rural tourism, the indicators used in the evaluation of methodologies and methods applied to information on the components of the activity of this type of tourism.

The statistical analysis of the rural tourism activity in the Bran-Moeciu area was carried out on the two components of the rural tourism market: "rural tourist supply and demand". The presentation of the offer consisted in a highlighting of the natural and anthropic tourist potential of the area, as well as of the technical-material base that it has, in the conditions of existence and manifestation of some particularities that stand out as they are presented and analyzed in close correlation. with statistical results.

The phenomenon of tourism industrialization both globally and nationally, was based on the "productivist vision" of tourism activities, which led to the concentration of supply in the center of tourist areas, investments corresponding to the requirements of the ongoing development process, standardization. The process of globalization and sustainable development of tourism aims at practicing tourism activities under the incidence of ecological and rational use of resources, currently rural tourism being the one that best meets the respective requirements.

This article brings added value by the punctual approach of a tourist segment which is more and more important in terms of sustainable environmental development. That being said, it can be stated that certain elements developed in this article may represent the starting point of some practical approaches.

Keywords

rural tourism, tourism market, economy, development.

DOI: 10.24818/BASIQ/2021/07/008

Introduction

Services currently play a key role in economic growth (Dima, et al., 2020). This trend manifested worldwide is also noticeable in Romania, the priority being the sustainable development of tourism, as an essential component of the tertiary sector (Radulescu, et al., 2020). The affiliation of tourism to the service sector derives from the way of achieving some of its defining features such as mobility,

dynamism or ability to adapt to the requirements of each tourist, as well as the particularities of the tourist product, because it is the result of a harmonious combination of services. and own mechanical use.

The economic importance of rural tourism is always increasing and attracts the attention of economic agents and the state, which influences the emergence of new tourism companies and tourist activity directions (Lane, 2009). This evolution changes the competitive picture of the sector (Profiroiu, et al., 2020), putting in the foreground the issue of competitiveness of national tourism products. The development of rural tourism and its integration in the structure of the economy implies the continuous modification of its content and a diversification of its forms of manifestation (Long, 2000). Thus, among other types of tourism, rural tourism becomes one of the main priorities of the development of this branch in many European countries (Ribeiro and Marques, 2002).

The development of daily activities in conditions of multiple and rapid transformations on all economic and social levels and especially in the technical-informational level, constantly favors the emergence of urban stress (Burlacu, et al., 2020) which becomes an increasingly dangerous weapon for each individual and society as a whole (Alpopi, et al., 2018). Thus, the individual's desire to leave the workplace temporarily, to quiet, pollution-free areas, where nature is *the best friend of escape*, for movement, rest, recreation, leisure (Bran, et al., 2018).

This desire is facilitated by the reduction of weekly hours and working week days, as well as by the increase in the number of days devoted to rest leave, a process that over the years undergoes a transformation towards their fragmentation (Alecuc, 2006).

The increase of the free time and the tendency of the individual to exercise several remunerated activities, also have a favorable effect on the practice of tourist activities (Ali, 2016). Also, the development of a remunerated activity at home has a double implication: minimum effort that can be spent participating in tourist activities (Negescu Oancea, et al., 2020); on the other hand, it can directly involve the individual in the tourist activity, being the owner of a company with a tourist profile; he creates incomes from which he will also spend them in the same sector, either through tourist investments or by spending his holidays in a "preferential tourist oasis" (Wilson, 2001).

Along with the urban agglomeration, another step in the development of sustainable tourism includes the increase of free time, the increase of the individual's income and the increase of the level of knowledge and education (Camilleri, 2018). The reform of the education system, the technical-informational progress and last but not least, the "explosion" of the media are the factors that raised the level of education and knowledge of the population, which tends more and more towards another way of spending free time (Burlacu, et al., 2018).

Review of the scientific literature

The practice of rural tourism worldwide has been studied and debated in various specialized works through the publications of several authors in the field of tourism: Nistoreanu P., Glăvan V., Mitrache Ș.L, Bold I

The specialized literature in the field of tourism and, especially, of the issue of rural tourism, has devoted many works and the names of some authors represent today important points of reference (Rădulescu, et al., 2018). Among them, we will mention three personalities who, through their work, managed to include in their courses more than just information. It is about the work *Ecotourism and rural tourism*, third edition. which has as coordinator. Puiu Nistoreanu, outstanding personality of the Romanian university world. Author of numerous books on rural tourism and agrotourism, coordinator of many scientific articles on topics of great interest.

Along with the book of professor Puiu Nistoreanu, another work forms the second pillar of support for this field. *Rural tourism, The absorption of European funds*, having as sole author the associate professor Dr. Marinela Ghereș, opens the way to a unique approach to the rural environment, through the prism of economic levers that can be accessed by entrepreneurs in agrotourism and rural tourism.

Vasile Glăvan published in 2003, a work entitled Rural Tourism. Agrotourism. Sustainable tourism. Ecotourism, a specialized book, folded on the 4 major topics of interest that form, by the way, the title of the book. Together with Puiu Nistoreanu and Marinela Ghereș, he manages to complete the specialized literature with books that impress the reader due to the complex approaches, research methods recognized in the scientific world and last but not least due to the applicability and solutions offered to the Romanian business environment. We remember in this context the year 1976, when the famous tourism specialist Oscar Snak publishes his first known book of high synthesis tourism "Economy and organization of tourism 2, in which the second chapter is dedicated to" forms of tourism "that can be practiced and the underlying criteria.

Research methodology

Measuring tourism in the vision of sustainable development, involves the approach and application of principles and methods that are the basis for the formation and use of a complete set of economic indicators. Elements of statistical determination were also used in the case of studying the demand and consumption of rural tourism in Bran-Moeciu, through which we highlighted: the increasing trend of the number of tourists staying in rural tourist units from 2010 to 2019; the increase of their share in the agrotourism pensions in the area, the percentages belonging to the other types being in continuous decrease; an increasing evolution of the number of overnight stays; a percentage increase that also belongs to the agritourism pensions compared to the percentages determined for the other types of units, regarding the distribution of the number of overnight stays.

The approach varies from conceptual to methodological dimensioning for exploring the experimental field, which includes: information, comparative analysis, interpretations, deductive and inductive testing of ideas.

Results and discussion

Romania's geographical position, which imprints particularities on nature and human activity, complemented by the presence of the Carpathians, the Danube and the Black Sea, gives the country a strong geographical personality, doubled by a special tourist vocation.

By harmoniously combining the various and spectacular forms of relief of the favorable climate for tourism throughout the year, flora, fauna, anthropogenic potential, traditions that have not been lost in the mists of time, Romania has a tourist heritage that is can develop and modernize through capitalization and promotion activities in the context of the sustainable and ecological evolution of rural tourism.

The promotion of itinerant rural tourism is the main objective on which its development must focus, involving the use of traditional means: sales aids (guides, brochures, leaflets, catalogs), advertising objects, presence at tourism events, use of media (TV, publications, radio, internet), offering the possibility to transmit information in as many international languages as possible.

Bran-Moeciu area on the rural tourist market in Romania

The development of rural tourism in the Bran-Moeciu tourist area was possible thanks to the effort made by the locals to find and offer, permanently, new, attractive elements and quality tourist services, in accordance with the current requirements of tourism.

Being not only the oldest area, but also the best outlined in terms of rural tourism, in the situation of intensification and emphasis of tourism promotion and development, the future is in favor of this tourist area.

In this context, it is possible to study the tourist supply and demand of this rural area, completing them with a forecast of the evolution of rural tourism, in the conditions of applying adequate marketing strategies, based on an efficient management. Defining the tourist offer through "elements of attraction" that motivate the trip and those intended to ensure the capitalization of premiums, involves the inclusion in its structure of natural and anthropogenic potential, the technical-material base, labor and trading conditions.

Analysis of rural tourism demand and consumption

Fluctuations in rural tourist demand and consumption in the Bran-Moeciu tourist area can be highlighted with the help of the main quantification indicators: number of tourists accommodated and number of overnight stays registered in the tourist reception structures.

The evolution of the number of tourists arriving in the Bran-Moeciu tourist area, in the period 2010-2019, is the result of the theoretical demand transformed into actual demand, on the one hand as a result of satisfying the motivations to practice rural tourism, and on the other hand as a response to the quality of the offer of this type of tourism.

Table no. 1. The evolution of the number of tourists arriving in the Bran-Moeciu tourist area

Years	2010	2011	2012	2013	2014	2005	2016	2017	2018	2019
Number of tourists	25300	29770	34600	40090	43330	48900	56004	58864	60121	65204

Source: Braşov County Directorate of Statistics and ANTREC-Bran branch

The increasing trend of the number of tourists in the rural tourist reception structures (represented in tables and graphs) represents the argument based on which the structural mutations regarding the number of tourists accommodated on the types of rural tourist reception units in Bran-Moeciu area are analyzed.

In close accordance with the structural changes registered by the existing accommodation capacity, there are also those regarding the number of accommodated tourists. Thus, the increase of the share of the number of tourists accommodated in the agritourism pensions is noticed from one year to another, the percentages of the other types being in a process of decreasing content.

The evolution of the number of overnight stays in the Bran-Moeciu tourist area closely follows the growth trend registered by the number of tourists accommodated in the tourist reception structures.

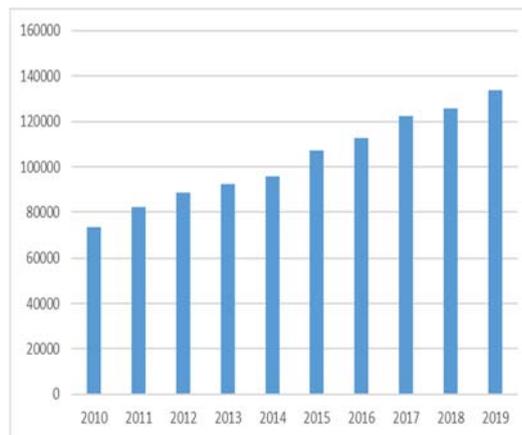


Figure no. 1. Number of tourists arriving in the tourist area Bran - Moeciu

Source: Braşov County Directorate of Statistics and ANTREC-Brasov branch

During the ten years, the specifics of the tourism practiced in the Bran-Moeciu area led to the onset of a fierce competition between pensions and agritourism pensions. The first two places were disputed between the two types of units, which was reflected in a percentage increase for agritourism pensions by 39.8%, to the detriment of pensions whose decrease was 26.36%.

Thus, it can be highlighted, for the period 2010-2019, the increasing evolution of the number of tourists and overnight stays in the structures of tourist reception, the structural mutations placing on the first place the agro-tourist pensions. The continuation of the process of accentuated development

of rural tourism in the Bran-Moeciu area opens the perspective of practicing this type of tourism at the level of international standards. For the whole region of rural tourism, a general average was established, ie, the average number of tourists arriving during the four years was identified. Seasonality indices (k), calculated as a ratio between the quarterly average number of tourists and their annual average of 5421.06 tourists, show a strong seasonality, with weights exceeding 100%.

The need to develop rural tourism and the prospects of its integration on the European tourism market

The economic and social development is harmoniously combined with the development of rural tourism, between the two there is a relationship of correspondence and reciprocity (Botezatu, 2014). The statement is argued by the double involvement that appears as a circuit, in the sense that the activities specific to rural tourism through their complexity, contribute to the overall development of rural areas, while this development will in turn lead to an increase in tourism.

The analysis based on the collected statistical data can become reality, only in the conditions of continuing the process of achieving a balance between the demand and supply of rural tourism on its specific market and the promotion of rural tourism products on domestic and international tourism.

The rural tourist offer is identified, in fact, with the rural tourist product, which is currently more and more in demand on the tourist market (Carneiro, 2015). The components of these products include traditional elements specific to the rural space included in the local tourist circuit, so that their particularities are outlined based on local tourist heritage, labor resources and services involved in tourism, while respecting the principles of sustainable development.

The primary role in the presentation of rural tourism products belongs to the promotional activity that must take place in the form of advertising, sales promotion, public relations, the use of brands, promotional events and sales forces (Kastenholz, 2012).

At the level of Bran locality, the promotion can be done through an advertising material written in a tourist guide or in the form of a video cassette that presents suggestive images from the respective area.

Regardless of the presentation, the material must inventory all the households that are arranged for rural tourism. The activities of detailed preparation of the offers of rural tourist products at all levels, of preparation of the households and economic agents, can be put into practice only through a functional management, both locally and globally. In order to facilitate the correspondence with the internal and external partners, at all levels, horizontally and vertically, it is necessary to adopt some standards regarding the evaluation criteria, the way of making the advertisement and publicity, the signs used, etc.

Rural tourism is one of the solutions for the development of the entire rural area. The expected success can be achieved through an overall development of the rural environment, based on a moderate increase in time and to the benefit of the rural area because a rapid or disorderly development of rural tourism can damage the environment, can lead to an impact on the population. local. Also, the local population must be prepared socially and professionally for the tourist activities, and through feasible market studies, the food production must be organized with the adaptation to the demand, as well as through the tourist motivation. Thus, rural tourism can be included in all the tourist activities of the region as well as in the context of the integrated zonal policy.

The issue of conservation is located in a much broader framework than the policy of preserving the quality of the built environment. It is obvious that the inhabitants of the villages want and must take advantage of the progress of modern life. As a result, the character of the villages changes from day to day, the man integrating in his time. The result is a conflict between tradition and modernity, between conservation and evolution, which manifests itself differently depending on the conditions of each geographical area.

The revival of rural settlements, the transition from traditionalist architecture to modern architecture without embarrassing each other is a difficult undertaking that requires study, time and funds, the most seductive solution for reviving villages is to introduce them to major tourist circuits.

Regarding the diversification of activities in the Bran-Moeciu area, it tends to favor small non-polluting industries of handicraft production, acting on infrastructures and administrative and fiscal procedures on stimulating and supporting initiatives in the field of rural tourism. It also aims to enhance local resources, rational exploitation of hydropower potential, promote alternative and renewable energies and improve home heating systems to achieve higher yields through the use of wood residues and other secondary resources.

At the national level, it is necessary to implement a rural development policy, which should be able to stimulate the efforts undertaken towards the isolation of the Romanian village, regulations that allow its use, as well as institutions that function. for the same purpose, and last but not least the existence of funds allocated in the desired direction.

Conclusion

The economic and social development is harmoniously combined with the development of rural tourism, between the two there is a relationship of correspondence and reciprocity. The statement is argued by the double involvement that appears as a circuit, in the sense that the activities specific to rural tourism through their complexity, contribute to the overall development of rural areas, while this development will in turn determine an increase in tourism.

In the analyzed period 2010-2019, against the background of the evolutions of the existing accommodation capacity, structural mutations are registered, being the result of the efforts of locals, local authorities or international organizations regarding the diversification of rural tourism offer, according to the trends manifested in rural tourism demand.

Architectural constructions with regional rural specificity have appeared, which are registered as agrotourism pensions and provide tourists with facilities as close as possible to international standards. The competition that thus appears between pensions and agritourism pensions is highlighted as an offer, in the form of the number of units and accommodation places made available to tourists.

In this context, the number of tourist accommodation places offered by agritourism pensions has experienced a process of continuous growth, compared to pensions, which are facing a rather sharp decrease. The same elements of statistical determination were used in the case of studying the demand and consumption of rural tourism in Bran-Moeciu, which highlighted: the growing trend of the number of tourists staying in rural tourism units from 2010 to 2019.

At the national level, it is necessary to implement a rural development policy that is able to stimulate the efforts undertaken towards the isolation of the Romanian village, regulations that allow its use, as well as institutions that operate in the same purpose and last but not least the existence of funds allocated in the desired direction.

For Romania, in the current period, these concerns have widened, the acceptance of this development representing a responsible way of development in the medium and long term, in accordance with the national interest and with the requirements of international collaboration. Rural economies are characterized by differentiated strategies and community behaviors that are based on traditional rural values, but also those derived from a continuous process of infusion and evolution.

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Analysis of the Economic Efficiency of Expenditure for Environmental Protection in Agriculture

Maria Loredana Popescu¹, Victor Adrian Troaca², Carol Cristina Gombos³ and Ovidiu Andrei Cristian Buzoianu⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: popesculr@ yahoo.com; E-mail: adrian_troaca@ yahoo.com

E-mail: svegombos@ yahoo.com.sg; E-mail: buzoianuovidu@ yahoo.com

Please cite this paper as:

Popescu, M.L., Troaca, V.A., Gombos, C.C. and Buzoianu, O.A.C., 2021. Analysis of the Economic Efficiency of Expenditure for Environmental Protection in Agriculture. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 73-80 DOI: 10.24818/BASIQ/2021/07/009

Abstract

The aim of this paper is to analyze the cost-effectiveness of sustainable environmental and agricultural developers.

To write this article, a methodology based on the analysis of demographic and socio-economic statistics, the analysis and interpretation of literature, as well as a study on the importance of environmental protection in agricultural development and methods of cost-efficiency analysis were used.

Agriculture is an economic branch of national strategic interest, called to ensure food security for the population and to produce and export. However, it is subject to natural and economic phenomena that directly influence agricultural production, such as: natural disasters, pests, diseases in the field of animal husbandry or changes in the prices of agricultural products. In order to counteract the negative effects of these phenomena and to ensure appropriate conditions of activity and development, agriculture needs important support from the state.

This paper brings added value in order to create a subsequent model of economic efficiency at the level of sustainable development in the agricultural field. That being said, it can be stated that certain elements developed in this article may represent the starting point of some practical approaches.

Keywords

Economic efficiency, environment, agriculture, pollution.

DOI: 10.24818/BASIQ/2021/07/009

Introduction

The links between the richness of the natural environment and agricultural practices are multiple. Agriculture has contributed over the centuries to the creation and maintenance of a variety of valuable semi-natural habitats (Anghelache, 2017). While many of these have been perpetuated by extensive agricultural practices and a large number of wildlife species have owed their survival, agricultural practices can also have a negative impact on natural resources (Collins, 2007). The policies of the European Union, and mainly the common agricultural policy (CAP), are therefore aimed at reducing the risk of environmental degradation, while farmers are encouraged to continue to play a positive role in preserving the rural landscape and protecting the environment.

With Romania's accession to the European Union, our country had to adopt special measures regarding agriculture, but, at the same time, it benefits from funds, subsidies directed to this sector. While

agricultural policies and official institutions have met all the criteria for accession to the European Union, the agricultural sector itself is not yet ready to make effective use of the opportunities that have arisen. The big problems that Romania faces in the agricultural sector are: the large number of subsistence and semi-subsistence farms, the large share of farmers in the total employed population, as well as the large number of elderly farmers, the still weak organization of agricultural producers in association, to which the lack of information on the market at the level of producers regarding the quality standards contributes (Cosmulese, 2017).

Expenditure on environmental protection in agriculture is justified and even imposed by the fact that within the European Commission, the set of measures aimed at reforming the Community Agricultural Policy (CAP) includes an important chapter on new guidelines in environmental management (e.g. guaranteeing natural food which are perfectly compatible with the ecological requirements, of a superior quality, better management of the natural resources, protection of the landscape, protection of the abiotic environment etc). At the macroeconomic level, the environmental protection expenditures made by the local public administration represent approximately 100 billion Euros and are related to the efforts to harmonize the environmental acquis, the creation / development of the infrastructure for the implementation and control of the application of the new legislation (Prus, 2012).

Review of the scientific literature

Angelsen (2010) listed policies to reduce deforestation as well as their impact on agricultural production. Anghel, Lilea and Dumbravă (2017) considered the quality of the environment as being a component of sustainable growth. They addressed issues related to environmental protection and water quality conservation in the context of sustainable growth. Anghelache and Anghel (2017) analyzed the impact of waste on the environment in EU member states. Quamrul and Michalopoulos (2015) considered the influence of climate change on the spread of agriculture. De Groot, Brander, Van Der Ploeg, Costanza, Bernard, Braat and Van Beukering (2012) estimated and quantified globally the value of ecosystems and the services they provide.

Ali (2021) develops a sustainability model for the agricultural branch for the state of Ghana, correlating the need for food resources at the local level with future development possibilities.

Anghelache (2017) develops the idea of the needs for conservation and protection of environmental qualities in the context of economic growth

Moreover, Baffoe (2019) analyzes sustainable development in developing countries and brings to the fore the usefulness of the analytical hierarchy process in classifying the activities necessary for interventions for sustainable efficiency. Baum (2019) introduces in his study a modern, necessary concept, namely eco-efficiency as part of agricultural sustainability. Cosmulese (2017) addresses the importance of implementing European funds in all member states, focusing on Romania. These are absolutely necessary for sustainable development, including in agriculture.

De Marinis (2020) makes a characterization of the participatory hierarchical analytical process in view of the allocation of resources in the projects for the development of Agricola Ionescu (2020) exposes in his study a new model in agriculture, based on indicators and ecological principles for a sustainable economy Krajewski (2016) develops the idea of economic growth emphasizing the impact of public spending on environmental protection. Luczka (2017) draws an integrated parallel in terms of sustainable consumption of resources, viewed both on the theoretical and practical level. Njegomir (2017), brings to the fore the idea of agricultural entrepreneurship, seen as a necessary element of dynamics and growth in the field, in close correlation with ecological privileges.

Research methodology

The statistical methods used in the study of economic and ecological problems are complemented by the design of analysis models on the efficiency of agricultural spending. The approach varies from conceptual to methodological dimensioning for exploring the experimental field, which includes: information, comparative analysis, interpretations, deductive and inductive testing of ideas.

Results and discussion

The situation of environmental protection, of the expenses made in this field

Environmental protection expenditures represent payments made by producers of environmental protection services, as well as by polluting economic agents in the realization of those products and services in order to prevent, reduce and eliminate pollution (James, 2005). At the level of agriculture, as a branch of the national economy, environmental protection expenditure (CPM) is defined as public expenditure, which aims to prevent, reduce and eliminate any type of environmental degradation caused by productive processes in agriculture.

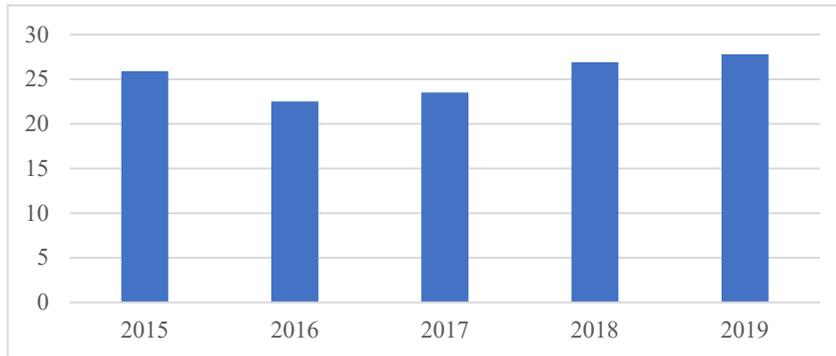


Figure no. 1. Evolution of the "chemical fertilizer consumption" indicator

Source: INSSE

Pesticide consumption- shows the intensity of pesticides in agriculture (insecticides, fungicides, herbicides). The trend indicates the achievement of environmental objectives.

Table no. 1. Evolution of the "pesticide consumption" indicator

Type	Consumption of chemical fertilizers (kg / ha)			
	2016	2017	2018	2019
Agricultural land	0,85	0,74	0,56	0,5

Source: INSSE

Intensity of agriculture- aims to highlight changes in the productive or unproductive use of agricultural land. It is calculated as the ratio between the agricultural area of the current year and that of a reference year (Duram L., 2005).

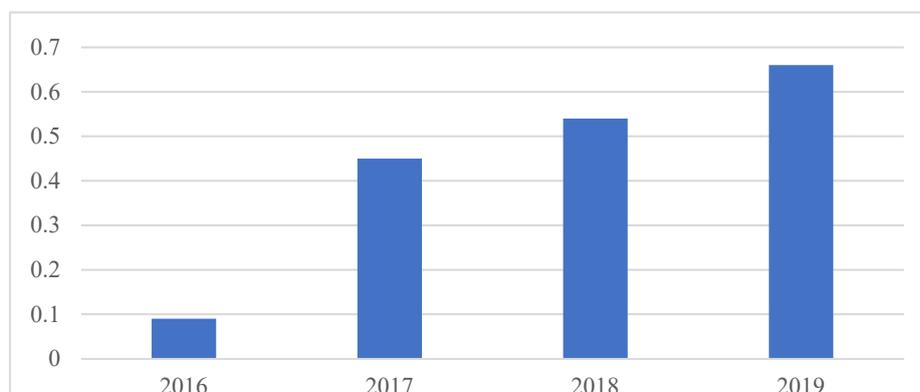


Figure no. 2. Evolution of the "agriculture intensity" indicator (%)

Source: INSSE

The trend indicates that the situation is stable in terms of the degree of intensification of agricultural practices.

Analysis of different types of environmental protection expenditures

In order to analyze the level of environmental protection activities at macroeconomic level, as well as that of the expenditures for financing these activities, the following distinction must be made (Gheorghiu A., 2004):

- current expenses (expenses for the supervision and protection of the environment and which refer to the prevention or repair of the damages brought to it);
- capital expenditures or investments (include new or existing tangible capital goods purchased from third parties or produced for own use, with a duration of operation of more than one year, for the purpose of environmental protection.

These also include non-produced tangible goods such as land (Neven D., 2014). It includes additions, renovations and improvements that extend the life or increase the capacity of the equipment. Also included are goods and services incorporated in land, services related to the transfer of ownership of land, existing constructions, other incorporable assets.

- grants from the European Union (grants)

In Romania, the largest share in terms of environmental protection expenditures is held by non-specialized producers (68%). As the statistical data on environmental protection expenditures are not detailed by types of activities within the sectors, but are presented only globally, we cannot have an exact situation at the level of agriculture.

Table no. 2. Evolution of environmental protection expenditures as a share of GDP in 2015-2019

Nr. Crt.	Environmental protection expenditure	2015	2016	2017	2018	2019
1	Investment expenses	0,46	0,54	0,59	0,49	0,65
2	Current expenses	0,65	0,66	1,2	1,01	1,39
3	Total expenses	1,11	1,2	1,79	1,5	2,04

Source: Institute for Economic Studies and Statistics

There is a slight increase in CPM as a percentage of GDP from 2015 to 2019, when there is a reduction in current spending, and then the percentage rises sharply. Environmental investment accounts for 32% of the total, current expenditure 68%, while subsidies only 0.3%. The overall increase of the CPM share in the GDP, but also of their absolute figure, is mainly explained by the efforts that Romania makes for the harmonization and implementation of the European legislation in the field of environmental protection.

For the protection of the environment in agriculture, at national level, statistics are practically non-existent. However, we can make an analysis of the main areas subject to protection, of which agriculture has a significant part: soil, groundwater and biodiversity (Padash A., Ghatari A.R., 2020).

Table no. 3. Expenditures for environmental protection in agriculture by fields in 2019 (thousand RON)

Nr. Crt.	Domain	Total	Investments	Current expenses		Grants
				Internal	External	
1	Soil and groundwater protection	1949158,07	106532,63	4137,97	42999,37	3,8
2	Protection of natural resources and conservation of biodiversity	78252,41	28378,69	28286,88	25474,04	12,8
3	Total	-	143911,32	32442,85	68473,41	16,6

Source: Institute for Economic Studies and Statistics

By development regions, CPM registers very different values: 59.6% Bucharest-Ilfov region, 8.8% South-West Oltenia region and 7.6% South-East region, on the first places, and the lowest values are registered in the North-West region, 1.7%. In agriculture, environmental protection expenditures by development regions are as follows:

Table no. 4. Expenditures for environmental protection by development regions in 2019 (thousand RON)

Nr. Crt.	Region	Total	Soil and groundwater protection	Protection of natural resources and conservation of biodiversity
1	Total	-	190915,07	78152,41
2	North-East region	15675,43	8228,23	7447,2
3	South-East region	19952,94	5293,09	14659,85
4	South Muntenia region	9867,59	5390,42	3877,17
5	South-West Oltenia	23683,52	13398,71	10284,81
6	West region	14239,39	11110,22	3129,17
7	North-West region	4516,19	3276,61	1239,58
8	Center region	20549,08	19109,4	1439,68
9	Bucharest-Ilfov	160583,34	124508,39	36074,95

Source: Institute for Economic Studies and Statistics

As can be seen from the table, the Bucharest - Ilfov Region holds the supremacy in terms of the effort for a clean environment in agriculture, followed by the South-West Oltenia Region and the Center Region. The least money for the protection of the agricultural environment was spent in the North West Region.

Analysis models used in the study of the economic efficiency of environmental protection expenditures in agriculture

Efficiency is the quality of producing the expected positive effect (Baum R., 2019). Economic efficiency is the most general economic category that characterizes the results deriving from different variants expected for use (productive consumption, individual consumption, sale) or saving resources (human, material, financial) entered or not entered in the economic circuit.

In other words, economic efficiency is measured either as an absolute sum from the difference between the value of the effect and the value of the effort, or as a level obtained by the ratio between the effect

and the effort or vice versa. Increasing economic efficiency can be achieved by increasing the effects in relation to efforts at a faster pace (Ionescu R.V., 2020). As it is known, the level is the most conclusive indicator in terms of economic efficiency, the only one comparable in time and space.

The efficiency of environmental protection programs in agriculture depends both on the efforts made at the microeconomic level (agricultural holding) and at the macroeconomic level (agriculture as a branch of the national economy considering the structuring of Romania by areas and regions). Thus, the efforts, in the form of environmental protection expenditures, aim at goals grouped into two main categories: preventive environmental protection expenditures and expenditures intended to reduce the level of pollution (ecological reconstruction, post-factum expenditures).

The general formula for the level of efficiency of environmental protection expenditures is:

$$ECPM = \frac{\text{Reducing the negative environmental impact}}{\text{Expenses needed to reduce the impact}} \quad (1)$$

Agriculture, the main supplier to the food industry, is perhaps the most important branch, as it provides food to the population, and the quality of food has a direct impact on people's health (Łuczka, 2017). Thus, in the field of agriculture, the efforts for environmental protection are in the direction of the transition to ecological-sustainable agriculture, which guarantees both food security and environmental protection against pollution from agricultural sources.

Analyzing the economic efficiency in an ecological agriculture, a series of shortcomings can be identified:

- low level of yields (especially during the transition to organic farming, until the establishment of an ecological balance of ecosystems, after which the level of production obtained tends to stabilize);
- the capitalization price of ecological products is higher than that of conventional products;
- the need to support organic agriculture (premiums, tax exemptions);
- organoleptic characteristics sometimes deficient in some ecological products (there is compensation, however, due to their high nutritional value);
- the presence of fake organic products on the market - this implying efforts in the sense of improving (streamlining) the control and certification system of organic products (green label);
- lack of research and extension assistance for organic farming (high costs for research and development and professional training of agricultural workers)

The current stage reached by humanity, characterized by a high degree of pollution and consumption of depletable resources, imposes on the forefront of the concerns of decision makers the issue of sustainable development, the development of methodological tools for substantiating decisions (Torquati, 2014). As a direct effect of environmental protection expenditures, we nominate the quality of agricultural production and environmental factors- factors of production in agriculture (water, soil, etc.).

Conclusion

The analysis shows that the evolution of efficiency indicators of operating costs and environmental protection at 1000 lei operating income registers favorable dynamics due to the increase on the one hand of the volume of production sold and on the other hand of total operating costs, but also those for environmental protection. However, a detailed analysis of the influence of the factors on the evolution of the mentioned efficiency indicators and especially of the meaning of these influences is required:

- The increase in the total volume of operating expenses and environmental protection expenses had negative influences, but which were covered by an increase in revenues generated by them (operating income and the value of production sold).
- At the level of 2018 as well as of 2019 the expenses for environmental protection have a very low value and their structure is very simple.

Regarding the economic efficiency, it is found, according to the performed calculations, an increase of

the economic efficiency of the environmental protection expenses, but these expenses include only expenses occasioned by the payment of environmental taxes and authorizations and of the minimum environmental protection actions that the farm initiated in accordance with the requirements of applicable law.

Operating and environmental protection costs per 1000 lei of production sold are two important indicators that speak about the efficiency of the agro-industrial farm's commercial activity. The values of both indicators register positive evolutions, as a result of the influences exerted by the modification of the structure of the sold production, the reduction of the production costs and the increase of the prices, at the majority of the sold products. Therefore, the increase in profitability took place exclusively as a result of the restructuring of production and the increase in sales prices.

Total gross profit increases during the analyzed period, which demonstrates a proper management of resources and a high level of competitiveness of products and the farm in general in the market. The increase in environmental protection expenditures contributes to an important extent to the reduction of the gross profit related to the exploitation activity and the environmental protection component. An improvement in the profitability situation is found in the case of trading activity, where the value of the indicator

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Advertising in Pandemic Times

Daniel Moise¹, Petruț Cristian Vasilache², Rusalca Velicu³ and Valentin Păuna⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: moisedaniel@mk.ase.ro; E-mail: cristian@vpccparteners.ro

E-mail: rusalca.velicu@gmail.com E-mail: valentin.pauna@metro.ro

Please cite this paper as:

Moise, D., Vasilache P. C., Velicu, R., and Pauna, V., 2021, Advertising in Pandemic Times. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 81-85. DOI: 10.24818/BASIQ/2021/07/010

Abstract

Advertising is one key element for companies to transmit information to their stakeholders. Although the times and the uncertainty of the future are nowadays something very common, and what is much worse is that, the global economy must recover after the Pandemic. Entire economic sectors, like tourism, events, hotels, restaurants, cafes, transportation, spas, more precisely tourism sectors were affected and had not only to diminish their activities, but even to close down their businesses. Organizations still had to communicate with their audience. In this article, we propose a model of communication and the strategies that must be taken by companies in different fields, in order to transmit the message to their stakeholders. We also conducted a research to discover if the advertising in pandemic times has changed and in what manner and intensity. It is widely known that during economic crisis, the first department where the budget is diminished is the marketing budget. After conducting the research, we have discovered that organizations laid more emphasis on security, safety and protection as main communicational axe, although other companies transmitted the opposite, even showing that we can have the same “normal life” as before the pandemic. The majority of the respondents admire ads that present the normal life and ways of returning to the life before the pandemic, being more appreciated and watched. Ads can be very powerful, but at the same time, organizations must pay attention to the way the message is interpreted and decoded.

Keywords

advertising, ads, communication in pandemic times, consumer expectations.

DOI: 10.24818/BASIQ/2021/07/010

Introduction

The latest pandemic, on one hand, demonstrated that the medical and economy systems were not prepared to face such a virus that spread at such a high speed worldwide, but on the other hand, forced organizations to rethink (Tirtadarma and Darmo, 2020) and to accelerate the shift towards online. The shift towards online, was not (Bartikowski, Laroche and Richard, 2019) only regarding communication and advertising, but even to greater extent what regards logistics and the way customers can visualize the products, place an order and then being delivered to them. If, for some economic sectors like tourism, which were extensively affected due to travel restrictions, other sectors have flourished in this period. The sectors that had a greater expansion, regarding (Kim and Kim, 2020) their businesses, we can mention medical, pharmaceutical, biotechnologies sectors, as online platforms, companies producing hardware and software solutions, constructions and deliver companies. The times and the uncertainty of the future are nowadays something very common, as shocks (J.O.U.E., 2020) were transmitted in the logistic chains, due to the high demand for some type of products / services and diminished or even lack of the demand for others. In addition, and even worse than that, no one can say with certainty, or can predict when and how the global economy will recover (Pan, et al., 2021) after the Pandemic. Despite the fact that several vaccines were discovered and the majority of the countries started the inoculation of their population with different types of vaccines, the economic shocks and the macroeconomic major shifts are still going to appear. In addition, some of the main

factors that we have to bear in mind are not only due to the CoVid19 pandemic, but also those connected with the climate change. It is high time we took (Bae, et al., 2021) the proper development towards a truly sustainable and eco-friendly consumer behavior. To boot the adoption, lawmakers, governments, organizations and customers alike must converge to reach the ultimate stage of having zero footprint carbon dioxide emissions. The only issue here is of “not being too late”, as the planet is not ours, belongs to future generations.

Organizations, no matter if they had a boost, a decrease, or a constant demand for their products / services, still needed to communicate (Ewijk, et al., 2020) with their stakeholders.

Literature Review

Advertising still is (Vézina and Paul, 1997) one key element for companies to transmit information to their stakeholders and what is most important, it can change (Terblanche-Smit and Terblanche, 2010) the consumer behavior and perception towards the brands and even the organization itself. Although mass media advertising, especially the one that uses TV as a communication channel, tends to diminish in intensity and efficiency. This can be due to the decrease of number of people watching ads on TV, but in the same manner, the appearance of new forms of entertainment and the development of devices that enables TV audience to record, play, rewind and fast forwarding the TV shows will lead to the fact that many ads will remain unwatched. We might add that even, “zapping”- the ability to use the remote control to change the TV channels, had the same effect, but media planners managed to resolve that issue by planning to almost to seconds the ads transmitted through different TV channels. Marketers shifted (Kotler, Keller, 2016) towards communication through social media networks, entertainment, viral marketing, experiential and so on. Furthermore, companies started to manage customer portfolios instead of brand portfolios. Other companies are also appealing to corporate advertising in order to enhance the organizational image, but at the same time, to assume a position regarding a social cause or issue, and even to get direct involvement in reducing the risk of getting infected with CoVid. Corporate advertising was not always seen as a good strategy to appeal due to different factors as (Belch and Belch, 2018):

- The lack of interest from buyers;
- Costly form of self-indulgence in order to meet the egos of top management;
- The company is in some financial or public relations trouble;
- Seen like a waste of money, as they do not promote a brand, product or service, and the return of investment cannot be very easy to be monetized.

Since the pandemic started, many companies have appealed to this kind of advertising (Woolley, Donnell, and Worthington, 2020) in order to reassure the customers that the safety not only of their employees, but as well of the actual, potential customers, consumers and community is their top priority. The first impulse (He, Harris, 2020) of the companies is to reduce spending on marketing and especially on advertising, as it was the case in 2008, when the crisis was due to the economic turbulent environment. Nevertheless, the present crisis is even more complex, and the novelty consists, on one hand, of (Kedare, Kamble, Salunke, 2020) a medical crisis, followed by an economic one, and we might also add an environmental one. All of them can be considered of maximum high alert. Organizations have to activate Corporate Social Responsibilities (CSR) strategies, and use (Severo, FerroDe Guimarães and Dellarmelin, 2021) them even at a larger scale than, they were used before. If companies take care of their customers, than profit will follow. Due to the pandemic, organizations should follow several strategies (Berger, 2021):

- Marketers should focus on their actual customers rather than attracting new ones, as the communication channels are already open and to reach their customers is more easily.
- Organizations have to lay more emphasis on digitalization and try to make the shift towards online.

- As promotion campaigns, discounts, deals, advertising and ads must become more personalized, organizations must use social media networks being easier to target the wanted and the right audience, in comparison with using the traditional mass media communications channels.

- Revise (Favier, et al., 2020) the entire all integrated marketing communication, not only the ads, advertising campaigns in order to see which ones are more efficient.

Adoption of appropriate advertising strategies can lead (Najafi-Ghobadia, Bagherinejad and Taleizadeh, 2021) to stakeholders’ engagement towards the brands and even the organization. We consider organizations, not only companies and NGO’s, but even political parties, as during the pandemic and the lockdowns, elections still took place. Being a good thing as gatherings, concerts, and different manifestations were not allowed, so the financial power was not seen as a crucial determinant of the results in some countries.

Marketers and advertising agencies, have to be (Jiménez-Sánchez, Ruiz and Margalina, 2020) very careful about the message transmitted. As shown above, it is a path never walked, on until now, with many unknown factors. To make things worse, people are more than sensitive these days. Some companies suffered not only the drop in sales, but even being on the point of closing down all the shops from some country markets, as in the case of H&M. Although sometimes it can be considered an exaggeration in interpretation. The power of stakeholders grew more and more, as the communication is not only unidirectional, is bidirectional, and furthermore, the message from audience can reach other stakeholders including authorities. Authorities that might take notice and react in the sense of starting an investigation and even heavily fining the company. Entire ads, marketing campaigns were withdrawn if the message, images, and acts, transmitted were considered inappropriate.

We propose an adapted AIEDA model, and as external threats, we consider CoVid19, climate change and sustainability. The audience of the message are started to arouse (Hussian, et al., 2021) interest in the moment when they lack control and want to search for more Intel. Regarding the evaluation perceived, consumers will take into account only the information they find it useful, and if the company was credible up to this point. The message must be constructed in such a manner that will trigger the desire to obey or to follow the indications. In addition, one the most important moments of the models regarding the action is to realize the purchase or to accept the main idea.

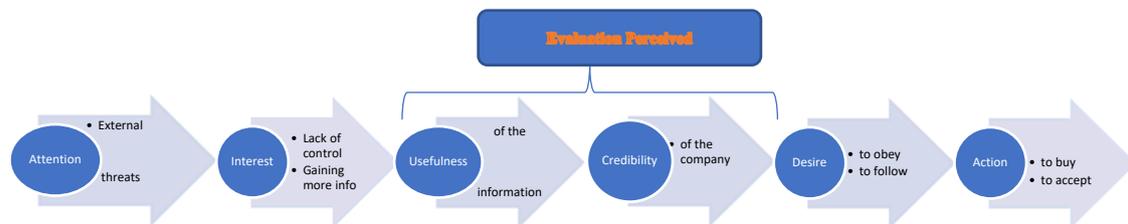


Figure no. 1. The AIEDA model

Source: adapted after A model of tourism advertising effects, 2021

Research methodology

From the model proposed, we have conducted a research among young adults, with ages between 19 – 24, students and master program students in order to discover what their preference towards advertising and ads is, laying emphasis on some examples and case studies. We want to see how the respondents perceive these case studies and examples.

Research findings

First, we wanted to discover what their opinion is towards the threats that humanity faces in this period: CoVid19 pandemic, Climate Change and sustainability. If Climate Change and sustainability are perceived like something that the organizations, and they include here not only NGO's, but governments and law makers, that must take immediate and drastic measures in order to overcome this threat. Among measures to be taken, they mentioned zero carbon emissions, the use of trains for short and medium distances, and investing in underground trains. One of the respondents addressed a very intriguing issue that a lot of money is invested in colonization of other planets like Mars, but not in resolving environmental problems.

Respondents were shown different case studies and ads as examples, companies like: Vel Pitar, Metro, NN insurance, Olympus, Help Net, Regina Maria, ASIROM, Edenia and others. The ads where the main characters wore masks, gloves and keep physical distancing, were more appreciated and in respect to the recommendations and measures made and taken by the authorities. These companies were considered more social responsible. The most debated examples were of Vel Pitar and Ryan Air, as they started a "tsunami" also online and not only. The controversial ad regarding Vel Pitar was the one showing that the company packages each loaf of bread separately from within the factory, without the interaction of humans, leading to diminish the possibility of spreading Coronavirus. While "Jab & Go" Ryan Air ad campaign begins with the message "vaccines are coming", after showing people in the ad not obeying the rules taken by almost all the countries in the world, like physical distance, wearing masks and gloves.

Conclusions

During national, international and worldwide crisis, companies must reassure their stakeholders that are all in together. In the same manner, the tone and time of launching an ad must be perfect and adapted to the fears and concerns of their stakeholders and trying to find a solution. Moreover, by not to giving the impulse and negative examples to their audience that it is all right to break the rules and disobey, leading to an unfortunate end.

Limitations of the research and future research. Quantitative research should be conducted and even marketing experiments, before launching ads, especially those that are going to be transmitted using the mass media channel TV.

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Analysis of the Opportunity to Finance Investment Projects Through Public – Private Partnership

Cristina Dima¹, Răzvan Cătălin Dobrea², Cosmin Andreica³ and Valentin Păuna⁴

¹⁾²⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

³⁾ *University of Bucharest, Bucharest, Romania.*

E-mail: cristina.dima@man.ase.ro; E-mail: razvan.dobrea@man.ase.ro

E-mail: cosmin_andreica20@yahoo.com; E-mail: valentin.pauna@metro.ro

Please cite this paper as:

Dima, C., Dobrea, R.C, Andreica, C. and Pauna, V., 2021, Analysis of the Opportunity to Finance Investment Projects Through Public – Private Partnership. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 86-93 DOI: 10.24818/BASIQ/2021/07/011

Abstract

In the current context of the transition from a classical society to a society based on a smart and sustainable economy, the integration of the needs of communities at economic, social and environmental level into complex projects is a constant concern. The implementation of complex projects in terms of volume and structure can no longer be covered at the individual level only by the institutions that require public-private partnerships, so it is practically necessary to achieve combinations between the different alternatives available.

The objective of this research is to evaluate the opportunity of financing through public-private partnership of public investment projects, highlighting the advantages and disadvantages associated.

In this paper we used the qualitative research method based on the analysis of articles in the literature and we highlighted the context of developing this source of funding and the relationships and responsibilities that can ensure good management between different categories of partners.

The results obtained from the study of the specialized literature proved that the investments made in PPP can be extremely useful and efficient tools for the sustainable development of communities, but in Romania they are insufficiently exploited compared to the classic investments financed from local and central budgets.

This topic has a high degree of novelty for Romania, where the institutions are still reluctant to identify and select a private partner, which indicates a lack of involvement.

Keywords

Public investments, sources of financing, public-private partnership, partners.

DOI: 10.24818/BASIQ/2021/07/011

Introduction

Public entities, considered in the past as the guarantor of stability and integrity, have today become more vulnerable and more exposed to various influences. The internal management of resources, regardless of whether they are called material, human, financial, on criteria of economy and efficiency cannot ensure the premises of a sustainable development, able to use sustainably the natural and anthropic factors, but also to capitalize on opportunities. Communities, regardless of location or size, have become key players and drivers of integrated and intelligent development processes, all of which are possible only through new resource management. We believe that it is necessary to move the focus

from the use of resources, especially financial ones, in the way of attracting, diversifying and allocating them efficiently.

Attracting and allocating financial resources, how they are prioritized in relation to the challenges and opportunities of communities are processes of major theoretical and practical interest. The internationally relevant literature deals with these topics, highlighting the need for innovative approaches, scientifically based using quantitative and qualitative methods (Dabla-Norris, et al., 2011).

Public organizations have diversified their access to funding sources from the available categories, reimbursable and non-reimbursable precisely to solve certain deficits, in the current operation but especially to be able to initiate new projects (Mihai, et al., 2018).

The evaluation criteria in terms of the performance of PPPs intended to finance public investments, may take into account the relevance, effectiveness, efficiency, utility, sustainability of the effects generated, but also the added value for the community. (Filipkowska and Wegrzyn, 2019). In addition, some authors (Carrillo De Albornoz et al., 2018) consider that classical efficiency indicators, such as the internal rate of return and updated net income, cannot accurately reflect the efficiency of a PPP, and for this reason certain adjustments to the calculation methodology are needed.

The aim of the research was to highlight the need for public institutions to attract financial resources and use them in public partnerships with a positive impact on the community.

Literature review

An increasing share of public institutions have understood, however, that although each source of funding has a number of advantages and disadvantages, it can make a different contribution to increasing operational performance. Based on these considerations but also on others related to the accessibility of a source, in a certain temporal and political context, organizations have moved to a new way of covering financial needs, through the combined use of various sources (Rajaram, et al., 2014).

The public-private partnership is known globally because it responds to a wide range of needs, from social structures to infrastructure models (Reeves and Palcic, 2017).

This alternative is considered viable, at least for the following reasons: local collection of taxes and fees, although increased as a percentage of the total, is more a source of ensuring functionality and less a variant of development; phenomena such as population migration, demographic aging or the degradation of the medical and educational system have had a negative effect on the volume of public revenues; in certain geographical areas, local economies have experienced phenomena of degradation or even complete disappearance, which has also limited the receipts from the space of taxes and duties paid by economic operators; although Romania has gone through a period of economic development in the last ten years, based on the infusion of foreign capital or European funds, the level of taxes collected was not in line with needs; the banking system, had to diversify its customer categories. Public institutions, in view of the existing legislative framework, represent a new category of customers, who once entered this category, become practically captive; at international level, the need for financing of public institutions was quickly supplemented by various options, offered through the WB - World Bank, EIB – European Investment Bank, or other representative financial institutions (European Investment Bank, 2017); reimbursable financing in the system of public institutions has evolved significantly in terms of volume and in view of the fact that some authorities own capital goods and land, which can easily become the subject of viable and easily marketable guarantees. In 2010, by Law no. 178 (updated) an attempt was made to regulate the way a project is carried out in PPPs - Public-Private Partnership, mainly regarding the design, financing, construction, rehabilitation, modernization, operation, maintenance, development and transfer of a public good or service. The results generated by the application of this legislative framework were not what was expected from the perspective of interpreting some formulations differently, as well as the fact that the harmonization of PPP legislation with that of concessions and public procurement was not achieved (Ciurea, 2019).

In May 2018, GEO no. 39/2018 on the public-private partnership that brings a new vision on the actions of realization, rehabilitation and extension of a new or existing objective in the patrimony of the public partner and / or the functioning of a public service (The Government of Romania, 2018).

According to the new approaches, the study on the basis of public investment must include detailed information on project financing, economic efficiency, risk distribution for each implementation option, project support, comparison of options, alternatives for project implementation and project correlation with deficit public debt and public debt, calculated according to the methodology applicable at European Union level. This means that more than half of the revenues generated by the project company, from the use of goods or the operation of the public service that is the subject of the project, come from payments made by the public partner or other public entities also for its benefit.

Research methodology

The methodology used is qualitative and was based on the in-depth study of the scientific literature on public investment and the best financing instruments for public-private partnerships, from a temporal perspective to highlight the changes that have occurred and those that need to be implemented on time, medium and long. The obtained results prove their usefulness at the level of the entities involved in the investment phenomenon, through the prism of a better understanding and interpretation, but also from the perspective of optimizing the decision-making system.

Public-private partnerships can generate benefits for communities, being strengthened and regulated through and through public-private partnerships (PPPs). The emergence of this tool is the result of the need to ensure a level of complementarity between the technical and financial capabilities of private organizations with the interests and needs of public organizations.

According to the literature, PPP is the tool to ensure sustainable development perceived as the balanced use of necessary resources, with reference to meeting the needs of all stakeholders, this being a mandatory condition for ensuring the social and economic sustainability of communities (Filipkowska and Wegrzyn, 2019).

Smart community development, focused on increasing the quality of services for citizens, economic growth, reducing resource consumption, protecting the environment and promoting ICT solutions, can be supported through PPPs in order to generate synergistic effects for all stakeholders.

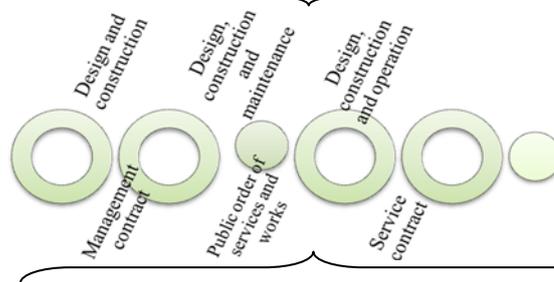
To ensure an appropriate level of guidance and regulation, the European Center of Expertise in PPPs (ECEP) has been set up at European level, whose main responsibilities are to work with EU Member States to monitor the evolution of the national and European PPP market, and the promotion of mechanisms to strengthen institutional capacity (European Court of Auditors, 2018).

In the case of certain projects, the possibility of individual implementation, usually only by the public institution, limits the performance and the probability of obtaining the expected results. (Filipkowska and Wegrzyn, 2019). Moreover, the specific durations increase significantly, and the guarantee of the continuation of the projects, especially the multiannual ones, decreases considerably, in the conditions of manifesting some political or strategic inconsistencies. Following research on the PPP approach from the point of view of partners, (De Shepper, et al., 2014) states that there are, in many cases, gaps between the expectations of stakeholders and the results obtained, which determines the failure of the project. According to the European Court of Auditors (2018) the major differences between a project financed and approached in a classic way and a project carried out in PPP consist in the management of it, the contracts made and the risks associated with the project, which ultimately are divided between partners. From the perspective of the risks of a project, the private partner usually assumes the ones related to the stages of design, obtaining financing, implementation, management and last but not least ensuring the maintenance system of the newly created or modernized infrastructure. In compensation, the public partner is responsible for taking political, strategic and regulatory risks.

Following the research conducted in the literature, we have identified a number of features that allow us to understand how a PPP works (EIB, 2017). Among the most relevant we specify that they involve a collaborative process, which often comes down to a financing system, mainly from private funds and depending on the situation, by pooling private funds with public funds. The projects are characterized by long durations, both in terms of implementation and operation (usually over 5 years), which allows the private partner to recover the investment and obtain a satisfactory profit.

The distribution and assumption of risks between partners is another feature, as mentioned above, this process being influenced by the ability of each party to identify, assess, manage and control a particular category of risks. The financing of public investments through PPP contracts can be fully supported by the financial resources allocated by the private partner or by the financial resources allocated by both the private and the public partner. The public institution frequently intervenes in the form of a purchaser of services provided by the private organization, such as infrastructure design, construction and operation, respectively other related services (design-construction-financing-maintenance-management) (European Court of Auditors, 2018). These partnerships are contractually regulated, with the detailed establishment of all activities, responsibilities and related documents. Analyzing the conceptual framework of PPP we can say that the main idea of a PPP is to transfer construction, market demand and operational risks to the private company, which bears the costs and is involved to maximize profits during the contract period (Carpintero and Petersen, 2016). Based on the research carried out on the specialized literature, in figure no.1. and figure no. 2. we have differentiated the activities and forms under the responsibility of public and private sector partners.

Activities frequently under the responsibility of the PUBLIC PARTNER



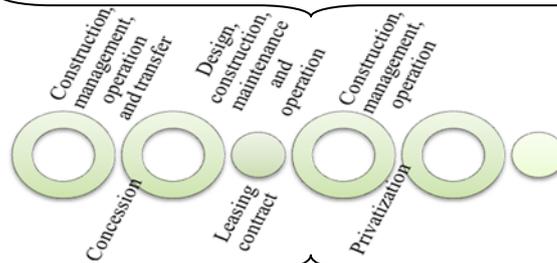
Types of documents assigned to the PUBLIC PARTNER

Figure no. 1. Synthesis of the main types of services and documents under the responsibility of the public partner in PPP

Source: own graphic representation adapted from Filipkowska and Wegrzyn, 2019

The public partner, most often ensures the management, management of services at community level and the collection and dissemination of related information at community level. The responsibility of the public institution also has the right to monitor the management of the provision of services as well as the observance of the corresponding quality standards.

Activities under the responsibility of the PRIVATE PARTNER



Types of documents assigned to the PRIVATE PARTNER

Figure no. 2. The types of contracts and forms under the responsibility of the private partner in the PPP

Source: own graphic representation adapted from Filipkowska and Wegrzyn, 2019

In the most common cases, PPP projects are initiated by the public authority through a specific tender procedure, in order to identify the private partner and define the terms of the future project agreement. The public institution is responsible for providing the infrastructure in its original state, in order to improve the operating parameters. The public partner also represents the regulatory authority, which

creates the framework for implementation and operation, for which it issues operating permits and licenses.

Private partners are often included in the category of capital investors. If a larger number of private investors are involved, a joint venture structure is defined. An extremely relevant factor for project success is the examination of success factors that highlight the diversity of projects and the understanding of the importance of stakeholders (Swamy, et al., 2018). Financing investments through PPP partnerships can be provided through the commercial banking system or bond investors, interested in the return on investment. There are cases where in a classic PPP, project stakeholders can also include trade unions for the protection of human resources, the media for gathering and disseminating information and even organizations with responsibilities in the field of environmental protection. In (figure no. 3) we synthesized the main categories of stakeholders within a PPP:

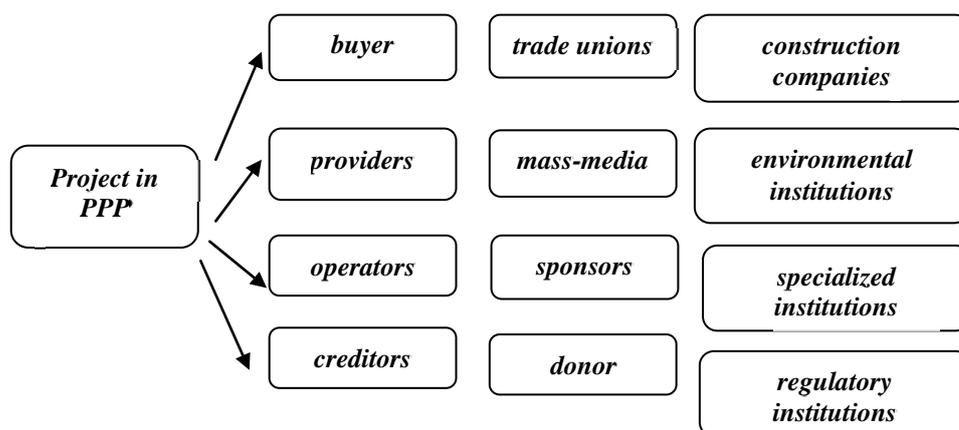


Figure no. 3. Stakeholders within a PPP

Source: own graphic representation adapted from Filipkowska and Wegrzyn, 2019

The interests of public institutions in a PPP partnership are related to monitoring the system in which the project is carried out, intervention and control in the interest of the community, achievement economic, social and environmental benefits and gains.

Private partners pursue to a greater extent the profit from construction, financing, operation and other contracted services. Unfortunately, in some situations PPPs are a complex gathering of strong but often contradictory actors depending on interest groups.

Under classical contractual conditions, throughout the life cycle of the project the responsibility is private partner, including for the management of the amounts invested. Instead, the public partner will also use the beneficiary of services created following the completion of the infrastructure, for which a conventional amount will be paid with one assent to the private partner.

The values that the public partner must pay to the private partner are determined according to the availability of the infrastructure or the degree of its use. As much (thus), the values are differentiated if the future objective is available and works in the default parameters. Regardless of the amount set, the most important factor is the qualitative one, with the obligation to comply with the quality standards for the entire duration of the project.

From a financial point of view, in the case of projects implemented in partnership, in the budget of authorizing officers financed either in full or in part of public funds and which have the quality of partner, it includes only something necessary to complete the project activities. (Ministerul Finanțelor Publice, 2019). In addition, the financial contribution of public partners to the PPP can be included as an off-balance sheet item, but subject to conditions set by the EU (European Parliament, 2013).

The European Commission's studies and audit reports have shown that the EU can support PPPs through Cohesion Fund (CF) and European Investment Bank (EIB) funding (European Court of Auditors, 2018).

Another form of financing PPP projects is the mixed one in which private resources are combined with EU funds. Thus, the public partner can support the project much easier from a financial point of view, which means a decrease in the funding contribution. However, there are also weaknesses of associating European Union funds with PPP partnerships. Due to the high level of requirements, the uncertainty regarding the mobilization of resources, the compliance with deadlines and the anticipation and the resolution of some difficulties encountered also increases.

Moreover, the main disadvantage of this form of mixed financing is the management of funds due to their inclusion in off-balance sheet format, which increases the risk of decrease the cost-benefit report, but also transparency throughout the life cycle (European Court of Auditors, 2018). Another disadvantage (drawback) of project implementation in PPPs is the administrative capacity. For such projects it is necessary training human resources within public institutions to support and implement these types of complex projects.

For the problems identified in the financing and implementation of PPPs, it is necessary an objective analysis of the causes and proposing solutions for these types of projects to be integrated in the Romanian economic context and to become real development opportunities. Regarding the purchases part, there are still difficulties in choosing the best option, and often the decisions are not properly substantiated, which leads to project delays and negotiations, which influence both the financial component and the efficacy of its implementation.

Results and discussion

The advantages of using PPP projects as a source of financing, according to the literature (Moldovan, 2017; Vertakovaa and Plotnikov, 2014; European Court of Auditors, 2018) have in mind the optimal implementation of projects, in terms of meeting deadlines and budgeting approved, the distribution of potential risks between partners, the reduction of the level of costs, the possibility to obtain more easily some facilities in terms of attracting additional resources for a certain area. Also relevant are issues such as providing lifelong maintenance services for projects as opposed to those traditionally funded and implemented, combining public and private sector experience for more efficient project management and evaluation; reducing construction costs and improving quality by (harnessing) capitalizing on the innovative potential of the private sector and stimulating research efforts - development, innovation and sustainable development.

The disadvantages of using projects as a source of financing in PPPs (European Court of Auditors, 2018) are primarily related to ensuring transparency and to differentiated responsibility for the provision of services, when a private partner is involved in the partnership to comply with the same obligations as the public partner.

Another disadvantage of long-term partnerships is the cost implications. They can increase significantly if the project is financed by the private partner through a private loan, with the risk of increasing final costs. In the case of high standards imposed by the tender documentation and very long association periods, the number of interested private partners is small, or there is a risk of creating competitive advantages for only some of the economic partners. Relevant statistics published at European level show that for Greece, the average duration of PPP projects is around 4 years, and the cost increase is around 60%, in the case of motorway infrastructures (European Court of Auditors, 2018).

Conclusions

The interest of the European institutions is manifested in the implementation of policies and methodologies for the implementation of PPPs and, certainly, in the field of promoting those legislative regulations that support this type of intervention, so that it becomes an effective tool for development. Statistically, the EU PPP market is dominated by priority countries such as Greece, France, Spain and Portugal, which have developed interventions amounting to around 90% of the total market in the period 1990-2016 (European Court of Auditors, 2018).

European practice has shown that investments in PPPs, if properly implemented, can be useful and effective tools for community development in areas such as education, health, services and road infrastructure.

In conclusion, we believe that there is a need to change the approach to investment through PPPs, in terms of modern values and principles, adaptable to economic, social and environmental needs, and the administration to be able to manage public investment projects in an objective way, transparent and a priority for the well-being of society.

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Characteristics of Waste Generation in the European Union

Sorin Petrică Angheluță¹, Cristina Curea², Cosmin Andreica³ and Elena Velicu Rusalca⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: sorin.angheluta@gmail.com; E-mail: stefania.curea@ase.ro

E-mail: cosmin_andreica20@yahoo.com; E-mail: rusalca.velicu@gmail.com

Please cite this paper as:

Angheluță, S.P., Curea, C., Andreica, C. and Rusalca, E.V., 2021. Characteristics of Waste Generation in the European Union. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 94-101
DOI: 10.24818/BASIQ/2021/07/012

Abstract

It is desired that the impact of resource use on the environment be kept to a minimum. Thus, resource efficiency enables sustainable economic growth. This can reduce greenhouse gas emissions as well as the amount of waste generated. Given that climate change is contributing to environmental degradation, the interest in efficient waste management is high. Environmental protection measures can reduce the effects of global warming. Many of the technologies have negative influences on the environment. Thus, the application of new technologies can lead to a reduction in the amount of waste resulting from the production process. The article presents a comparative analysis of the distribution of waste generation in the member countries of the European Union. One measure that can lead to the efficient use of resources is the prevention of waste generation. In this way, the impact of waste on the environment decreases. From the analysis presented, it is observed that certain sectors of activity generate a higher amount of waste. At the same time, compared to 2010, in 2018, in most member countries of the European Union, the quantities of waste generated per capita increased. This can be an alarm signal for the call to action. Extending the life of a product and reusing it, through repair, can influence the change of production models. Measures to recycle and reuse materials are considered to be of greater importance.

Keywords

Generation of waste, waste management, European Union.

DOI: 10.24818/BASIQ/2021/07/012

Introduction

The environment is affected by an intensive use of resources. Consumption habits can also lead to more efficient use of resources. We can consider that reducing the use of non-renewable raw materials is one of the measures that can be applied for this purpose. We must keep in mind that the natural environment provides a good part of the food, as well as a part of the means necessary for the economic activities. However, the economic potential has not been fully directed towards the recovery of pollution-affected ecosystems. The way we treat the environment has a direct influence on people's way of life. Increased attention should be paid to how resources are used. Their intensive use can influence the way they are approached and waste management. It is also considered that for a better management the whole production cycle of a product should be rethought. The conservation of natural resources can be achieved through interventions in each stage of making a product. The quality of the environment can be improved through sustainable materials management measures. Reducing greenhouse gas emissions can also be achieved by applying resource efficiency measures (European Parliament, 2018). It is

considered that the improvement of natural capital and its protection can be achieved by applying a management that increases the efficiency of resource use (Zorpas, 2020).

Literature review

Globally, the population is on an increasing trend. The trend is also for the population to benefit from high levels of well-being and consumption. Thus, resource-intensive use will lead to changes in the way people use resources. The sustainable use of resources and their efficient use can lead to a decrease in the amount of waste produced. It is desired to increase the value of products and services by decreasing the amount of raw materials used. Such an approach can lead to an increase in the use of renewable energies. The decline of natural resources causes a decrease in the quality of life of people. Overexploitation of natural ecosystems accelerates the process of environmental degradation and contributes to the decrease of resources needed for future generations (Bran, et al., 2012). One of the priorities of the European Union is to reduce the amount of waste generated and recover it (Magazzino, et al., 2021). The impact of food waste is both economic and social and environmental. Thus, it is considered that in order to combat food waste, it is important to know the quantities of food that are wasted throughout their production chain (Caldeira, et al., 2021). Measures are also needed to avoid food waste, as well as to reduce this waste. In this way, the economic burden can be reduced, but also the environmental one (Jeswani, et al., 2021).

Lately, more importance has been given to plastic waste management. Increasing microplastic material concentrations negatively influence water and soil quality (Corradini, et al., 2019). Responsible, controlled individual behavior can lead to a decrease in the amount of waste generated, especially in terms of plastic waste (Kedzierski, et al., 2020). It is believed that the green economy can help promote a reduction in waste generation, encouraging sustainability. Thus, valuable substances are recovered from waste, which are then reused (Al-Ghouti, et al., 2021). In some cases, due to the life cycle of the products, waste production is inevitable. Recovery of high quality components from these products can be a measure that leads to improved recycling efficiency (Ardente, et al., 2019). Through the circular economy, for any field of activity, a sustainable waste management contributes to the identification of solutions that lead to the reduction of the amount of waste (Garcia-Garcia, et al., 2019). Waste generation influences both people's health and the state of the environment. Thus, it is desirable for waste management to consider reducing these effects and lead to a reduction in resource consumption (European Parliament, 2018).

Methodology of research

According to European legislation, economic activities are classified statistically by means of a nomenclature (NACE) (EC, 1990). Based on this classification, according to the existing data on the EUROSTAT website, information from the last 10 years was chosen for the analysis. The article presents a comparative analysis of the distribution of waste generation in the member countries of the European Union, for the period 2010-2018. Depending on the main economic activities, the article presents the comparative situation of the waste generated for 2010 and 2018, respectively. The analysis took into account the quantities of waste generated per capita.

Results and discussions

The processes in which materials are used lead to the generation of waste. Thus, most processes through which products are made have an impact on human health and the quality of the environment (Lagerkvist and Dahlén, 2012). In order to achieve a finished product, waste is produced in any sector of activity. Thus, for 2010, the situation of the distribution of waste generation by NACE activities is presented in the following table.

Table no. 1. Distribution of waste generation by NACE activities, 2010 (Kilograms per capita)

Countries	1	2	3	4	5	6	7	8	9	10
European Union	47	1469	565	184	329	1715	222	50	437	5017
Belgium	21	156	1315	111	1328	1547	468	147	538	5630
Bulgaria	84	20311	447	1086	80	11	126	13	477	22635
Czechia	11	11	401	147	319	893	103	65	318	2268
Denmark	34	4	280	171	578	566	37	614	640	2923
Germany	3	300	599	111	426	2336	224	3	444	4446
Estonia	83	4846	2791	4908	209	328	144	639	323	14270
Ireland	22	481	715	73	746	353	31	1542	379	4344
Greece	0	4028	444	992	87	188	127	0	467	6333
Spain	125	681	354	50	206	815	217	7	498	2953
France	21	16	333	15	230	4022	387	0	452	5478
Croatia	3	7	148	25	519	2	5	27	0	735
Italy	5	12	606	45	352	1001	79	28	548	2676
Cyprus	156	460	159	4	33	556	205	1	1288	2861
Latvia	32	0	179	12	58	10	6	86	331	714
Lithuania	147	2	855	12	86	115	22	154	407	1801
Luxembourg	5	36	1711	4	408	17490	423	25	493	20597
Hungary	49	9	313	272	132	407	160	45	286	1674
Malta	7	136	22	0	32	2384	322	0	361	3264
Netherlands	282	11	848	77	470	4698	356	2	547	7291
Austria	66	32	354	54	486	2502	1492	57	553	5596
Poland	16	1618	752	533	358	547	86	27	234	4171
Portugal	7	25	259	28	175	122	93	65	515	1290
Romania	30	8762	380	291	52	36	142	1	255	9949
Slovenia	69	6	739	678	48	737	291	0	355	2922
Slovakia	97	31	495	163	136	331	127	41	319	1741
Finland	517	10227	2836	269	419	4595	1	276	313	19454
Sweden	33	9493	834	158	315	1000	195	86	431	12545

Source: own processing according to data published by Eurostat (2021)

Legend:

- | | |
|---|--|
| 1 – Agriculture, forestry and fishing | 6 – Construction |
| 2 – Mining and quarrying | 7 – Services (except wholesale of waste and scrap) |
| 3 – Manufacturing | 8 – Wholesale of waste and scrap |
| 4 – Electricity, gas, steam and air conditioning supply | 9 – Households |
| 5 – Water supply; sewerage, waste management and remediation activities | 10 – All NACE activities plus households |

For 2010, for all NACE activities plus households, generation of waste in kilograms per capita has high values for: Bulgaria (22635), Luxembourg (20597), Finland (19454), Estonia (14270), Sweden (12545). The economic activity for which the generation of waste in kilograms per capita is the highest is mining and quarrying. The countries with the highest quantities of this kind generated per capita are: Bulgaria (20311) and Finland (10227). The construction sector also generates large amounts of waste in Luxembourg (17490). Another activity with high values is electricity, gas, steam and air conditioning supply. Bulgaria (1086) and Estonia (4908) are the countries with the highest amounts of waste for this economic activity. For manufacturing, the highest values per capita are recorded in: Finland (2836), Estonia (2791), Luxembourg (1711), Belgium (1315). In Austria, services (except wholesale of waste and scrap) generate the highest amount in the field (1492). Also water supply; sewerage, waste management and remediation activities generate in Belgium 1328 kilograms per capita. For wholesale of waste and scrap, high quantities are generated in: Ireland (1542), Estonia (639), Denmark (614), Finland (276), Lithuania (154), Belgium (147). The agriculture, forestry and fishing sectors also contribute to waste generation. The countries with the highest values for this sector are: Finland (517), Netherlands (282), Cyprus (156), Lithuania (147),

Spain (125). For households, high values are recorded in: Cyprus (1288), Denmark (640), Austria (553), Italy (548), Netherlands (547), Belgium (538), Portugal (515).

For the European Union, in 2010, the distribution of the average quantities generated by the main economic activities is given in the figure no. 1.

It is observed that the highest average amount of waste generated is for the construction sector (1715), followed by mining and quarrying (1469) and manufacturing (565). The lowest quantities are generated by agriculture, forestry and fishing (47) and wholesale of waste and scrap (50).

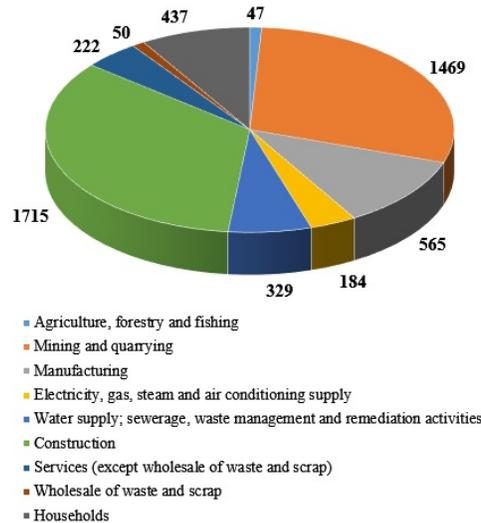


Figure no. 1. Distribution of average quantities generated by the main economic activities, 2010

Source: own processing according to data published by Eurostat (2021)

For 2018, the situation of the generation of waste by NACE activities distribution is presented in the following table.

Table no. 2. Distribution of waste generation by NACE activities, 2018 (Kilograms per capita)

Countries	1	2	3	4	5	6	7	8	9	10
European Union	45	1391	552	175	514	1870	216	25	425	5212
Belgium	39	3	1475	69	1382	1983	424	115	428	5917
Bulgaria	44	15213	362	1848	387	27	108	33	448	18470
Czechia	13	8	479	48	468	1091	115	54	350	2626
Denmark	65	2	176	191	277	2071	317	0	604	3702
Germany	12	107	682	114	580	2717	211	19	450	4891
Estonia	105	5166	3305	5666	570	1659	627	27	415	17539
Ireland	61	407	708	31	307	391	641	0	327	2874
Greece	45	2395	499	322	256	213	79	9	429	4248
Spain	134	504	293	70	518	814	120	8	485	2945
France	20	21	335	22	391	3587	291	1	444	5113
Croatia	135	163	120	18	171	308	113	11	316	1355
Italy	6	22	470	38	698	1007	84	32	499	2855

Countries	1	2	3	4	5	6	7	8	9	10
Cyprus	23	175	430	2	120	1211	241	0	444	2646
Latvia	69	1	199	23	115	161	52	1	300	920
Lithuania	105	41	941	53	419	221	194	47	505	2527
Luxembourg	14	7	1022	12	571	12041	846	2	313	14828
Hungary	46	18	268	211	216	624	128	87	281	1879
Malta	25	83	54	1	251	4075	301	0	382	5173
Netherlands	272	4	813	89	497	5900	345	7	502	8429
Austria	16	6	646	57	276	5529	373	25	499	7428
Poland	11	1694	785	495	643	446	254	40	243	4612
Portugal	6	3	294	17	343	136	135	106	507	1546
Romania	30	9172	413	350	106	33	116	1	215	10435
Slovenia	30	7	801	466	139	323	1883	5	310	3964
Slovakia	97	50	627	179	280	99	468	63	414	2277
Finland	0	17418	1554	227	620	2849	168	36	369	23243
Sweden	95	10177	508	187	732	1217	209	59	429	13628

Source: own processing according to data published by Eurostat (2021)

Legend:

- | | |
|---|--|
| 1 – Agriculture, forestry and fishing | 6 – Construction |
| 2 – Mining and quarrying | 7 – Services (except wholesale of waste and scrap) |
| 3 – Manufacturing | 8 – Wholesale of waste and scrap |
| 4 – Electricity, gas, steam and air conditioning supply | 9 – Households |
| 5 – Water supply; sewerage, waste management and remediation activities | 10 – All NACE activities plus households |

For 2018, for all NACE activities plus households, generation of waste in kilograms per capita has high values for: Finland (23243), Bulgaria (18470), Estonia (17539), Luxembourg (14828), Sweden (13628), Romania (10435). The economic activity for which the generation of waste in kilograms per capita is the highest is mining and quarrying. The countries with the highest quantities of this kind generated per capita are: Finland (17148), Bulgaria (15213) and Sweden (10177). The construction sector also generates large amounts of waste in Luxembourg (12041). Another activity with high values is electricity, gas, steam and air conditioning supply. Bulgaria (1848) and Estonia (5666) are the countries with the highest amounts of waste for this economic activity. For manufacturing, the highest per capita values are recorded in: Estonia (3305), Finland (1554), Belgium (1475), Luxembourg (1022). In Slovenia, services (except wholesale of waste and scrap) generate the highest amount in the field (1883). Also water supply; sewerage, waste management and remediation activities generate in Belgium 1382 kilograms per capita. For wholesale of waste and scrap, large quantities are generated in: Belgium (115) and Portugal (106). The agriculture, forestry and fishing sectors also contribute to waste generation. The countries with the highest values for this sector are: Netherlands (272), Croatia (135), Spain (134), Lithuania (105), Estonia (105). For households, high values are recorded in: Denmark (640), Portugal (507), Lithuania (505), Netherlands (502).

Compared to 2010, in 2018, the amount of waste generated per capita increased in: Finland (+3789), Estonia (+3269), Malta (+1909), Austria (+1832), Netherlands (+1138), Sweden (+1083), Slovenia (+1042). For

the same period, the amount of waste generated per capita decreased in: Luxembourg (-5769), Bulgaria (-4165), Greece (-2085), Ireland (-1470), France (-365), Cyprus (-215).

For the European Union, in 2018, the distribution of the average quantities generated by the main economic activities is given in the following figure:

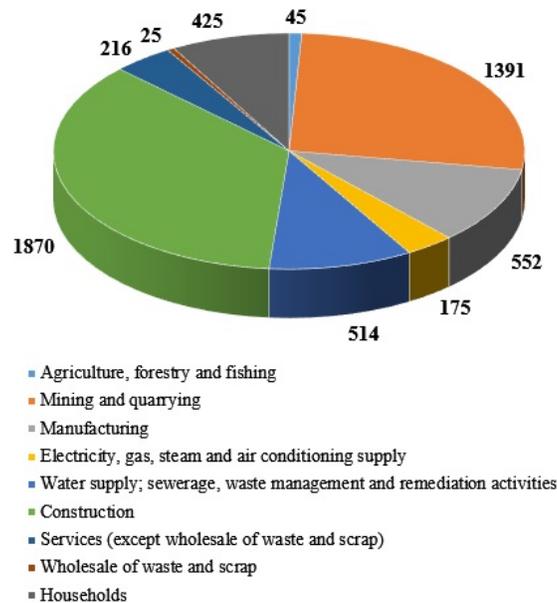


Figure no. 2. Distribution of average quantities generated by the main economic activities, 2018

Source: own processing according to data published by Eurostat (2021)

It is observed that the highest average amount of waste generated is for the construction sector (1870), followed by mining and quarrying (1391) and manufacturing (552). The lowest quantities are generated by wholesale of waste and scrap (25) and agriculture, forestry and fishing (45).

The search for solutions for waste disposal has become more and more present. The decrease of natural resources, as well as the increase of the interest for the ecological issue, were among the aspects that were the basis of this approach (Noor, et al., 2020).

Conclusions

From the analysis presented, it is observed that certain sectors of activity generate a higher amount of waste. Thus, the highest amounts of waste generated per capita are recorded for the mining and quarrying sector, followed by the construction sector. The situation is similar for both years (2010 and 2018). Other sectors of activity in which large quantities of waste generated per capita are registered are: manufacturing, water supply; sewerage, waste management and remediation activities. It is also found that households also register high values. Compared to 2010, in 2018, in most member countries of the European Union, the amounts of waste generated per capita increased.

Regardless of the type of waste generated, it is important that waste management be conducted in such a way that the benefits enjoyed by the current generation and future generations enjoy (Wisnubroto et al., 2021).

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Methodological Support for the Romanian Sustainable Development in a European Context

Florin Dobre¹, Ghenadie Ciobanu², Raluca Florentina Crețu³ and Oana Matilda Sabie⁴

¹⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

²⁾ *INCSMPS, Bucharest, Atrifex University of Bucharest, Romania.*

E-mail: gciobanu01@yahoo.com; E-mail: gciobanu01@yahoo.com

E-mail: cretu_raluca@yahoo.com; E-mail: oana.sabie@amp.ase.ro

Please cite this paper as:

Dobre, F., Ciobanu, G., Crețu, R.F. and Sabie, O.M., 2021. Methodological Support for the Romanian Sustainable Development in a European Context. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 102-111
DOI: 10.24818/BASIQ/2021/07/013

Abstract

The complex transformations of the last three decades of socio-economic evolution, the confrontations with multiple economic, social, ecological, cultural, educational problems require today new approaches, visions, strategies and policies for sustainable development. Ensuring smart and inclusive growth, priorities are important at the global, regional, national and local levels. New theoretical and methodological approaches to economic activities at the microeconomic level / small and medium enterprises, large enterprises and corporations needed. In this article, we review the interdisciplinary approach on the law of entropy, the theory of value-entropy, the approach of the nature-society-man system in sustainable development. We propose the introduction of the “auto poetry” model that combines ideas of synergetic, evolutionary epistemology, constructivism and represents a theoretical basis for the study of processes at different levels of organization of nature and social life. The concept of autopoiesis acts as a natural scientific basis. Knowledge formed to adapt to the environment of existence, for an efficient implementation. The application of the auto poetry model consists in the permanent capacity of constant reproduction, in maintaining the autonomy in relation to the environment, and it develops inside the synergetic paradigm.

Keywords: sustainable development, sustainable development strategy, autopoiesis model.

DOI: 10.24818/BASIQ/2021/07/013

Introduction

With the transition of national economies to the knowledge economy in several states (information-innovative) development, it became obvious the need for new theories of development, appropriate to the essence of the processes taking place in society (Sarbu, et al., 2021). Each of the spheres of society (economic, social, environmental, etc.), being an open and complex dynamic system in any aspect and at any level of manifestation (global, national, regional, local), subject to a positive or negative impact of external factors and conditions) (Radulescu, et al., 2021). Therefore, we would like to mention the objectives of the *Romanian Sustainable Development Strategy: (1) No poverty. Eradicating poverty in all its forms and in any context. It is proposed to reduce the number of citizens in severe and relative poverty in all dimensions, according to national definitions. Reducing the number of people living below the poverty line, stimulating participation in the labour market, developing the system of protection and social assistance. (2) Zero hunger. Eradicating hunger, ensuring food security, improving nutrition and promoting sustainable agriculture. Development of a sustainable and competitive agro-food sector to improve the quality of life and ensure living conditions in rural areas*

close to those in urban areas, promoting local and organic production, capitalizing on traditional and mountain products with added value. (3) *Health and well-being*. Ensuring healthy living and promoting well-being at any age. Reducing the maternal and infant mortality rate, reducing infectious and chronic diseases, preventing and treating substance abuse and mental illness. (4) *Quality education*. Guaranteeing quality education, promoting lifelong learning opportunities for all. Access of all children to early education, fair and quality primary and secondary education. (5) *Gender equality*. Achieving gender equality and strengthening the role of women and girls in society. Preventing and combating violence against women and girls, in the public and private spheres, ensuring balanced and effective participation of women - equal opportunities for leadership at all levels of decision-making in political, economic and public life. (6) *Clean water and health*. Ensuring the availability and sustainable management of water and sanitation for all. Aligning Romania with EU requirements and standards on drinking water, wastewater, and waste management and increasing water efficiency in all sectors. (7) *Access to energy*; Ensuring everyone's access to energy at affordable, safe, sustainable and modern prices. To support consumers' long-term expectations, the energy sector needs to become economically robust, advanced, technologically flexible and less polluting. (8) *Decent work and economic growth*. Promoting sustained, open, sustainable economic growth, full and productive employment. (9) *Industry, innovation and infrastructure*. Building resilient infrastructure, promoting sustainable industrialization and encouraging innovation. (10) *Reduced inequalities*. Reducing inequalities within and between countries. The strategy proposes reducing gaps, eliminating discrimination of any kind and policies for the progressive achievement of increased equality, in particular scales, wages, education and social protection. (11) *Sustainable cities and communities*. Developing cities and human settlements so that they are open to all, safe, resilient and sustainable. (12) *Responsible consumption and production*. Ensuring sustainable consumption and production models. Staged transition to a new development model by introducing elements of the circular economy, increasing resource productivity, reducing food and waste. (13) *Action in the field of climate change*. Take urgent action to combat climate change and its impact. (14) *Aquatic life*. Conservation and sustainable use of oceans, seas and marine resources for sustainable development. (15) *Earth life*. Protecting, restoring and promoting the sustainable use of terrestrial ecosystems, sustainable forest management, combating desertification, halting and repairing soil degradation and halting biodiversity loss. (16) *Peace, justice and efficient institutions*. Promoting peaceful and inclusive societies for sustainable development, access to justice for all and the creation of efficient, responsible and inclusive institutions at all levels. (17) *Partnerships to achieve the objectives*. Consolidation of means, implementation and revitalization of global partnerships for sustainable development. *The 2030 Agenda for Sustainable Development* (Ministerul Afacerilor Externe, 2020) has brought a new vision not only in terms of the essence of the objectives set, namely their universal and interconnected nature, but also in terms of implementing the objectives and monitoring them, which is based on recognizing that the success of materialization depends not only on the state actor, but also on the other actors involved, up to the citizen.

Review of the scientific literature

In the European context of sustainable development the concept of sustainable development in the European Union was introduced in the Enlarged Europe Strategy 2006 (Anon, 2019). The purpose of Romania's first sustainable development strategy in 1999 (Gladwin, et al., 1995) was to promote the continuous improvement and conservation of the well-being of the population, in correlation with the requirements of a sensitive use of natural resources and the conservation of the ecosystem. Bartelmus, (1999) argues: "Sustainable development is the globally adopted paradigm for integrating environmental and development policies. A controversial debate between "environmentalists" and "environmental economists" has led to a confusing proliferation of indicators and policy advice on sustainable development. Modern management theory is limited by a fractured epistemology author, Thomas (1995) that separates humanity from nature and truth from morality. Reintegration is necessary for organizational science to support ecologically and socially sustainable development. The author presents requirements for such a development and rejects the paradigms of conventional technocentrism and antithetical ecocentrism for reasons of incongruity. Dobrovolska (2018) in her research: "Reveals the peculiarities of modelling the paradigm of sustainable development since the

publication of the first studies on the impact of human activity on the environment to date.” The author identified three main stages of development, focusing on key objectives and tasks, through an analysis of the main documents governing activities in this field. Šlaus and Garry (2011) in “Human Capital and Sustainability” are of the opinion: “a study of sustainability must consider the role of all forms of capital - natural, biological, social, technological, financial, cultural - and complex ways in which they interact. All forms of capital derive their value, utility and application from human mental awareness, creativity and social innovation. This makes human capital, including social capital, the central determinant of resource productivity and sustainability.” This article examines the links between population, economic development, employment, education, health, social equity, cultural values, energy intensity and sustainability in the context of evolving human consciousness. According to Harrington (2016) “Sustainability” and “sustainable development” have become important concepts and objectives for science and society. Sustainability, connected to long-term desirable conditions, an activity applied to geography and other fields. However, the integrative statement of the essential concepts on which sustainability studies and applications are built is missing. The author discusses ideas, theoretical concepts, including the importance of choice, place, scale, systems, limits, change, connected concepts, and the identity of “sustainability”. According to Spangenberg (2005): “Any society described will comprise four economic, social, environmental and institutional dimensions. Each of them is a complex, dynamic entity, which self-organizes and evolves in itself, making the coupled system one of extraordinary complexity. For the sustainability of the system, the four subsystems must maintain their capacity to survive and evolve, while the interconnections of the subsystems must allow for permanent co-evolution.” Solving the problem of “adequate level of complexity” for analysis, studies, descriptions and modelling is a necessary precondition for proper analysis and to avoid wrong predictions. Kuhlman and Farrington (2010) consider that: “Sustainability as a policy concept has its origins in the 1987 Brundtland Report. That document was concerned with the tension between humanity's aspirations for a better life on the one hand, and the limitations imposed by nature on the other. The paper supports this change in the sense that: (a) it hides the real contradiction between the goals of well-being for all and the conservation of the environment; (b) risks of diminishing the importance of the size of the environment; and (c) separates social aspects from economic aspects, which are, in fact, the same. ***Instead of the concept of stability, the concept of stationarity could be used.*** In the study “Studies of economic theory and modelling”. Verger, (2013) argues that: “Industrial ecology and stationary economy can be combined in the notion of cycles: thus industries could operate in an almost closed loop if the theory of industrial ecology was followed to the end, and the economy in its more general form would not disturb the great natural and ecological cycles that allow it to subsist in terms of the stationary economy, on the contrary, it would fit perfectly into it.” Seel and Lock (2017) are stating: “When in 2015, 193 countries agreed on 17 sustainable development goals, the delegations of the nations signed a challenging agenda to pass this planet on to future generations in the next 15 years. Efforts for sustainability have not yet led to greater sustainability or less unsustainability. Despite many efforts in developing and developing countries, none of the United Nations Member States has yet achieved all the goals (GeSI, 2016).” Strange and Bayley (2008) argue that: “Local initiatives have been successfully taken to raise public awareness of the importance of their participation in waste reduction, urban renewal and other projects. The authors considered that the implementation of the principles of sustainable development was by no means simple. The key question remains whether we have made enough progress - or taken the warnings seriously enough - to properly understand and address the most important and urgent issues. There is strong evidence that the climate is changing, and forecasts indicate a proliferation of extreme events that could have catastrophic consequences for the systems on which life is built and for human societies”. Seghezze (2009) states: “Sustainability is usually seen as a guide for developing economic and social policies in balance with ecological conditions. More than two decades after the World Commission on Environment and Development (WCED) defined “sustainable development” and put the concept of sustainability on the global agenda, the concrete meaning of these terms and their suitability for specific cases remains challenged. A new conceptual framework is needed to address sustainability issues. The limitations of the WCED definition could be mitigated if viability is seen as the conceptual framework within which territorial, temporal and personal aspects of development can be openly discussed. Sustainability could be better understood in terms of “Place”, “Permanence” and “People”. The place contains the three dimensions of space, Permanence is the fourth dimension of time, and the category of People represents a fifth human dimension”. Soyer, Ozgit and Rjoub (2020) assume that economic growth contributes to

human development and social well-being by increasing employment, purchasing power and production. Sustainable development is a multi-faceted concept that could be defined in many ways. According to Jackson, the philosophy of the root and the social basis for sustainable economies differ greatly from the basis of current conventional economies. The former have various meanings (Ministerul Afacerilor Externe, 2020). Among the different perceptions of sustainable development, some consider it a possible radical philosophy to reshape the growth process and as a new concept of framing (Anon, 2012). On the contrary, other perspectives consider it to be key to making greater progress in collective social equity and also in environmental protection.

Yesterday's economists, but also today's economists are concerned with the interdisciplinary approach. As early as 1880, in SA Podolinsky's work "Human Labor and Its Relation to the Distribution of Energy" (1991), he developed the concept of social energy, the role of human labour in retention, accumulation, protection against dispersal, theft and transformation of the forms of solar energy needed to meet people's needs. Based on the concept of social energy, improvements were made in the twentieth century, including Vernadsky's teachings on the relationship of solar energy with living matter, with a great scientific influence on thinking and technology. Professor Georgescu Roegen, (1996) Romanian economist considered the founder of the school of bioeconomics, which is that production as a transformation of a constant supply of materials and energy must be subject to the law of entropy, which applies to all closed systems: entropy or the amount of inaccessible matter and energy tends to increase continuously, while the amount of available matter and energy tends to decrease continuously. Among the Romanian economists of the Romanian school, a passionate successor of the development of that school is Professor Bran (2003) with the development of the entropy value theory. In the author's opinion "Since value is the object of work of financial distribution we cannot be indifferent to the correct nature of economic theory that specifies what is and by what mechanism is obtained and managed value in the current economy" The author considers that the theory of value based on low entropy (TVE) recognizes as an objective foundation for all processes engaged in obtaining and managing value the most general laws of nature, ***the law of conservation of matter and the law of entropy.*** **The new approach of the nature-society-man system in the context of sustainable development.** In order to understand Kuznetsov, et al. (n.d.) it is necessary to mention the elements of originality¹. Identified the unanswered questions that made it impossible to close the gaps in the relationship between philosophy, mathematics, natural sciences, engineering and the humanities - between scientific and theoretical knowledge and the ability to use them correctly in the practice of developing management in nature - society - man; 2. Identified the "basic" questions, the answers to which allow, for a "legitimate reason to sew together" fragmented and disparate knowledge into a single structure of the world, allowing them to be deliberately recomposed into an integrated model Development. 3. He provided the answer to these questions in a way that shows the way to unification - a synthesis of disproportionate and therefore seemingly disparate ideas and theories between the natural sciences, engineering and the humanities. 4. Starting from the scientific and theoretical logic of thinking, perceptions that can be discovered in the new laws of nature, he managed the specific design of the system, managing the development of the system, at any level of the system nature - society - man, to transform the impossible in the possible. Iliescu (2016) states that: "The general purpose of this article is to highlight the fact that behind the sociological discourse are different formal logical substrates. One of these is given by the relations of order. It is about inferences based on these relationships. One of the specific purposes was to produce these inferences. They capture as many fragments of social reality as possible in a double aspect: static and dynamic. Another purpose was to compare the variable, understood as in the syntactic sense of the predicate logic with the sociological variable. Maturana and Varela (1980): 'the term "autopoiesis", the concept has become a paradigm, by moving to many other realms of science and by how fruitful it has proved to be. Moving from biology to cybernetics, from systems theory to social function theory, from ontology to art, "autopoiesis" has become more than just a heuristic tool; it has become a way of understanding and explaining phenomena without resorting to other layers of interpretation: a tout court paradigm".

Paper Body

According to Romania's Sustainable Development Strategy 2030, Romania is gradually adapting to a new Development Paradigm, in a defined period of globalization, increasing inequalities and increasing environmental degradation. Romania's Sustainable Development Strategy takes on the challenge and tries to help Romania travel in its transition to a more sustainable future (Profiroiu, et al., 2020). Based on the principles of the 2030 Agenda for Sustainable Development, this transition will be made as a member of a prosperous and revitalized European Union. In the field of employment we have the evolution (Bodislav et al., 2020). In 2017, according to the National Institute of Statistics (Anon, 2012) and Eurostat, the employed population was 8,670,556 people. The employment rate for the population aged 20-64 was 68.8%, of which 77.3% for men and 60.2% for women. The elderly between 55-64 years old registered an employment rate of 44.5%. The unemployment rate was 4.9%. Romania registered an employment rate among people with higher education, for the 15-64 age group, with approximately 4 percentage points higher than the EU average, respectively 87.9% compared to 84.0%. Industrial activities in Romania have been concentrated in recent years in the low-tech and medium-tech sectors (Angheluta, et al., 2019). Technological changes lead to long-term economic growth,(OECD, 1998) (Goos, et al., 2019) productivity and improved living standards. New ideas, new products and new production techniques involve the process of "creative destruction". Newly implemented technologies are destroying jobs in some industries, primarily low-skilled jobs, creating new jobs with new knowledge and skills (Ioniță, et al., 2009). Evolutionarily, the process has led to job creation, as new industries replace the old industry, workers adapt their skills to change and expand demand (Burlacu, et al., 2019). Technological changes, in conjunction with the ongoing restructuring in OECD economies, lead some to associate technology with unemployment and social suffering (Radulescu, et al., 2020). The impact of Technologies on employment at the economic level is positive provided that the mechanisms for transforming technology into jobs are not affected by deficiencies in training and innovation systems and rigidities in product, labour and financial markets (Profiroiu, et al., 2020). Economic activity becomes fundamentally knowledge-based: jobs are shifting from low-skilled to highly skilled workers; productivity and employment growth depend on the conditions for the economic dissemination of new products and processes. Labour market reforms, combined with measures that foster improvement and lifelong learning, contribute to the further development of innovation, facilitate the use of advanced technologies and allow for technical change in translation into more jobs. Large-scale policy reforms are needed Improving the contribution of technology to growth and productivity, while implementing the conditions to translate its potential into higher incomes and jobs, requires the implementation of large-scale and coherent policy reforms. In most OECD countries, current policies in this area focus too much on developing new technologies in the low-tech part of the sector's production and too little to promote technology innovation and diffusion throughout the economy. Therefore, in the table below we show the evolution, regarding employment in technology and knowledge-intensive sectors by NUTS 2 regions in EU member countries.

Table no. 1. Employment in technology and knowledge-intensive sectors by NUTS 2 regions (from 2008 onwards, NACE Rev. 2) - High-technology sectors (high-technology manufacturing and knowledge-intensive high-technology services)

GEO/TIME	2015	2016	2017	2018	2019
European Union - 27 countries (from 2020)	7,276.50	7,424.20	7,614.90	7,872.80	8,192.20
European Union - 28 countries (2013-2020)	8,765.70	8,930.50	9,160.90	9,426.60	9,844.30
European Union - 15 countries (1995-2004)	7,194.90	7,326.20	7,490.60	7,658.70	8,027.00
Euro area - 19 countries (from 2015)	5,584.30	5,702.10	5,840.70	5,990.50	6,254.50
Belgium	198.6	196.7	211.3	230.5	245.1
Bulgaria	112.8	116.1	114.8	122.6	127.7
Czechia	229.2	242	243.6	261.9	257.7
Denmark	154.5	154	143.5	146.8	157.3

Germany (until 1990 former territory of the FRG)	1,627.70	1,670.40	1,703.70	1,738.20	1,762.00
Ireland	171	179.8	183.3	181.3	187.5
Greece	85.7	90.4	93.8	105.6	116
Spain	656	656.6	706.2	699	732.2
France	1,061.90	1,065.80	1,078.10	1,105.20	1,181.60
Croatia	51.9	57.6	57.1	66.9	70.2
Italy	767.5	779.5	774.5	812.7	854.4
Cyprus	10.5	10.7	11.7	12.8	11.8
Latvija	29.5	27.9	31.8	31.9	29.8
Lithuania	30.6	33.3	33.4	40.1	44.1
Luxembourg	10.1	9.3	10.4	11.9	12.5
Hungary	196.9	223.1	211.7	233.6	257.1
Malta	11.7	12.7	12.6	12.9	14.6
Netherlands	306	335	326.8	339.3	368.9
Austria	165.7	182.5	186	179.1	171.8
Poland	487	466.8	494.1	524.9	543.2
Portugal	123	125.2	134.1	143.2	154.8
Romania	224.4	225.7	256.8	259.8	249.6
Slovenia	54.3	50.3	54.5	53.7	56.1
Slovakia	99.2	103.3	111.8	110.6	117.2
Sweden	235.5	236.8	252.7	265.9	275
Iceland	11.1	11.2	10.4	10	10.3
Norway	106.8	103.8	107.2	111.7	114.8
Switzerland	263.3	278.3	291.6	294.3	306.7
United Kingdom	1,489.20	1,506.20	1,545.90	1,553.80	1,652.10

Source: Eurostat

From this table we notice that in Romania in 2015 in the Hi-tech sector 224.4 thousand people were employed, and in 2019 it increased to 249.6. In the North-West Region from 30.8 thousand employees there was a decrease to 29.4 thousand employees, in the Central Region from 26.4 thousand a decrease to 19.3 thousand employees.

Table no. 2. Employment in technology and knowledge intensive sectors by NUTS 2 and regions (since 2008, NACE Rev. 2) - High-tech sectors (high-tech manufacturing and knowledge-intensive high-tech services)

GEO/TIME	2015	2016	2017	2018	2019
Romania	224.4	225.7	256.8	259.8	249.6
Macro region one	57.3	54.7	56.9	52.4	48.7
Northwest	30.8	30.1	29.9	31.3	29.4
Centre	26.4	24.7	27	21.1	19.3

Macro region two	30.2	30.5	26.5	27.4	30.6
NORTH EAST	21.3	20.7	15.8	18.1	22.9
South East	8.9	9.8	10.7	9.2	7.7
Macro region three	94.7	96.3	123.6	124.2	121.4
South - Muntenia	12.4	12.6	15.4	14.6	14
Bucharest - Ilfov	82.3	83.7	108.1	109.6	107.4
Macro region four	42.3	44.3	49.8	55.8	48.9
Southwest Oltenia	8.7	:	6.6	8.9	:
West	33.6	38.3	43.2	47	42.7

Source: Eurostat

The impact of technological innovation on the future of work. New digital technologies are becoming more widespread in the economy (Commission of the European Communities, 2006). Thanks to digitization, cars are becoming more and more capable of performing tasks that only people could do before. A key finding is that so far recent technological changes have had little effect on aggregate jobs, but lead to significant job restructuring. This involves three key challenges for European labour markets: **first**, digitalisation induces changes in skills requirements, and the fate of workers in changing labour markets depends crucially on their ability to keep up with change. **Second**, digitalization is not a purely technological process, but requires a process that accompanies organizational change. **Third**, digitalization comes with an increase in the share of alternative work arrangements, due to more outsourcing, standardization, fragmentation and online platforms. These alternative working arrangements involve both new opportunities and challenges.

Methodology

The autopoiesis model. The sufficient predicates of self-poetry. Autopoiesis literally means self-production and expresses the dialectical connection between the structure and function of a complex system. The term was coined by Chilean scientists Francisco Varela and his principal colleague and Professor Umberto Maturana in 1973. "An autopoietic machine is a machine organized (defined as a unit) as a network of processes for producing components that 1) through interactions and their transformations are continuously regenerated and implemented by a network of processes that produce them, and 2) form it as a concrete unit in the space in which they (components) exist, defining the properties of the topological area of their implementation as such a network. An autopoietic system (machine) is fundamentally different from an allopoietic system (machine), such as an automobile factory, which uses raw materials (components that come from outside) to build organized structures that are something other than itself. An autopoietic system is built on the principle of self-attribution, cyclical organization, it occurs by itself. *Theoretical models of organizational autonomy in biology* Authors Maturana H.R., Varela F.J. [24] claim: "Autonomy is a Greek word meaning "self-law", self-foundation (" self-grounding "), self-construction, self-closure. In mythological consciousness, similar properties have been demonstrated by deities and divine creatures. All the above does not diminish the great methodological value of autopoiesis and other purely materialistic mechanistic concepts of biological autonomy in cybernetics, systems theory, cognitology, psychology, sociology and biology, as a critical theory that gave impetus to the development of a new paradigm. **1. Bootstrap in chemistry.** Chemist George Cămpis developed a systemic concept similar to autopoiesis. He called its component - system (component - system) or system of self-modification. **2. Second-order cybernetics and "own behaviour"** In accordance with the principle of structural determination, the reaction of each autopoietic system or, in general, closed organizationally to external influences is determined by its internal structure. **3. The epistemology of constructivism and bootstrap - a model of knowledge representation** Traditional Artificial Intelligence (GOFAI - "Old - Fashion Artificial Intelligence") is based on an epistemology of correspondence or correspondence that sees knowledge as a simple reflection or "reflection" of the outside world. **4. The concept of self-organization critique.** *Fractals*

are widespread in nature and demonstrate large-scale invariance, "self-resemblance." In biology, self-similar patterns are observed at different spatial scales. But fractals are also temporal: fluctuations of a similar type can be observed at different time scales. These are heart rhythms, epidemics on small islands, the reproduction of bird populations or paleontological records of fossils.

5. Mathematics and bootstrap systems In general, none of the theorists who developed bootstrap systems - F. Varela, R. Rosen and J. Campis proposed a formal apparatus, sufficiently complete and rigorous. R. Rosen realized that the classical set theory is not applicable to the description of such systems and recommended the use of the apparatus of category theory, convenient for constructing organized relationship structures (morphisms) in a recursive way. Attempts to describe the Rosen system (M - R) and autopoetry in the language of category theory have already been undertaken.

6. Bootstrap in ecology and the theory of evolution Symbiotic relationships in the ecosystem and in the biosphere as a whole are global in nature. Moreover, relationships that, from a superficial point of view, appear to be antagonistic or competitive, in the broader context of a community or biocenosis, often prove to be symbiotic. Moreover, trophic relationships are far from basic. Symbiotic complexes in nature are semi-closed organizations, sympleiotic systems with positive feedback.

7. Biosphere. Various approaches to the systemic representation of the biosphere have been critically analyzed. It is concluded that the still popular view of the biosphere as a classical autopoietic system is not justified and, in principle, unconstructive. However, the biosphere can be attributed to bootstrap systems.

Conclusions

Rapid economic development and rising consumption levels have a serious impact on the natural environment, which can only be partially mitigated by technological solutions. Sustainable development seems to be a contradiction in terms, a paradox, which can only be fully resolved by the evolution of a higher level of human consciousness.

These challenges require appropriate policy responses at European, national and regional level, which must be implemented for education and training policies, active labor market policies, budgetary and fiscal policies and policies in the field of technological development.

Linking sustainable development with digital technologies in the form of e-health services, robotics or emission reduction solutions could help individuals, organizations and nations achieve a more sustainable planet in the light of sustainable development goals. The self-modification system is simply a collection of components that can transform each other and together form larger components.

It is assumed that each conceptual object (symbol) in the cognitive model of the subject corresponds to a physical object in the environment. The structure of the model can be considered an image, a map or a homomorphic coding of the structure of external reality. Such an epistemology of "reflection - correspondence" leads to a practical and conceptual problem, which is known as "symbol grounding": how are the symbols "rooted", the model elements in the external reality they intend to reflect? The problem cannot be solved with the model alone. This results from the principle of "linguistic complementarity", which generalizes classical epistemological restrictions.

Because fractals are associated with extensive correlations, they also reflect certain characteristics of the organization and evolution of living systems. A common feature of systems that demonstrate resemblance is the presence of large-scale functions (also known as power laws).

In the traditions of the last two or three decades, multi-level symbiotic relationships are often called bootstrapping. Such systems can have internal stability and, at the same time, are often vulnerable to specific external influences that violate the symbiotic balance.

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The Paradigm of Innovation: From the Entrepreneur to the System

Maria-Alexandra Sârbu¹, Elena Radu², Andra-Maria Ionescu³ and Cosmin Nicolae Mirea⁴

¹⁾²⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

³⁾ *Unilever South Central Europe.*

E-mail: alexandramariasarbu@gmail.com; E-mail: elena.radu2012@gmail.com;
E-mail: andramaria.ionescu@yahoo.com; E-mail: cosminnicolaemirea@gmail.com

Please cite this paper as:

Sârbu, M.A., Rădulescu, C.V., Radu, E. and Mirea, C.N., 2021. The Paradigm of Innovation: From the Entrepreneur to the System. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 112-118
DOI: 10.24818/BASIQ/2021/07/014

Abstract

Innovation makes an essential contribution to the economic and social progress of all countries, regardless their level of development. The aim of this research is to analyze Romania's national innovation system, and its objective is to identify the evolution of the innovation concept, from its emergence to the treatment of innovation at national / regional level, as a system (through the decisive contribution of OECD and EU). The paper analyzes and synthesizes the main bibliographic sources in the field of innovation, the research being quantitative, from secondary sources - analysis of statistical data provided by Eurostat and by the Romanian National Institute of Statistics, to identify the level of innovation performance in the EU and also Romania's position within the Union, based on the composite innovation index. Following the research, it can be seen that innovation, in terms of defining the term and the conceptual approach, has seen a continuous evolution, from Schumpeter's theory, which regards innovation as a source of business cycles (1939), to innovation, seen as a result of processes within a system (Miettinen, 2002). The research highlights the negative evolution of the performance of the Romanian innovative system within the EU (2019: 22.46% of Sweden's performance and 34.4% of the EU average performance), given that the horizon of the last relevant strategy (2020) has been exceeded and no other strategy has been developed yet.

Keywords

Innovation, national innovation system, innovation performance index, innovation scoreboard.

DOI: 10.24818/BASIQ/2021/07/014

Introduction

From a historical point of view, it is not possible to specify exactly when the term innovation was introduced, there are several examples that could be taken into account (at Falce, 2014). For some authors, innovation has emerged in the Middle Ages (the 13th century), when it was more associated with change, with the *creative* dimension of innovation only appearing in the 20th century (GGoa, 2008), others give Schumpeter the primacy in dealing with the concept of innovation, while other authors consider Adam Smith the first author who, even if he did not use the word innovation specifically in relation to free trade, it was the one who introduced the concept. In the contemporary period, the significance of the concept has evolved greatly, the vision of innovation becoming a systemic one, being regarded as a long-term process that, by virtue of its nature, changes the working methods and

perceptions that each individual has about their own role and interests. Globalization of research activities, collaborative networks, clusters and the role of users are just some of the new terms added to the approach that emerged in the 1990s (Goudin, 2007).

Review of the scientific literature: innovation and national innovation system

Innovation is common in all fields and is a subject of analysis and research in scientific and technical literature, social sciences (history, sociology), management and economics, humanities and arts, becoming an emblem of modern society and a phenomenon that needs to be studied (Gedin, 2008). Fagerberg, Fosaas and Sapprasert (2012) consider that innovation began to show interest during World War II, when policy makers, first in the US and then in other parts of the world, became interested in research, development and innovation, as a driver of military progress and, to a lesser extent, of the civilian sector. Analyzing an impressive number of specialized works, according to the above authors, many of the central ideas of the literature in which innovation is treated can already be found in Schumpeter's two reference works, namely: *"Theory of Economic Development"* (1912) and *"Capitalism, Socialism and Democracy"* (1942), in which innovation is described as a dynamic force that drives the continuous transformation of social, institutional and economic structures. J. A. Schumpeter (1883-1950) is one of the first great economists in the world to analyze the role of innovation in economic change in the twentieth century, which is why McCraw (2005) calls him *"the prophet of innovation"*. For Schumpeter, *"innovation is possible without anything that should be identified as an invention, and invention does not necessarily induce innovation"* (1939, p. 84) because while invention is an act of intellectual creativity and *"does not matter for analysis economic"* (p. 85), innovation is an economic decision taken by a firm in the application or adoption of an invention. Schumpeter regards innovation as a historical process of structural change and classifies it into five types: the launch of a new product; a new quality or product mix; the application of new methods of production or sale of a product; the opening of a new one; New sources of supply of raw or semi-finished materials; a new industrial structure such as the creation or destruction of a monopoly position (Śledzik, 2013, p. 90). After approx. 40 years, Barnet (1953, p. 7) defines innovation from a much broader perspective, that of cultural change: *"any new thought, behavior or thing, qualitatively different from existing forms"*. By the 1960s, innovation was already the watchword in the economic environment, being recognized at its true value. Thus, Robertson (1967) begins his study with the slogan *"Innovate or you will perish"* (p. 14), which had become a true leitmotif of the market and defines innovation as *"a process through which a new idea, a new behavior or material object appears and is transposed into reality"* (p. 19) that can be programmed, classified according to effects and influenced by opinion leaders. Innovation is also of interest to Drucker (1985) who, like Schumpeter, treats innovation in close connection with entrepreneurship: *"the specific tool for entrepreneurs, the means by which they exploit change as an opportunity for another business or a different service"* (p. 20), considering it an economic or social term, rather than a technical one, expressed more correctly in terms of demand than in terms of supply, while Porter (1990, p. 83) looks at innovation in its direct relationship with competitiveness, considering that the companies that create a competitive advantage, compared to those that cannot perceive the new way to compete, carry out, in the last resort, an act of innovation. But above all, innovation means novelty: *"an idea, practice or object that is perceived as new by an individual or other adoption unit"* (Rogers, 2002, p. 990) counting less on whether or not an idea is a new "objective", as compared to the time that has elapsed since its first use or discovery, the novelty of the idea perceived by a particular individual also determines his reaction: if the idea seems new, it is an innovation. As a conclusion of the above, technological evolution, economic and social changes take place through innovation, the ability of a society to innovate being its own mechanism for renewal and development.

Since the 70s, there has been a shift in focus, from the characteristics of companies to the systematic properties of innovation, usually characterized at national level (Wixtoe, 2009), thus creating a new concept - an innovation system. The innovation system consists of *"all the important economic, social, political, organizational and other factors influencing the development, dissemination and use of innovations"* (Edquist 1997, p. 14, op. cit. in Edquist, 2001, p. 1). By defining the innovation system, through the determinants of innovation and not through their consequences, the crucial issue becomes the identification of all important determinants, named by Edquist and activities of the innovation

system or its functions. Gradually, the *national innovation system* term became widespread among policy makers and researchers around the world (Godin, 2007; Yoon and Hyun (2009).) Despite the fact that most researchers subscribed to Nelson's definition (op. cit. 1993): "... a set of institutions whose interactions determine the innovative performance of national firms", others describe the national innovation system as "... *elements and relationships that interact in the production, dissemination and use of new knowledge and economically useful ... and which are either located inland or rooted within the borders of a nation-state*" (Lundvall, 1992, op. cit in Yoon and Hyun, 2009, p. 2), focusing on the role of spreading innovation. Analyzing the innovation system, Carlsson (2006, p. 65) finds that there is little evidence of the globalization of innovation systems, as long as most studies focus on national innovation systems and their effects at the regional level are not further analyzed. Lundvall (2007), who considers that the core element of the innovation system - interactive learning - is problematic at regional level, much of the interaction taking place at national / international level, rather than at regional level.

Despite the above statements, in 2007, based on the premise that strong innovation, together with new international partnerships, can help address global issues, OECD ministers acknowledged the need for an intergovernmental policy that harnesses the potential of innovation as a driver mainstay of productivity, generating growth and economic development. As a result, *the Innovation Strategy* was launched in 2010, revised in 2015 (OECD Innovation Strategy 2015). Also the OECD, together with Eurostat and supported by UNESCO, the World Bank and other regional development banks supporting innovation investment, published the fourth edition of the *Oslo Manual* in 2018 (first edition in 1992) where there is a clear gap between the outcome of the innovation process (innovation) and related activities (innovative activities).

Research methodology

The purpose of this research is to study the innovation concept, its evolution during time and to analyse the E.U's and Romania's innovation systems. In order to analyse the innovation systems we have studied the overall performance of innovation in the E.U member states, finding out which countries are strong, moderate and modest innovators using the innovation index of the E.U member states. Romania's innovation system was studied in terms of the number of Innovative enterprises, by activity and size classes. In order to find out the level of innovation performance we have examined the statistical data provided by the Romanian National Institute of Statistics and by Eurostat.

The U.E. innovation system

In 2000, the Council of Europe launched the Lisbon Strategy, as an action and development plan by 2010, with the stated aim of transforming the EU in "*the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth, with more and better jobs and greater social cohesion*" (European Council, 2000). However, Lundvall (2007) highlighted some errors that were made at European level:

- emphasis on reference policies and components of innovation systems, in order to generalize "best practices", without understanding the meaning of the concept of "*system*", in which good practice cannot be copied or translated from a national system to another, with the expectation of producing the same effects, abstracting from performance, characteristics, culture, conjuncture, internal and external environment, etc., a fact reported long ago by Deming (1980);
- innovation policy efforts at national and European level have been based on the narrow definition of the innovation system, where the emphasis has been on innovation based on scientific progress, while "interactive learning" within and between companies operating in low-tech sectors has not been reflected in the development of European innovation policy etc. (pp.6-7).

In full agreement with Lundvall, and Kreek (2013), it shows that perhaps the greatest failure of the Lisbon Strategy is that the EU economy has failed in its goal of becoming "*the most dynamic and*

competitive knowledge-based economy in the world". As a result, in 2010, the European Commission set out a new set of objectives leading to an "Innovation Union" by 2020 (Europe 2020).

The radiography innovation system of the EU at the level of 2019 is presented in the *European Innovation Scoreboard 2020*, which shows that between 2012 and 2019, South Korea (which is in 2019 the EU's innovative performance by 38%), Canada and Australia have a score of performance (calculated as a composite index) higher than the EU, and Japan, which in 2012 was below the EU level, is now in a higher position. However, the EU maintains its superior position compared to the USA, China (despite the most significant increase between 2012 and 2019 compared to all countries), Brazil, Russia, South Africa and India (Figure no. 1).

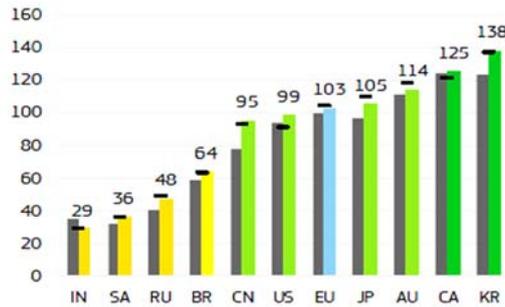


Figure no. 1. The overall performance of innovation in the EU

Source: *Hollanders, H., 2020, p. 6.*

The legend of the coloured columns: gray – 2012; various – 2019; Horizontal black lines- 2018

Despite the reduction in the level of performance by the UK leaving the EU, between 2012 and 2019, the performance score of the EU increased by 8.9 percentage points (*Hollanders, 2020, p. 6, p. 18*), with innovation performance increasing in 24 of the 27 EU member states, with the largest increases being recorded in Lithuania (+ 27.8%), Malta (+ 24.7%), Latvia (23.3%), Portugal (21.5%) and Greece (20.7%) and only in three countries decreased: Germany (-0.4%), Romania (-5.7%) and Slovenia (-9.9%) - Figure no. 2.

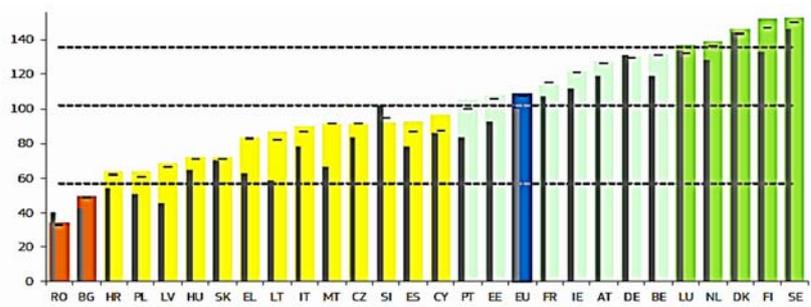


Figure no. 2. The performance of innovation systems in EU Member States

Source: *Hollanders, 2020, p. 7.*

National innovation performance systems are calculated on the basis of 27 indicators that capture 10 dimensions of innovation, according to which EU countries are classified into four categories: **innovation leaders** - they are above the EU average: Sweden, Finland, Denmark, Netherlands and Luxembourg; **strong innovators** (above or close to the European average): Belgium, Germany, Austria, Ireland, France, Estonia and Portugal; **moderate innovators** (below average): Cyprus, Spain, Slovenia, Czech Republic, Malta, Italy, Lithuania, Greece, Slovakia, Hungary, Latvia, Poland and Croatia and **modest innovators**: Bulgaria and Romania, also below the European average - Figure 2. We can notice that the first two categories include the countries of Western and Northern Europe, and in the last two, the vast majority of the countries belong to the Eastern and Southern Europe. The analysis highlights a fairly high level of concentration on the performance of national innovation systems, without a real convergence of regions within the EU, which imposes the need to develop and

implement an innovation-based growth model for the last two categories of countries. It should be emphasized that the *European Innovation Scoreboard 2020* presents and analyzes not only the individual performance of Member States' national innovation systems, but also of the innovation system across the European Union, based on each indicator. As a result of the Coronavirus pandemic triggered in 2019, only a one-year forecast (2020) could be made, by half-extrapolating the results of the linear regression, respectively continuing the trend of increasing innovation performance for most indicators by 3.2 percentage points (2020/2019) and by 12% compared to 2012 (Hollanders, 2020).

As a conclusion of the above, 13 countries in the European space are included in the category of moderate innovators and two countries - Romania and Bulgaria - in the category of modest innovators, which means that 55.6% of EU countries are in the performance of innovation system, below the European average, the last countries with a big difference compared to the absolute leader: Romania is at 22.46% of Sweden's performance, and Bulgaria at 32.3% - Figure no. 3. As a result, we believe that sustained efforts are needed at both national and European level, by stimulating countries that are below the European average, in order to raise the performance and global competitiveness of the EU and achieving European strategic objectives.

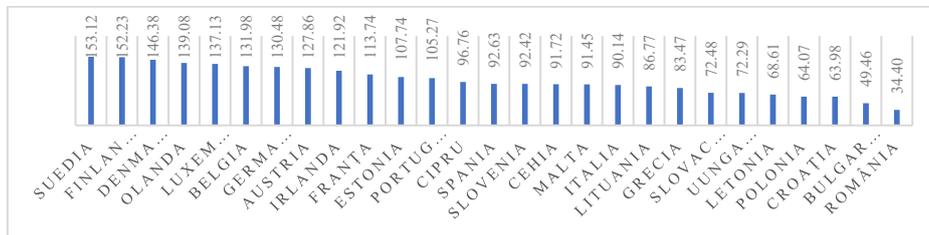


Figure no. 3. Innovation index in EU member states

Source: statistical data processing of the *European Innovation Scoreboard 2020*. Available at: https://interactivetool.eu/EIS/EIS_2.html# [Accessed on: 28.01.2020].

Romania's innovation system

After 1989, the research and development activity experienced a chronic underfunding, which generated a permanent decline materialized in the low quality of the infrastructure, the drastic decrease of the number of researchers (reduced salary attractiveness, young researchers leaving the country, etc.), in parallel with the increase of the average age, and reorganizations and privatizations in the economy have led almost to the disappearance of research and development at the organization level (National Strategy for Research, Development and Innovation for 2007-2013). In the perspective of Romania's accession to the EU in 2007, in order to ensure coherence with specific policy documents at community level, the Romanian Government adopted, in 2006, *the National Strategy for Research, Development and Innovation for the period 2007-2013* which, in addition to contributing to the institutional administration of research and development activities, innovation, also provided a number of objectives, including: increasing scientific production, internationalization and development of domestic human capital in research, as a result of a substantial increase in public funding of research and technological development. The evaluation of 2011 and the impact study of 2015 resulted in a number of shortcomings, including: undersizing of the research and development sector, insufficient number of researchers; lack of human capital in the development of areas and for innovation and interdisciplinary research; decrease in the number of researchers in the business environment; the reluctance of multinationals in the development of local research centers; limited intra- and intersectoral mobility, with a negative impact on the spread of innovation and the circulation of technical knowledge and innovation; the weak connection of the research-development activity with the business environment; difficult access of the private environment to public research infrastructure, insufficient funding of research and development (amounts spent per capita are 20 times lower than the European average, etc.), the conclusion being that „*innovation is not a central factor of economic and social development in Romania*” (Romania's National Strategy for Research, Development and Innovation for the period 2014-2020, p. 6).

Despite the above shortcomings, in 2012, the performance of Romania's innovation system stood at the highest level, which continued to decline until 2019 - Figure no. 2. As can be seen from Table no. 1,

the largest number of innovative enterprises was registered in 2008, growing steadily since 2002, after which it started to decrease steadily until 2016, in 2018 there is a return of innovative activity on all enterprises, but without reaching level of 2012, taken as a reference in the latest European Innovation Scoreboard. The same evolution is registered also in the structure, with the mention that the highest number of innovative enterprises is registered in the category of small enterprises (53.65% in 2002 and 71.98% in 2018), at the opposite pole being the large enterprises (16.64 % in 2002 and 8.36% in 2018). If in 2002, the innovative enterprises in Romania represented 17% of the total enterprises, in 2008 their share increased to 33.3%, so that in 2018 to reach below the level of 2002, respectively 14.6%. From 2002 to 2006, the main share in innovative enterprises was held by the innovative product and process, and since 2008, the main share was held by enterprises with marketing and/or organizational innovation (until 2008 there are no statistics available for this type of innovators), a situation that will continue until 2018.

Table no. 1. Innovative enterprises in Romania, by activity and size classes

Activities	Size classes	Number of enterprises								
		2002	2004	2006	2008	2010	2012	2014	2016	2018
Total	Total	3.983	5.171	6.013	9.986	8.116	5.968	3.645	2.925	4.198
-	Small	2.137	2.851	3.523	6.797	5.613	4.089	2.527	2.059	3.022
-	Medium	1.183	1.597	1.836	2.388	1.874	1.400	786	643	825
-	Large	663	723	654	801	629	479	332	223	351

Source: National Institute of Statistics. Innovation. Available at: <http://statistici.insse.ro:8077/temp-online/#/pages/tables/insse-table>

In 2014, with the end of the strategy's time horizon, a new strategy was adopted for the next period - 2014-2020 - which, according to the above analysis, began to take effect only in 2018 (latest data statistics available on the website of the National Institute of Statistics of Romania), a fact also confirmed by the *Romania's Country Profile* in the European Innovation Scoreboard, 2020. The new strategy was developed in correlation with cohesion policies, taking into account the European strategy Europe 2020 and its main instrument - Horizon 2020. In the European innovation landscape, Romania ranks last in most dimensions of innovation: the last place at: *Human resources*; *Innovators* (continuously declining since 2012), *Business investments*, *Intellectual assets*, *Impact on employment*; position 26 of the 27 member states in *Attractive Research Systems*; position 25 in *Cooperation*; 23rd place in the *Favorable Innovation Environment*; the 22nd place in the *Financing and Support dimension* and the best position in the *Impact on sales* - the 20th position among European countries, followed by: Malta, Poland, Portugal, Lithuania, Latvia, Bulgaria and Croatia. According to the country profile, Romania's lowest scores are recorded on the indicators: *Lifelong learning*, *SMEs with product or process innovations*, *SMEs with marketing or organizational innovations* and *internally innovative SMEs*.

Conclusions

Although *Romania's National Research, Development and Innovation Strategy for the period 2014-2020* was based on building a "broad partnership for innovation" (p. 7) which, through coordination and integration within the research-development-innovation system, to allow long-term commitments on ensuring resources, predictability and credibility of the public-private partnership and which, in the end, will lead to raising Romania's performance and convergence towards the EU average, the results did not live up to expectations. Romania of 2019 has a very small improvement and is, at most indicators analyzed, below their level in 2012. *The innovation-friendly environment* and the *Impact of sales* are the most favorable dimensions of innovation, the weakest are *Innovators*, *Business Investments* and *Human Resources*, and *Broadband Internet penetration* and *Exports of medium and high technology products* are the only indicators that approach the EU performance average. Increasing the performance of Romania's innovation system requires action on two levels: concerted support from both the EU, aimed at countries with national innovation systems that perform below the European

average, but also nationally, through sustained measures to support and stimulate research-development-innovation activity. If from the EU it can be said that the answer was received by allocating 2.5 million Euros, in cooperation with the World Bank, for providing expertise in two cooperation and innovation projects in the regions and cities of Romania, within *Catching up Regions* initiative, Romania's action is still awaited: although the time horizon of the last strategy has been exceeded, a new Romania strategy in the field has not been launched in 2021 either, despite the fact that innovation is a safe investment in Romania's competitive development, in the context of the European and global economy.

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Big Changes Start with Small Steps – Understanding Europeans’ Attitudes towards H&S diets

Cristina-Andreea Nicolae¹ and Mihai Ioan Roşca²

¹⁾²⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: nicolaeandreea20@stud.ase.ro; E-mail: mihai.rosca@mk.ase.ro

Please cite this paper as:

Nicolae, C.A. and Roşca, M.I., 2021. Big Changes Start with Small Steps – Understanding Europeans’ Attitudes towards H&S diets. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleşea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 119-125

DOI: 10.24818/BASIQ/2021/07/015

Abstract

The global food system, from production to consumption and waste, places the heaviest burden on Earth’s shoulders, threatening both the natural ecosystem and the health of people. Changing our current dietary patterns is paramount and urgent, considering the worsening of existing environmental issues. Sustainable diets must become commonplace across society. The main role of this paper is to improve current knowledge regarding the attitudes of European citizens towards food and the concept of healthy and sustainable diets. The main variables analyzed are food purchasing behaviour, consumption of healthy and sustainable diets and main factors influencing the adoption of healthy eating behaviours. The data analysed is collected under the 2020 Special Eurobarometer survey, developed by the European Commission. The study found that overall respondents are willing to adopt healthier diets for them and the environment. At the same time, some important barriers need to be addressed first in order for real changes to happen. Results also highlighted important differences between countries, based mostly on their socio-economic context and reported eating behaviours. This study might serve as a starting point for further research on the subject and can guide both marketers and practitioners in the food industry who want to make sustainable diets more appealing to the general public. This paper also contributes to the latest research on food consumption behaviour during the COVID-19 pandemic.

Keywords

Sustainability, food consumption, healthy and sustainable diets.

DOI: 10.24818/BASIQ/2021/07/015

Introduction

Current global environmental concerns such as global warming, pollution or biodiversity loss are worsening on a daily basis, threatening life on Earth. For this reason, mankind must take a series of important and urgent measures. Although, many actions still cannot be fully controlled by humans, there are some small, daily habits that can have a significant positive impact on the environment. Believe it or not, some of these habits are related to our daily food consumption behaviour. If there is one thing that humans can do now to help the Earth, it is adopting a healthy and sustainable (next H&S) diet. Therefore, it is both urgent and mandatory that people change their current diet choices if we want to help preserve natural resources and ensure life on Earth for future generations. At the moment, the global food system, from production to consumption and waste, has a major negative impact on the environment, the health of society and food safety.

Considering that food production is the largest cause of global environmental change (Willett, et al., 2019), as well as the rapid transformations in food systems and diets driven by agricultural

developments, rising incomes, and increased urbanization (Heller, et al., 2020), it is vital to understand the current perceptions of citizens towards sustainability and the popular topic of H&S diets. Therefore, the main objective of this paper is to examine the public attitudes on food consumption and sustainability in Europe, highlighting key differences and similarities between European Union member states. This study looks at current food purchasing behaviours, consumption of H&S diets and main factors influencing the adoption of healthy eating behaviours for European citizens, considering at the same time the current pandemic context. The data analyzed is from the Special Eurobarometer Survey 505, entitled “Making our food fit for the future – Citizens’ expectations” (2020). The study reveals some promising results regarding the frequency of H&S diets consumption among European citizens. However, cost and availability remain the most important barriers in adopting sustainable food options in Europe. The influence of socio-economic context and gender on food consumption habits is also relevant.

The current study is organized into four sections. First section presents a review of the scientific literature on the topic of H&S diets and sustainable consumption. The second section establishes the research methodology while the third section discusses the main findings and results of the data analysis. The last section is for conclusions.

Review of the scientific literature

Sustainability can be achieved through the food we choose to consume daily. Gussow and Clancy introduced the term of H&S diets in 1986, arguing that encouraging food sustainability and environmental protection are critical to promoting healthy eating behaviours for humanity (Gussow and Clancy, 1986). To understand what a sustainable diet means, the agricultural, environmental, social, cultural, and economic determinants and effects of the food eaten as well as the nutritional value should be considered (Johnston et al., 2014).

As shown in Figure 1 below, H&S diet is a very complex term. Therefore, definitions vary considerably. According to Springmann et al. (2018), the concept of sustainable diets combines the challenges of creating a food system that supplies healthy diets for a growing population while reducing its environmental impacts and staying within planetary boundaries, while Johnston, et al. (2014) concluded that sustainable diets present an opportunity to successfully advance commitments to sustainable development and the elimination of poverty and food insecurity. To put it simply, sustainable food consumption refers to a type of diet that is healthy for both humans and the natural environment, having a minimal impact on Earth’s natural resources. At this stage however, definitions are multiple and there is no unanimous agreement of just what such a diet might look like on a plate (Garnett, 2014).



Figure no. 1. The key components, determinants, factors, and processes of a sustainable diet
 Source: Johnston, et al., 2014, p.421

Previous consumer studies have investigated the factors that determine organic food consumption, as well as main barriers to sustainable consumer behaviour, including the understudied attitude-behaviour

gap. On one hand, some researchers have highlighted that overall consumers have started to pay more attention to what goes on their plates and some of them are willing to pay more for sustainable food products, that come from reliable sources or through environmentally friendly agricultural practices (van Doorn and Verhoef, 2011). Interestingly, some specialists went even further to suggest that consumers' concerns towards climate change have determined a radical shift in their diets and food preferences. To give a clear example, one recent online survey of British adults confirmed that respondents are aware of the relationship between food and the environment and are engaged with sustainable diet recommendations (Culliford and Bradbury, 2020). Recent research has also claimed that one of the most important consumer contributions, along with other actions such as recycling, favouring locally sourced foods, or reducing food waste, could be the transition towards a plant-based and low-meat diet, as meat has been identified the most environmentally harmful from all food products (Voinea, et al., 2020).

On the other hand, there are other studies that tend to contradict these findings. For instance, although consumption patterns may be changing, when looking at the latest obesity report across Europe results are not very promising. The GBD study estimates that, in the European Union in 2017, over 950.000 deaths were related to unhealthy diets (The Lancet, 2017), while a recent body mass index (BMI) report revealed that more than half of the European population is overweight and obese (Marques, et al., 2018). Another issue is that public awareness about the environmental impact of food production and consumption – especially when it comes to people's own food choices – is insufficient and must be increased (BEUC, 2020).

When it comes to sustainable eating, it is worth highlighting the main barriers that can hinder such behaviour. For example, Eker, et al. (2019) argued that consumers resist diet change due to reasons such as taste preferences and traditions, a lack of awareness about the link between climate change and food consumption, or ideological beliefs about human-animal relations. Furthermore, one study from the European Consumer Organisation highlighted that consumers tend to underestimate the environmental impact of their own eating habits and confirmed that price, lack of information and the challenge of identifying sustainable food options as well as their limited availability are the main perceived barriers to sustainable eating (BEUC, 2020, p. 4). At the same time, everyday consumption practices are likely to be resistant to change (Vermeir and Verbeke, 2006).

All in all, it can be concluded that while situational and product-related factors and people's eating motives (e.g., concern about health and reducing meat consumption) can facilitate environment-related food choices, other individual characteristics or eating motives (e.g., hedonic pleasure and meat consumption) can impede more environment-friendly food choices (Siegrist, et al., 2015).

Research methodology

The data analysed is collected under the 2020 Special Eurobarometer survey "Making our food fit for the future – Citizens' expectations", developed by the European Commission. The survey was carried out in 2020 in all 27 European Union member states resulting a total sample of 27.237 respondents. Due to the COVID-19 pandemic, both face-to-face and online interviews were used as a research method. The variables analysed are European citizens' food purchasing behaviours, frequency of H&S diets consumption and the most important factors that influence H&S diets adoption. The data set was analysed using SPSS software.

Results and discussion

In order to assess food purchasing behaviour across Europe, respondents were asked to rank the top 3 most important factors when buying food from a list of 10 items. The top 3 most common answers among European citizens are taste (45%), food safety (42%) and cost (40%). In contrast, only around 1 in 10 respondents consider whether the item complies with their own beliefs and ethics (e.g. in terms of religion, animal welfare or fair payment of producers) (16%) or the impact of the item on the environment and climate (15%) when shopping for food. It can be argued that Europeans emphasize personal factors such as taste, the safety of the food and the cost over sustainability concerns such as the

environmental impact when buying food. Other factors mentioned by respondents are the origin of the food (where it comes from) (34%) and its nutrient content (33%). On the other hand, convenience was the least mentioned answer (9%).

When comparing results between countries, cost is more likely to be mentioned in middle income countries, such as Portugal (70%), Lithuania (61%), Latvia (60%) and Bulgaria (59%). By contrast, it is less mentioned in higher income countries (below European average of 40%), such as Italy (31%), Austria (31%), Germany (32%) and Luxembourg (32%). Although there are some differences between countries, cost was in the top 3 most mentioned answers in 19 countries. These findings add to the body of evidence that cost and affordability are important determinants in influencing people’s food choices (Barosh, et al., 2014, p. 10). Another possible explanation might be the current pandemic context, as the shopping behaviour of consumers has shifted a lot, moving towards cheaper food options.

Sustainable factors, such as the item’s impact on the environment, are the most mentioned answer in countries with high environmental awareness like Sweden (27%), Denmark (23%), Germany (23%) and the Netherlands (22%). By contrast, only 3% of Lithuanians and 4% of Latvians said they consider the item’s environmental impact when purchasing foods. When looking at another sustainability aspect, ethics and beliefs, results vary considerably between countries. For example, citizens living in Germany (31%), Denmark (30%) and Austria (30%) are almost 3 times more likely to mention this answer compared to people living in Cyprus (4%), Malta (5%) and Portugal (5%). It can be concluded that countries with high level of environmental awareness are more likely to state environmental sustainability as an influence on their food purchasing behaviour.

Next respondents were questioned about their current understanding of sustainable diets by looking at the frequency of H&S diets consumption. Using a 5-point Likert scale (always, most of the time, from time to time, never and don’t know), respondents were asked to state whether they eat a H&S diet. As observed in Figure 2 below, more than 65% of European citizens stated that they eat a H&S diet either always (10%) or most of the time (56%). Less than 1 in 10 Europeans said that they have never eaten a H&S diet (7%). These are promising results, in line with previous findings in the literature (BEUC, 2020).

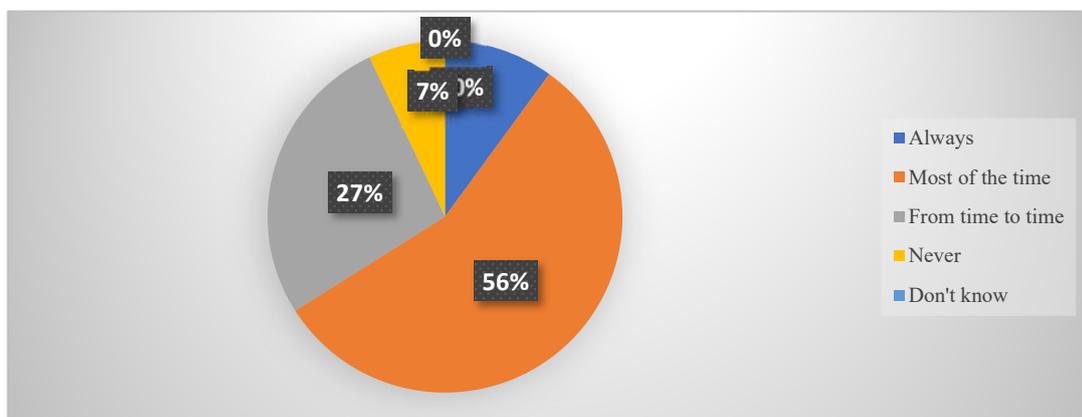


Figure no. 2. Consumption of H&S diet across Europe

It is worth highlighting that there are significant differences between countries. For instance, people living in the Netherlands (83%) and Finland (81%) are two times more likely to eat a H&S diet always or most of the time compared to those living in Lithuania (46%) and Bulgaria (32%). There are some possible explanations for these variations. For instance, the organic food market is more developed in Nordic and Western countries compared to the Eastern and Baltic side of Europe. This factor combined with the high purchasing power of higher income countries may result in higher sustainable consumption levels.

Interestingly, around 2 in 10 citizens from France (26%) and Bulgaria (20%) have mentioned they have never eaten such a diet. At the other end of the scale, the only two countries where no respondents declared they have never eaten a H&S diet are Sweden and the Netherlands.

However, it is difficult to compare these findings considering that food choices are dependent on particular combinations of ecological, economic and cultural factors that have developed over time (de Boer, et al., 2006, p. 272). Moreover, what constitutes a H&S diet for one culture might mean something different for another culture, considering that food practices communicate who we are in several ways and can be a symbol of personal identity, group affiliation, and cultural identity (Monterossa, et al., 2020, p. 63).

When comparing these findings across gender, as seen in Figure 3 below it can be argued that women tend to eat a H&S diet more often than men, at least at declarative level (60% vs. 70%). Previous consumer studies confirmed that ethical consumption habits are generally considered to be more feminine which could lead to males disregarding these behaviours (Culliford and Bradnury, 2020, p. 10).

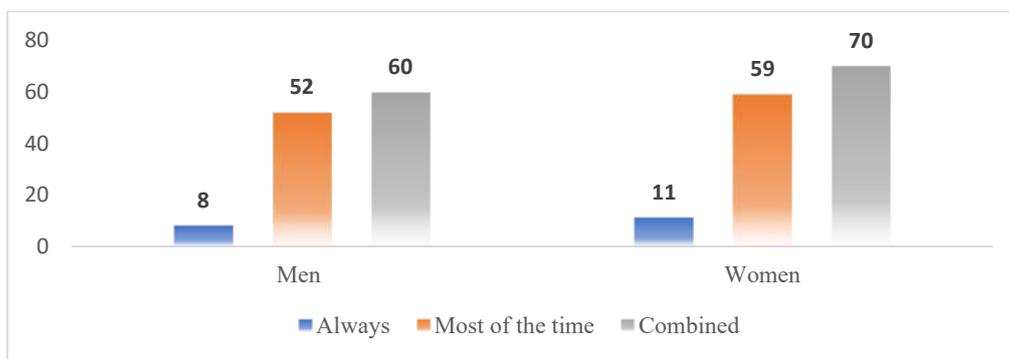


Figure no. 3. Consumption of H&S diet across Europe per gender

When comparing variables, respondents who are more concerned about the impact on the environment when purchasing food are also more likely to declare that they eat a H&S diet always or most of the time (77%), compared to the EU average (66%). On the other hand, those who consider cost as an important factor when shopping for food are less likely to mention they eat a H&S diet (55%).

Finally, in order to assess the factors influencing the adoption of H&S diet in Europe, respondents were asked to choose the top 3 attributes that would help them to adopt a H&S diet from a list of 10 items. The most important factors for European citizens are affordability (49%), availability (45%) and clear information on food labelling regarding the product's environmental, health and social impacts (41%). Education about H&S diets would also help them, according to 29% of respondents. Other responses mentioned are "product placement in-store that facilitates selection of H&S food" (23%), "food, meals are quick and easy to prepare" (23%) and "menu guides and other practical tools" (18%).

Interestingly, almost half of all respondents mentioned that affordability would help them consider more sustainable food choices. Affordability of healthy options is the most mentioned answer in 21 countries, ranked highest in Estonia (72%), Finland (69%) and Bulgaria (66%). On the contrary, this answer is least mentioned in Luxembourg (31), France (32%) and Romania (36%). Affordability of food is likely to become more of an issue for many consumers given the expected economic impact of the COVID-19 crisis, it is therefore vital to ensure that the sustainable food choice is not the most expensive one (and that it is not perceived in that way) (BEUC, 2020).

When comparing variables, it is evident from data analysis that respondents who picked cost as one of the significant attributes when food shopping, are also more likely to say that affordability will make them consider adopting such diets.

Conclusions

The current food system is a key driver of environmental degradation through loss of biodiversity, deforestation and pollution and the effects of climate change and environmental damage are also likely to increasingly challenge food security over the next century (Culliford and Bradnury, 2020, p. 2). Therefore, understanding the attitudes of citizens towards food and sustainability is mandatory for the successful adoption of H&S diets across society.

Overall, the study findings are promising. The results showed that the majority of respondents are eating H&S diets most of the time. At the same time, it can be argued that some countries are more likely to say that sustainability influences their eating behaviours compared to others. This study also confirmed that cost remains the main barrier to eating more sustainably as well as the main determinant of food choices.

Developing a sustainable food system to feed the growing global population is one of the major challenges of the 21st century (Culliford and Bradnury, 2020, p. 2). Considering the dramatic changes in food consumption patterns in the last 50 years, this paper calls for more actions at both local and European level in order to facilitate the shift to global sustainable food consumption and production and make sustainable eating choices affordable for everyone, especially in the current COVID-19 context. Although there is not one simple solution that will automatically shift diets towards those that are healthier, more environmentally sustainable, and more equitable at the national or global scale (Fanzo and Davis, 2019, p. 500), big changes do indeed start with small steps.

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Tourism in Digital Era

Carmen Bănescu¹, Cristina Boboc², Simona Ghiță³ and Valentina Vasile⁴

¹⁾²⁾³⁾ Bucharest University of Economic Studies, Bucharest, Romania

²⁾³⁾⁴⁾ Institute of National Economy, Bucharest, Romania

E-mail: banescu_carmen96@yahoo.com; E-mail: cristina.boboc@csie.ase.ro;

E-mail: simona.ghita@csie.ase.ro; E-mail: valentinavasile2009@gmail.com

Please cite this paper as:

Bănescu, C., Boboc, C., Ghiță, S. and Vasile, V., 2021. Tourism in Digital Era. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. 7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 126-134 DOI: 10.24818/BASIQ/2021/07/016

Abstract

In a society facing a real technological revolution, tourism sector could not stay away from modern technique. Tourism entered the digital era with favorable results on profitability, competitiveness, and sustainability. The tourism sector has grown due to digitalization. People had access to viewing unknown locations and thus, the need arose to know new places. Obviously, access to more information is restricted by several factors in the development of society. In this paper, the impact of digitalization on tourism services is analyzed through panel data regression models, estimating the way in which the share of people who have planned their trips online depends on the level of economic development, education, and knowledge in using the Internet, on security and safety of ICT infrastructure. The data refer to 29 European countries, over a 9 year – time period (2010-2018). The fixed effects model proved to be the most efficient. At the same time, the existence of a significant country effect on the use of online tourist booking services was highlighted. Western European countries economically developed have a positive propensity for digitalization in tourism, while Eastern European countries, mainly former communist countries, with a lower level of economic development are less in favor of digitalization in tourism.

Keywords

ICT, Digitization, Online Touristic Services, Panel Data Regression Analysis

DOI: 10.24818/BASIQ/2021/07/016

Introduction

The innovation process and the development of modern information and communication technologies have become important factors in boosting the competitiveness of the tourism sector (Molz, 2012; Sigala and Chalkiti, 2014), but it has also facilitated tourists' access to information (Sigala, 2014). Thus, the usage degree of online services in travel planning, in booking accommodation and transport was higher in the case of trips abroad (59%), compared to the domestic ones (2014). The age profile of tourists planning their travels using modern information and communication technology is similar to that of people using the Internet. A higher prevalence of online bookings is found in the case of air transport (67%), with more significant weights, which exceed 75% in the case of young age groups (15-34 years) (Eurostat, 2016). According to a survey conducted in 2015 regarding the use of ICT by individuals and households, 39% of the population aged 16-74 stated that they used the Internet to inform about travel. 65% of Europeans using the internet services ordered products and services online, while over 50% of them booked or planned their holiday trips (accommodation and transport) by these means. In 2018, the share of people who have planned their trips for personal purposes by using online technology has registered large variations in territorial profile. The leading countries, with high weights, were the Netherlands (54%), Denmark (50%), UK (48%), Norway (47%) and Sweden (45%), with very high accessibility to Internet services, with a high level of digital skills of individuals and

with a significant degree of services digitization. At the opposite end of the ranking are Romania (only 3%), Croatia (4%) and Bulgaria (6%) (Eurostat, 2016).

The present paper performs an analysis of the impact of digitalization on online bookings of tourist services, using panel data econometric models (fixed and random effects) and data provided by Eurostat for 29 European countries, for the period 2010-2018. The influence factors cover the country development level, education, IT security and tourism sector.

Literature review

In general, it is recognized that ICT services have provided modern tools to facilitate and create new distribution channels, a competitive business environment (Molz, 2012; Sigala and Chalkiti, 2014), they have facilitated the connections between business partners, the circulation of information and the tourists' access to this information (Sigala, 2014), brought innovation in organizing the activity and in strategies (Hjalager, 2015; Baum, 2015). A number of studies mention the main arguments for which ICT services are seen as a catalyst for tourism activity: the potential of these services in ensuring the survival of tourism organizations, facilitating the access of the general public to tourism products, and ensuring the efficiency of activities in the field (Mihajlović, 2012; Bethapudi, 2013). A study conducted in 2016 on the factors that influence the share of people booking online tourism services indicates the positive impact of their well-being, public spending on education and the share of people using the Internet in various activities, but also the negative impact of their reduced abilities in Internet use (Dumičić, et al., 2016).

In Europe, there are over 2.3 million SMEs operating in the touristic sector, with about 12 million employees. Studies have shown that SMEs in tourism face several difficulties in implementing digital techniques, the most important ones referring to the lack of time resources, the lack of necessary skills, the shortage of trained personnel and knowledge. Participation in digitized tourism is especially important in rural areas, with an emphasis on promoting the ecological dimension of tourism activity, although there are also difficulties related to limited access to technology in these areas. Such difficulties are encountered especially in the less developed countries (Dredge, et al., 2018). ICT also blurs the boundaries between sectors, but may have some negative implications for the hospitality industry (Hojeghan and Esfangareh, 2011).

In other studies, competitiveness is seen as an advantage that digitization can offer to tourism, through the reduction of operational and transaction costs (Bojnec and Kribel, 2004; Buhalis and O'Connor, 2005; Buhalis and Kaldis, 2008). On the contrary, other authors have shown that a significant direct correlation between the implementation of modern communication and information techniques, on the one hand, and the competitiveness in the hospitality industry cannot be demonstrated (Dos Santos, Peffers and Mauer, 1993; Byrd and Marshall, 1997; Mihalič, 2007).

Another category of studies analyzed the effect of ICT implementation in the tourism sector on the market share. Although there seems to be no clear evidence of a significant positive impact, there are researches that have revealed an effect of reducing the market share for SMEs as a result of digitization (Evans and Peacock, 1999), or others that have highlighted the use of ICT as a tool for maintaining and consolidating their market position (Buhalis, 2003). A series of research points to the role of ICT services in changing demand and supply in the hospitality industry (Chakravarthi and Gopal, 2012; Ali and Frew, 2014), as well as the existence of discrepancies in access to technology at the territorial level, which fuels the gaps between different countries or regions. Regions with limited access to such modern technologies enter a digital shadow cone or a "digital silence", decreasing their tourist attractiveness and negatively affecting the region's economy (Miller, 2013). Despite the clear advantages of introducing digitization in the tourism field, such as reduced costs of producing and distributing marketing materials, promoting messages in a more attractive, suggestive and efficient way, studies show the need to combine modern, virtual tools with traditional ones in promoting tourist destinations (Dasgupta, 2011).

Data and Methodology

In order to analyze the impact of digitalization on online bookings of tourist services we have used data provided by Eurostat for 29 European countries for the period 2010-2018. In the analysis the dependent variable is *the share of people who planned their online trip* (as a percentage of the country's inhabitants). While tourism depends on the country's level of development, one of the independent variables included in the regression analysis is the *GDP per capita* expressed at purchasing power parity. To use the online planning of a touristic holiday, the level of education of the population is particularly important. Thus, we have chosen as independent variables the *expenditure on education as a percentage in GDP*. Moreover, to make online reservations, all internet transaction must be secured. So, we have included in our analysis the *volume of internet servers that provide security* to the internet user (secure servers per million people). As an indicator of external tourism in the reference country, we have included in the analysis the variable *Number of tourists leaving the country relative to one million inhabitants*. Panel data econometric models is our choice for this analysis, as long as they provide information about individual behavior, both in terms of space and time dimensions.

The simple linear panel data regression model used in econometrics can be described as:

$$y_{it} = \beta_0 + \sum_{k=1,4} \beta_k x_{k_{it}} + u_{it} \quad i = \overline{1,29}, t = \overline{1,9}, \quad (1)$$

where the residual component is u_{it}

For the purpose of modelling individual heterogeneity, the term error is determined by two distinct components: individual effects which are constant over the entire time period (fixed effects) and effects which combine the individual and temporal influence (random effects).

Thus, the regression model can also be written:

$$y_{it} = \beta_0 + \sum_{k=1,4} \beta_k x_{k_{it}} + \alpha_i + \varepsilon_{it} \quad i = \overline{1,29}, t = \overline{1,9}. \quad (2)$$

The error ε_{it} is considered to be independent of the regressors and of the individual component. Determining the type of model depends on the degree of correlation between the individual error and the model regressors. If the correlation is strong, the recommended model being the fixed effects model (FE). However, if the error-specific component is not correlated with independent variables, it means that preference is given to the random effect panel regression model (RE). The choice of the optimal model is based on the Hausman-Wu test. The null test hypothesis states that the FE estimator is consistent and the RE estimator is consistent and efficient, while the alternative hypothesis indicates that the FE estimator is consistent and the RE estimator is inconsistent.

The impact of digitization on online bookings of tourist services – panel data analysis results

The main purpose of this analysis is to reveal the level of acceptances of Europeans for the online holiday planning method, based on the socio-cultural and digital development of a country.

The simple regression model - OLS

The simple regression model does not differentiate the spatial component from the temporal component. The model is applied to 29 European countries and for a period of 9 years (2010-2018), meaning 261 observations (9 years x 29 states). The estimated model is:

$$y_i = \beta_0 + \sum_{k=1,4} \beta_k x_{k_i} + u_i \quad i = \overline{1,261} \quad (3)$$

The model has a high explanatory power and is statistically significant. Specifically, the share of people who planned their trip online is explained in proportion of 74.9% by the regression model. To accept the model, it is important that the residuals meet the properties of the classical regression model. In this case, the residuals converge to a normal distribution, the dispersion of the residuals is approximately constant over time and the predicted values of the model are very close to the real values, which indicates a low forecast error. Moreover, the quality of this model also depends on the significance of the explanatory variables (Figure no. 1).

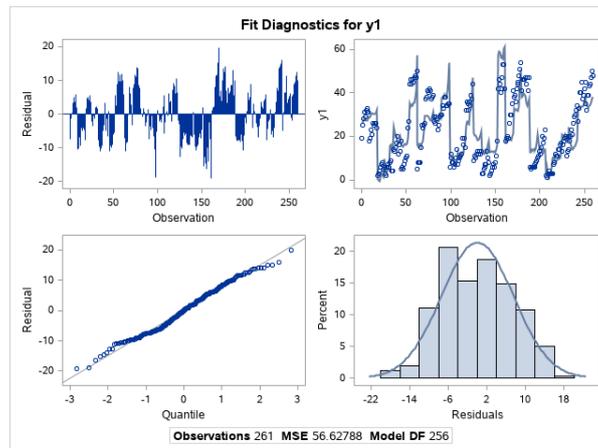


Figure no.1. Residuals analysis of the regression model for grouped data

Source: own processing in SAS Enterprise Guide

All estimated parameters of the model are statistically significant for 0.01 significance level. Thus, the share of people planning their holiday online is directly influenced by individual well-being, education expenses, the number of tourists who materialize their vacation and the security of personal data in online environment, as a result of secure servers existing in a country (Table no. 1).

Table no. 1. Parameter Estimates, model regression for grouped data

Parameter Estimates					
Variable	Df	Estimated	Standard Error	t Value	Pr > t
Intercept	1	-25.3690	2.6867	-9.44	<.0001
Edu from GDP	1	4.0408	0.4972	8.13	<.0001
GDP	1	0.2277	0.0113	20.10	<.0001
Secure servers	1	0.0002	0.0000	6.45	<.0001
External Tourists/million inhabitants	1	0.2025	0.0254	7.98	<.0001

Source: own processing in SAS Enterprise Guide

One percentage point increase in education expenditures, when the other variables remain constant, determines an increase with 4,0408 percentage points of people who make online reservations. One unit increase in GDP will lead to an increase with 0.2277 percentage points of the dependent variable, when the other variables remain constant. The share of people planning their vacation online increases by 0.2025 percentage points, when the number of people going on holiday in a European country increases by one unit, it means that there is a materialization of the reservation.

The equation of the estimated regression model is:

$$\hat{Y}_1 = -25.3690 + 4.0408 * \text{Edu from GDP} + 0.2277 * \text{GDP} + 0.0002 * \text{Secure servers} + 0.2025 * \text{Turisti/milion} \quad (4)$$

From this model it can be seen that the share of people who use the Internet to plan a trip is much more elastic to the proportion of education spending in GDP and almost as elastic to the other three factors.

Fixed Effects Model

Fixed effects model is applied to highlight if there is a correlation between explanatory variables and the individual unobserved effect. This type of model can highlight the country effect, meaning that each country has a distinctive coefficient that influences the dependent variable. The existence and representativeness of the individual (country) effects on the analysed variable is verified by using F test for no fixed effects. The hypotheses of this test are:

H_0 : there are no individual fixed effects; H_1 : there are individual fixed effects

Table no. 2. Testing the existence of fixed effects

F Test for No Fixed Effects			
Num DF	Den DF	F Value	Pr > F
28	228	27.58	<.0001

Source: own processing in SAS Enterprise Guide

For a 99% confidence level, there is insufficient statistical evidence to accept the null hypothesis, which means that the individual (country) fixed effects are statistically significant (Table no. 2). In terms of explanatory power, the model is representative and valid. The share of people planning their trip online is explained by the panel regression model with fixed effects in the proportion of 94.28%. Moreover, the residuals verify the hypothesis of homoskedasticity, normality and accuracy of the forecast (Figure no. 2).

The coefficients of the explanatory variables are statistically significant, for 0.1 significance level. The fixed effects are also mostly significant with a significance level above 0.1. Equation of the estimated regression model:

$$\widehat{Y}_i = 22.87 - 1.44 * Edu\ from\ GDP + 0.07 * GDP + 0.10 * Secure\ Servers + 0.29 * Turisti/million + \alpha_i, \text{ where } i = \overline{1,29}, \alpha_i - \text{the fixed effect of the country } i \quad (5)$$

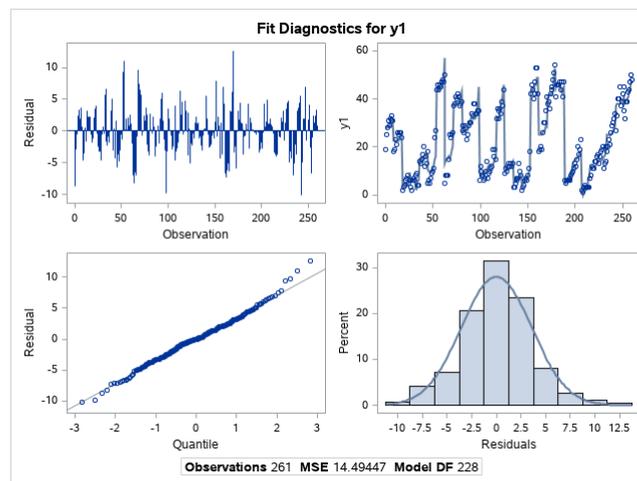


Figure no. 2. Residuals analysis of the fixed effects model

Source: own processing in SAS Enterprise Guide

It is interesting how in this context a higher share of spending on education could have a negative effect on the proportion of people planning an online trip. This could be explained by the fact that higher shares of education expenditure would not imply an efficient use of resources. If individual well-being for a Europeans increases by one unit, then the share of people making online reservations can increase by an average of 0.073 percentage points. Also, the increase by one unit of secure servers will increase the average by 0.004 percentage points of the share of individuals who will plan the trip online. An increase of one unit per unit in the number of tourists traveling outside the country determines an increase of 0.293 percentage points in the share of people who book their trip online. This indicates that online bookings materialize with a holiday in a foreign country. The reference country for fixed effects is United Kingdom. Ireland, Luxembourg, Netherlands, Norway and Sweden do not have significantly different effects (for a significance level of 5%) from the United Kingdom in terms of online booking. The other states are significantly different from the United Kingdom, especially Bulgaria, Germany, Italy, Poland, Romania (Table no. 3).

Table no. 3. Parameter Estimates for the regression model for the type panel date

Parameter Estimates					
Variable	DF	Estimate	Standard Error	t Value	Pr > t
Austria	1	-0.16075	5.8444	-0.03	0.98
Belgium	1	-3.15475	5.7567	-0.55	0.58
Bulgaria	1	-18.2019	7.3199	-2.49	0.01
Croatia	1	-16.2166	7.1128	-2.28	0.02
Cyprus	1	-6.43549	6.8517	-0.94	0.35
Czechia	1	-13.5444	6.463	-2.1	0.04
Denmark	1	19.06912	6.2716	3.04	0.00
Estonia	1	-5.35985	6.9785	-0.77	0.44
Finland	1	13.51939	6.039	2.24	0.03
France	1	-3.91022	4.1954	-0.93	0.35
Germany	1	-18.6782	3.5172	-5.31	<.0001
Greece	1	-15.0212	6.6962	-2.24	0.03
Hungary	1	-9.68996	6.5943	-1.47	0.14
Ireland	1	4.090986	6.4926	0.63	0.53
Italy	1	-21.3416	4.2068	-5.07	<.0001
Latvia	1	-12.9965	7.0509	-1.84	0.07
Lithuania	1	-14.6245	6.9758	-2.1	0.04
Luxembourg	1	8.699573	8.8812	0.98	0.33
Malta	1	4.123147	6.9618	0.59	0.55
Netherlands	1	10.89886	5.1507	2.12	0.04
Norway	1	14.23813	6.3929	2.23	0.03
Poland	1	-17.0124	6.1735	-2.76	0.01
Portugal	1	-6.23242	6.9174	-0.9	0.37
Romania	1	-24.2049	6.3485	-3.81	0.00
Slovakia	1	-11.6001	6.9698	-1.66	0.10
Slovenia	1	-5.99437	6.7286	-0.89	0.37
Spain	1	-2.16553	5.6754	-0.38	0.70
Sweden	1	10.36917	5.1793	2	0.05
Intercept	1	22.87444	9.6935	2.36	0.02
edu from GDP	1	-1.4408	0.6611	-2.18	0.03
Gdp	1	0.073195	0.0391	1.87	0.06
secure servers	1	0.104345	0.0201	5.2	<.0001
turisti/milion	1	0.292799	0.1095	2.67	0.01

Source: own processing in SAS Enterprise Guide

Random effects model

The Breusch Pagan test will be applied to test the existence of random effects:

H_0 : there are no random effects; H_1 : there are random effects

According to this test, the model has significant random effects (Table no. 4).

Table no. 4. Testing the existence of random effects

Breusch Pagan Test for Random Effects (One Way)		
Df	m Value	Pr > m
1	439.3	<.0001

Source: own processing in SAS Enterprise Guide

The estimated random effects model has a lower explanatory power than the previous ones, but statistically speaking it is representative. The share of people planning their trip online is explained by the random effects regression model in proportion of approximately 30% (Table no. 5).

Tabel no. 5. Parameter estimates

Parameter Estimates					
Variable	DF	Estimate	Standard Error	t Value	Pr > t
Intercept	1	-0.9082	4.5339	-0.2	0.8414
edu from GDP	1	0.10422	0.6049	0.17	0.8634
Gdp	1	0.18846	0.0249	7.56	<.0001
secure servers	1	0.00012	0.00002	6.19	<.0001
turisti/milion	1	0.22579	0.0617	3.66	0.0003

Source: own processing in SAS Enterprise Guide

In this model, only the variable that indicates the share of education expenditures is not statistically representative. The share of people booking online is elastic to individual well-being, the number of secure internet servers and the number of tourists leaving the state of residence (Figure no. 3).

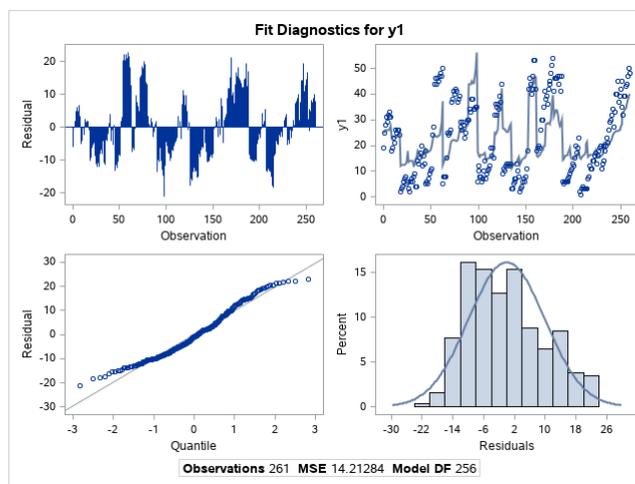


Figure no. 3. Residuals analysis of the regression model for random effects model

Source: own processing in SAS Enterprise Guide

The model with random effects is weaker, because the predicted values deviate a lot from the observed values. To decide which of the RE or FE models is better to use, the Hausmann test was used to test the hypotheses:

$$H_0: \text{FE consistent; RE consistent and efficient; } H_1: \text{FE consistent; RE inconsistent}$$

Table no. 6. Hausman test RMSE

Hausman Test for Random Effects			
Coefficients	DF	m Value	Pr > m
4	4	13.2	0.0104

Source: own processing in SAS Enterprise Guide

Table no. 7. Calculation of

Model	RMSE
Grouped model	7.5252
Fixed effects model	3.8072

There is not enough statistical evidence to accept the null hypothesis, so the model with random effects is not representative, because the estimators obtained are biased and inconsistent (Table no. 6). Given that the grouped model and the one with fixed effects are statistically significant, and the residual component respects the properties of the regression model, the optimal model is the one that minimizes the error. The fixed effects model has the smallest estimation error, so it can be used in describing the factors influencing the share of people who use technology to plan their vacation (Table no. 7). According to the model with fixed effects, two types of states can be distinguished: states that have a positive impact on the dependent variable and states that have a negative impact on the dependent variable. Thus, Denmark, Ireland, Luxembourg, Netherlands, Norway, Sweden and the United Kingdom are developed countries that have a positive trend regarding to the online booking of tourist

services. The opposite states are Bulgaria, Czech Republic, Croatia, Malta, Germany, Greece, Italy, Lithuania, Latvia, Poland, Romania and Slovakia, most of them former communist states, which do not have efficient education systems and are not high technology followers. It is interesting to see if Europeans sensitivity to tourism digitalisation can also be seen in their travel choices and their satisfaction with touristic services. Their holidays experience must be at least equal with their expectations, in order to consider that the tourists had a successful holiday.

Conclusions

Tourism is an important tool in capitalizing on the economic, social and cultural potential of some regions, contributing to their sustainable development and to creating or strengthening links with other regions. In the current economic environment, characterized by globalization and the increasing use of information technology, tourism takes on a new look, in which the trading of tourism products is gradually transferred from a physical dimension to a virtual, conceptual one, and in which balancing demand with supply is greatly facilitated by the new communication channels (Kelly, 1999). The purposes of using the Internet in tourism, as a modern communication and information means, are extremely varied, from the operative obtaining of complex information about certain tourist destinations to travel planning and booking, but the degree of use of this modern means in planning personal travel has registered large variations in territorial profile. In 2018, developed countries in northern Europe, such as the Netherlands, Denmark, the UK or Norway, stood out with shares of about 50% of the population who planned their trips (transport, accommodation) via the Internet, while at the opposite pole were placed the countries with a lower development level, such as Romania, Croatia or Bulgaria, with values close to 5%. Europeans have different approaches to holiday planning, depending on the country of origin. A developed state with a high standard of living and an education adapted to contemporary society has a greater acceptance of the ICT use in tourism. People understand how technology works, know how to use it, and know exactly how to avoid potential dangers in the online environment. According to the analysis, Western and Eastern Europe differ significantly in terms of access to online tourist services, and this differentiation is supported by individual well-being, education spending, the number of tourists and the safety of transactions made via the Internet, by using secure servers. It was observed that the number of people purchasing online tourism services is positively influenced by individual well-being, by a large number of tourists and the existence of more secure internet servers and negatively influenced by the share of education expenditures as a percentage of GDP. The negative influence of education expenditures can be explained in terms of their efficiency, meaning that there are states with reasonable shares of education expenditures, but it cannot be said that they have a higher level of education. Western European countries economically developed have a positive propensity for digitalization in tourism, while Eastern European countries, mainly former communist countries, with a lower level of economic development are less in favor of digitalization in tourism.

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Synergistic Perceptions on the Regulations Oriented Towards the Development of Romanian Coastal Tourism in the Context of Maritime Spatial Planning

Mari-Isabella Stan¹, Kamer-Ainur Aivaz², Dragoș-Florian Vintilă³ and Ionela Ionițiu⁴

^{1) 2) 3) 4)} Ovidius University of Constanta, Constanta, Romania.

E-mail: stanisabella@yahoo.com; E-mail: aivaz_kamer@yahoo.com

E-mail: ydragos@univ-ovidius.ro; E-mail: ionelaionitiu@yahoo.com

Please cite this paper as:

Stan, M.I., Aivaz, K.A, Vintilă, D.F. and Ionițiu, I., 2021. Synergistic Perceptions on the Regulations Oriented Towards the Development of Romanian Coastal Tourism in the Context of Maritime Spatial Planning. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 135-141. DOI: 10.24818/BASIQ/2021/07/017

Abstract

In this article, the authors' intention, in the context of developing the maritime spatial planning plan (MSP) of Romania, is to make an analysis of the regulations aimed at developing coastal tourism in the Romanian Black Sea area from the perspective of stakeholders. The objectives of this article are to detect the impact in which the lack of control exerts on some activities specific to the coastal area as well as possible similarities / differences regarding the perception of stakeholders according to all the variables analyzed. To achieve the research objectives, we conducted a questionnaire on tourism activity in the Black Sea coastal area which was addressed to stakeholders, entities directly interested and involved in activities carried out in this space. To write this article, we used the Principal Components Analysis (PCA) method, an exploratory, descriptive method. This approach is made from the perspective of completing the study on the integrated and updated analysis of conflicts/synergies of maritime and environmental uses carried out within the MARSPLAN BS-II project in which the authors are involved. The processing of data resulting from the stakeholder consultation process led to the identification of possible problems concerning the application of the relevant legislative framework for the development of the Black Sea maritime space in Romania. The results of the analysis of this article may be the starting point for further detailed research.

Keywords

Maritime Spatial Planning (MSP), legal regulations, Romanian coastal tourism, stakeholders.

DOI: 10.24818/BASIQ/2021/07/017

Introduction

The European Union has established the legal regulatory framework for the adoption of maritime spatial plans in the maritime areas of its Member States, being concerned about the role and importance of seas and coastal areas in the European economy from the perspective of economic, social, and territorial cohesion and sustainable development.

The Black Sea region has great geopolitical and strategic importance for the stability, cohesion, and prosperity of the region and great potential for development, to achieve the "Europe 2020" goals of smart, sustainable, and inclusive growth, including "Blue Growth" (Directiva 2014/89/UE). The Black Sea is considered an economic, geopolitical, and trade corridor of strategic importance, connecting the Mediterranean Sea through the Marmara Sea and the Aegean Sea and Europe with Asia to the Caspian Sea, Central Asia, and the Middle East and Southeast Asia and China (EUNETMAR, 2014).

Despite a large number of international, European, regional, and local initiatives, programs, and documents developed since the early 1990s, the Black Sea region suffers from a lack of synergy and sufficient coordination. In this sense, the MARSPLAN BS (2015-2018) and MARSPLAN BS II (2019-2021) projects were initiated, which are two important projects because they include the development of a formal, complete maritime spatial plan for the Mangalia-Shabla cross-border area (Romania and Bulgaria). While the first project aimed at developing the methodology, indicators, rules, strategies for the maritime spatial planning (MSP) plan as well as the development of several case studies in Romania and Bulgaria, the second project aims at developing a common MSP strategy based on results obtained and which should lead to the elaboration of maritime spatial planning (MSP) plans for both countries in 2021.

For the elaboration and implementation of the maritime spatial planning (MSP) plan of Romania, the consultation and involvement of the stakeholders, of the competent public administration authorities, and the targeted public was ensured.

The maritime spatial planning process is important because it presents the mechanism through which stakeholders are involved, the exchange of information playing an important role in the development of beneficial relationships (Ordinance No. 18/2016, art. 8). Maritime planning, as well as MSP stakeholders, have been addressed in a large number of projects, studies, specialist articles, covering a wide variety of issues and experiences related to this process (Văidianu and Ristea, 2018).

Following, this article contains a literature review, methodological procedures, research results, final considerations, and references.

Literature Review

Maritime Spatial Planning (MSP) is a practical way to create and establish a more rational organization of the use of marine space and the interactions between its uses, to balance development demands with the need to protect marine ecosystems and to achieve goals in an open and planned way (Ehler and Douvere, 2009).

Maritime spatial planning (MSP) is defined as a process by which public authorities analyze and organize human activities in marine areas to achieve environmental, economic, and social objectives (Directive 2014/89/EU).

Directive 2014/89/EU sets out a common approach for European Union countries to maritime spatial planning, which allows each member country to plan its maritime activities. The aim of the directive is to promote the sustainable growth of maritime economies, the sustainable development of marine areas, and the sustainable use of marine resources. Maritime spatial planning also aims to identify and encourage multiple uses, in accordance with relevant national legislation and policies.

The purpose of maritime spatial planning is to promote the sustainable development of the offshore energy sectors, maritime transport, fisheries, and aquaculture, conservation, protection, and improvement of the environment, including increasing resilience to the impacts of climate change, promoting sustainable tourism and sustainable extraction of raw materials (2014/89/EU Directive, art. 5).

In this sense, Romania has transposed into national legislation Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning and integrated coastal management by Government Ordinance No. 18/2016 on maritime spatial planning and Law No. 88/2017 on the approval of Government Ordinance No. 18/2016 on maritime spatial planning.

The maritime spatial planning plan has a directional and regulatory character, integrating, without limiting, the following activities, uses and fields (Ordinance No. 18/2016, art. 7): aquaculture areas; fishing areas; facilities and infrastructure for the exploration of crude oil, gas and other energy sources, mineral resources, as well as for the production of energy from renewable sources; shipping routes and traffic flows; military exercise and training areas; protected natural areas in the national network; raw material extraction areas; scientific research, including facilities and infrastructures for scientific research and monitoring of the marine environment; the routes of submarine cables and pipelines, as well

as their safety and protection areas; tourist activities; underwater cultural heritage; coastal protection measures against erosion; intervention plans in case of accidental pollution or in case of a marine natural hazard with risk for the coastal area; areas where there are port and hydrotechnical infrastructures.

Consultation of stakeholders on the regulations aimed at developing coastal tourism

Coastal areas face many competing claims about their use and development, such as tourism, fishing and aquaculture, raw material extraction, shipping routes, and marine protected areas. It also faces common challenges, such as the pressure on fragile marine ecosystems, the impact of climate change, and pollution (Friess and Grémaud-Colombier, 2019). The importance of studying coastal areas is justified by their resources, ecosystem services, and the key role played in socio-economic development (Petrișor, et al., 2020).

The Romanian coastal area hosts a multitude of economic activities (tourism having a preponderant share) to which the environmental problems in the area are added (coastal erosion, degradation of protected areas, and so on), which is why the development of coastal tourism must be seen from the sustainable development perspective that is based on the three traditional pillars - economic, social and environmental to which the cultural pillar was added (Petrișor, 2017), a sustainable development that requires simultaneous communication between different levels of governance (Arlati, et al., 2021).

In his research paper Kiși (2019) showed that sustainable tourism should ensure optimal use of environmental resources, respect the socio-cultural characteristics of local communities and still provide socio-economic utility to stakeholders. Therefore, the decision-making to promote sustainable development in the Romanian coastal area must be based on the integration of economic, social, and environmental factors, this integration being possible only through a holistic view of the various interested parties that influence the process of the Black Sea maritime spatial planning in Romania.

Recent research (Ólafsdóttir, 2020) presents a stakeholder-focused approach to developing a framework that effectively integrates public participation and highlights the importance of combining local knowledge and experts in these processes. In this sense, the stakeholders in the planning process of the Romanian maritime space are persons or groups of persons who have an interest or are affected by the results of the MSP.

Therefore, in the process of maritime spatial planning, the sharing of knowledge, activities, and experience of stakeholders can increase the effect obtained in achieving the objective of developing the maritime spatial planning plan (MSP) in Romania.

Methodology

To achieve the research objectives, we conducted a questionnaire on tourism activity in the Black Sea coastal area from the stakeholders' perspective. The questionnaire, prepared by the authors of this article, was sent on October 17, 2020, and completed within 3 weeks. To find the most appropriate way to obtain the respondents' answers, the questions were structured in two types: open-ended questions and closed-ended questions. Because our research was exploratory, the open-ended questions were dominant in the questionnaire, and they played a very important role in structuring and ordering the information. To obtain information of a particular nature given the existence of specific problems faced by the analyzed subjects and whose formulation is difficult given the heterogeneity of the respondents, we also introduced some open-ended questions.

The questionnaire applied to the stakeholders involved in the elaboration and implementation of the maritime spatial planning process is part of the activity which support the work of national competent authorities in charge of developing and implementing Maritime Spatial Planning and defining and analysing existing conditions in the maritime space. This study will be integrated and updated in the analysis of conflicts/synergies of maritime and environmental uses.

The analysis method used to process the data in the questionnaire is Principal Components Analysis (PCA), an exploratory, descriptive method, through which we tried to capture both the possible links

between the variables used (lack of control, port activities, industrial activities, tourism, use of pesticides in agriculture and fish poaching), as well as the similarities and differences in the stakeholders' perception according to all these variables.

Results and discussion

The legal framework related to maritime spatial planning (MSP) in Romania can be structured in three components, namely: specific legislation for MSP, sectoral legislation with an impact on MSP (environment, water, protected areas, landscape, construction, energy, transport, and navigation, fishing, cultural heritage, and archeology) and horizontal legislation: international law, environmental impact analysis (Vintilă, et al., 2018).

The normative framework in Romania regarding the elaboration and implementation of the maritime spatial planning plan provides to ensure the consultation and involvement of the interested parties, of the competent public administration authorities, and the targeted public, by informing them since the stage of drafting the maritime space (Ordinance No. 18/2016, art. 8).

In this regard, one of the issues brought to the attention of stakeholders was to see to what extent the provisions of Directive 2014/89/EU and Government Ordinance No. 18/2016 are known, which establishes the necessary framework for maritime spatial planning to harmonize ecological, economic, social, and safety objectives. 32.4% stated that they know the legislative provisions regarding maritime spatial planning, while 67.6% do not know them. Therefore, the main problem identified cannot be eliminated from the conclusions of the research, namely the fact that it is not known what maritime spatial planning (MSP) is. The parties involved are either not at all aware of the impact of this process or do not consider them important for their work. This lack of knowledge or interest, in turn, can lead to inactivity in the stakeholder involvement process.

In the context of the Romanian legal regulations, when asked “to what extent it is necessary to adopt/modify the normative framework in the tourism sector to contribute to the economic development of the maritime space at local and regional/national scale”, 91.5% consider that to a large extent the regulatory framework needs to be changed, while 5.6% believe it is not necessary and only 2.8% do not know. It is noted that most stakeholders agree that it is necessary to adopt/change the regulatory framework in the tourism sector to contribute to the economic development of the maritime space, which shows how important the communication of stakeholders is. What is interesting to note is that this perception does not come from the knowledge of the legislative provisions, because a significant percentage of respondents are not yet familiar with maritime spatial planning.

Regarding the question “In which of the following areas of activity do you consider that legislative changes are needed at the national/local level to implement maritime spatial planning” it is noted that stakeholders consider that there is a lack of control (regulation/sanctions) in terms of port activities, industrial activities, tourism, pesticide usage in agriculture and fish poaching (Table no. 1).

Table no. 1. Correlation Matrix

	Fish poaching	Tourism development	Port activity	Industrial activity	Use of pesticides
Fish poaching	1				
Tourism development	0.057	1			
Port activity	0.169	0.362	1		
Industrial activity	0.247	0.239	0.498	1	
Use of pesticides	0.417	0.097	0.059	0	1
Lack of control	-0.332	-0.021	0.062	0.04	-0.139

The correlation matrix, obtained with the help of the SPSS program by applying the PCA method, indicates significant, direct, and medium intensity links between port activity and tourism development, between port activity and industrial activity, as well as between pesticide use and poaching.

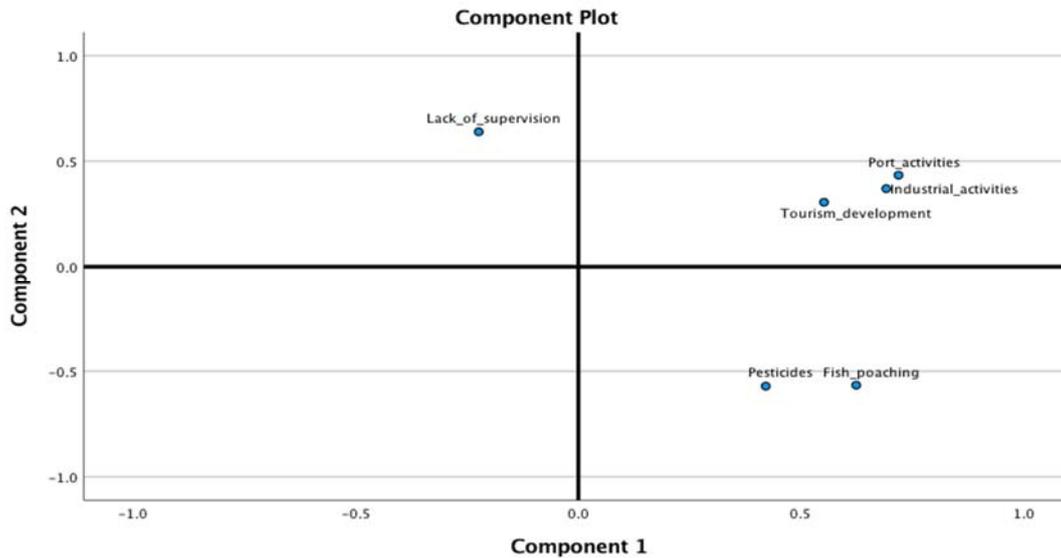


Figure no. 1. The diagram of activities affected by lack of control

Regarding the question “In which of the following areas of activity do you consider that legislative changes are needed at national/local level to implement maritime spatial planning”, it is observed that there is an obvious difference between variables, more precisely, between lack of control and variables related to port activities, industrial activities, tourism, pesticide use in agriculture and fish poaching (Figure no.1). Factorial component 1 obviously separates these variables. In other words, stakeholders consider that there are gaps between the control and the legislative framework in all areas of activity concerned.

Although most stakeholders agree that the legislative intervention is needed for port activities, industrial activities, tourism, pesticide usage in agriculture, and fish poaching, for all these identified activities there are national legislative regulations in line with the European regulatory framework, an example in this regard being the legislation on the administration of ports and port services that has existed since 1999, being amended and supplemented subsequently.

Stakeholders' perception of the need to adopt/modify the regulatory framework may result both from the fact that the government, state institutions do not communicate effectively, and from the lack of control and verification of the activities in the fields mentioned. On the other hand, stakeholders are willing to participate when they see/have an opportunity to have an influence on regulations in the field.

A collaborative relationship between different societal actors (stakeholders, competent public administration authorities, target audience) is a mutually beneficial challenge in approaching consultation and involvement in the MSP process. According to recent research (Banerjee, Murphy, and Walsh, 2020), there are many benefits of partnerships between different societal sectors, which have the ability to fill a gap created by the government's inability to reach certain social segments, either due to lack of desire or due to lack of resources.

Therefore, in this conceptual framework of developing and implementing maritime spatial planning, it is necessary to take into account the commitment to openly communicate with all stakeholders about the impact of activities on economic, social, and environmental development, as well as about the actions taken to better meet their expectations.

Abbreviations and acronyms

- MSP – Maritime Spatial Planning
PCA – Principal Component Analysis
SPSS – Statistical Program for the Social Sciences

Conclusions

The development of the framework regarding the elaboration and implementation of the maritime spatial planning of Romania aims at the better involvement of the stakeholders in the consultation processes and the involvement of the interested parties, of the competent public administration authorities, and the targeted public using efficient integration of public participation.

The sustainable development of coastal tourism is only achievable if the interests of the local population are protected, the conservation of natural resources is represented among its objectives by authorities, citizens, and service providers, and, finally, local social capital is constantly improved by the implemented legislation.

The maritime spatial planning process is important because it presents a mechanism for stakeholders' involvement, the exchange of information playing an important role in developing beneficial relationships. In this sense, the stakeholders' perception regarding the regulations oriented towards coastal development and sustainable tourism in the Romanian coastal area of the Black Sea according to all the analyzed variables indicates the lack of state control in the application of legislation (regulation/sanctions). The processing of data resulting from the stakeholders' consultation process led to the identification of possible problems related to the application of the relevant legislative framework for the development of the Black Sea maritime space in Romania.

The results obtained by previous research (Văidianu and Ristea, 2018) on maritime planning show that Romanian stakeholders have a relatively poor understanding of European, national and regional regulations for sea planning, as demonstrated by this study, namely 67.6% of stakeholders are unaware of the legislative provisions in this area. This reality is a challenge that should increase the capacity of the competent authorities involved in the implementation of the MSP to provide viable solutions to develop a collaborative relationship and to actively involve stakeholders.

In conclusion, the study shows the need to analyze the reaction and involvement of stakeholders in the maritime spatial planning process. Stakeholders' perception, according to their responses, that in all areas of activity there are gaps in control and the legislative framework may lead to a strategic approach of complex decision-making issues in the tourism sector.

This article completes the study on the integrated and updated analysis of conflicts/synergies of maritime and environmental uses carried out within the MARSPLAN BS-II project. The results of the analysis of this article may be the starting point for further detailed research.

Acknowledgment

This work has been supported by the European Commission through the European Maritime and Fisheries Fund, Cross-border Maritime Spatial Planning for Black Sea – Bulgaria and Romania (MARSPLAN-BS-II), EASME/EMFF/2018/1.2.1.5/01/SI2.806725- MARSPLAN-BS-II.

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The Labor Market in the Digital Age: A New Perspective on Jobs

Carmen-Elena Bănescu¹, Emilia Țițan² and Daniela Manea³

¹⁾²⁾³⁾ *The Academy of Economic Studies, Bucharest, Romania*

E-mail: banescucarmen15@stud.ase.ro; E-mail: emilia.titan@csie.ase.ro

E-mail: daniela.manea@csie.ase.ro

Please cite this paper as:

Bănescu, C.E., Țițan, E. and Manea, D. 2021. The Labor Market in the Digital Age: A New Perspective on Jobs. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 142-150
DOI: 10.24818/BASIQ/2021/07/018

Abstract

With the advent of new technology, the labor market has undergone many changes. These changes were perceived differently by people and may even be rejected. The fear that technology will replace human labor has persisted in people's identities since the beginning of the third millennium. Researchers are of different opinions. Some believe that technology will harm social welfare, while others argue that technology only helps to advance society. We accept on the one hand that technology can take over some workloads, but we also accept that technology creates new jobs. We also propose another perspective on this ideological conflict. We support the idea of reconfiguring jobs by optimizing tasks. We want to highlight the power that skills have in the hiring decision and what these skills are much desired by employers. The novelty comes from the way we work with new unstructured data sources to extract new insights. For this, we used the indicators "Skills needs" and "Skill penetration rate". These indicators were calculated by the World Bank in partnership with LinkedIn, based on the TD-IDF text mining methodology. To capture changes over time we used relative (chronological) dynamics indices, and to capture differences between skill categories we applied ANOVA analysis. Thus, we showed how the main industries have changed their preferences in terms of the skills that candidates have. We also highlighted how the importance for soft skills, technological skills and disruptive technological skills has increased. Finally, we presented the growing speed of demand for people with skills for new technologies (artificial intelligence, data science, human computer interaction).

Keywords

job skills, job tasks, job creation, labor market, digital age, industry 4.0

DOI: 10.24818/BASIQ/2021/07/018

Introduction

The general fear of society has been, and continues to be, that technology solutions will be able to replace the human workforce (Ford, 2015). This hypothesis on the one hand can be supported, if we consider some jobs in factories that have been fully automated. We can say rather that it was not the work itself that was automated, but the task that had to be accomplished (Frey and Osborne, 2017). Thus, the researchers described the risk of automating the tasks within the workplace. On the other hand, a partial automation of some activities could be beneficial for the quality of life of the employee, for the efficiency of the activity and even to eliminate the operational risk. There are also many jobs that require high complexity and could not be automated by existing technologies. However, technology is quite beneficial for the economy, helping to improve the internal processes of companies, but also building new areas of activity since the 21st century (Tohănean, et al.,2020). We can say that

the economy is facing a "digital evolutionism". What we want to indicate by this phrase is that like the theory of evolutionism proposed by Charles Darwin or the Big Bang theory, digital technology has an initial point, namely the emergence of von Neumann architecture.

The Industrial Revolution 4.0 comes with a new approach to the labor market. More precisely, the transition is made from the recruitment of the labor force on the consideration of „Job Title”, to the recruitment based on matching employee skills with job tasks. This matching ensures more efficient activities and a higher profit for employers. Often job mismatch occurs due to the lack of human resources on the labor market with certain skills. The rapid evolution of technologies is not supported by the ability of the education system to integrate it. Thus, between the time of supply and demand in the labor market there is a time delay in which the business environment must improvise. This is when the income gap deepens. Those few specialists in the new segments of technology will have much higher incomes. This is, moreover, a normal effect of an unbalanced market. This aspect is also a premise for the phenomenon of labor market polarization supported by some researchers (Maarten and Manning, 2007).

Through this paper we aim to show how the demand behaves with the supply on the labor market and if we observe the creative action of technology. Moreover, we want to highlight the labor market trend towards the new skills-based approach. We will have a predominantly qualitative approach, with elements of quantitative analysis. Finally, we intend to make useful judgments for both future research and possible proposals.

Literature review

In the last century, the topic of the impact of technology development on the labor market has been much discussed. Some researchers have concluded in their work that man is in competition with technology, which will eventually lead to massive unemployment in the labor market and social inequality (Ford, 2015). Others contradict this hypothesis and explain that income inequality can have causes related to “demographics, regulation, worker values, organization practices, and other technologies” (Handson, 2015). There are also others who agree with the hypothesis that technology has created jobs (Peetz, 2019). In general, discussions revolve around the possibility of automating work tasks or even occupations and start from the studies of researchers Frey and Osborne (Frey and Osborne, 2017). In addition to tasks that can be automated, researchers emphasize the potential of growth of the labor market in the area of programming and data analysis, which currently seem quite difficult to automate (Acemoglu and Restrepo, 2020). One study shows that investment in research and development has a net positive impact on employment (Balsmeier and Woerter, 2019). Moreover, education has been shown to reduce the marginal effect of task automation and reduce the wages gap (Kattan, Macdonald and Patrinos, 2021). According to the World Economic Forum, young people entering primary school will now have occupations that do not currently exist (Block, 2018).

If we analyze the data provided by the social platform LinkedIn, for 20 economies, we can identify the main areas in which technology has created new jobs: Data and Artificial Intelligence, Engineering and Cloud Computing, People and Culture, Product Development, Sales, Marketing and Content (World Economic Forum, 2020). These professional clusters are expected to create approximately 6.1 million new job opportunities in the next three years (World Economic Forum, 2020). Even so, in recent years the creation of new opportunities is more difficult to develop than the disappearance of other jobs, which creates an imbalance in the labor market (World Economic Forum, 2020).

Research methodology

The case study undertaken is based on a set of indicators measured at European level in the period 2015-2019. First, we will use the “Skills needs” indicator, which indicates the top 10 most important skills specific to each occupation in the industrial fields: Arts, entertainment and recreation; Financial and insurance activities; Information and communication; Manufacturing; Mining and quarrying; Professional scientific and technical activities (according to the International Standard Industrial Classification - one digit level) (LinkedIn, 2021). Thus, based on them we calculated the relative

frequency of industries in which the main categories of skills can be identified. A second indicator used is “Skill penetration rate”, which is calculated based on TD-IDF (term frequency – inverse document frequency) statistics (LinkedIn, 2021). This statistic is used in text mining to prioritize important terms in a collection. TD-IDF also underpins the operation of search engines. To highlight the significant difference between the categories of skills available on the labor market we will use simple ANOVA. This statistical method involves analyzing the dispersion of the penetration rate for each skill group.

Results and discussion

The rapid evolution of technologies and the changing demand on the labor market has determined that public institutions, which have the capacity to issue policies, collaborate with private companies for their common benefit. Thus, World Bank collaborates with the social platform LinkedIn in order to identify the best insights regarding the labor market. 199 economies were selected, and the analysis was performed in the period 2015-2019. Both the top skills required by employers and the penetration rate for each type of skill were measured.

The digital age is not about the title of a job, but about the skills and knowledge that the employee has. Matching a job with a suitable candidate is done at the level of skills. In order for the activities that the job requires to be performed successfully and efficiently, it is necessary for the employee to have certain characteristics that facilitate his activity. Thus, the skills needed on the labor market were classified into five major classes: business skills, disruptive tech skills, soft skills, specialized industry skills and tech skills (Figure no. 1). The World Bank provides us with an evening of data that allows us to observe how the need of the labor market has evolved for the categories of skills required in the digital economy. The data are available for the period 2015-2019, a period in which the labor market did not face major turbulence (Figure no. 1).

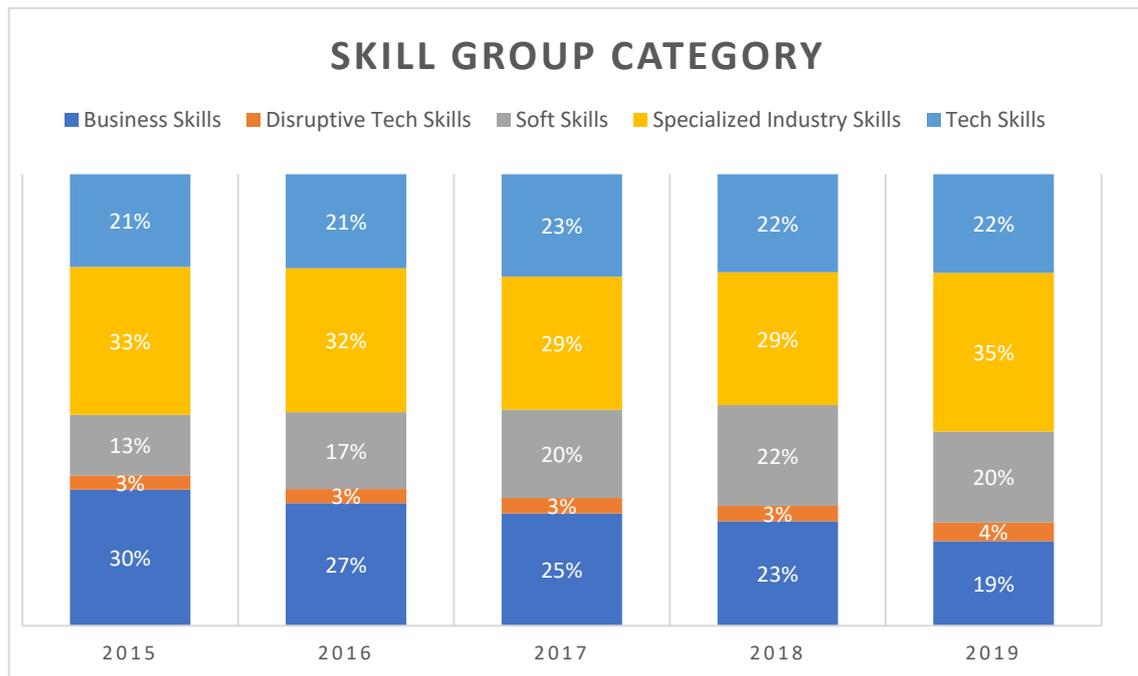


Figure no. 1. The proportion of industries that require a certain skill group category

Source: We used data from <https://datacatalog.worldbank.org/dataset/skills-linkedin-data>

As we approach the present moment, on the labor market there is an increase in the need for specialized workforce in new technologies, but also for employees with soft skills. Although the skills specialized in each industry mainly occupy the demand of employers, the need for knowledge in new technologies has increased the most in the last 5 years.

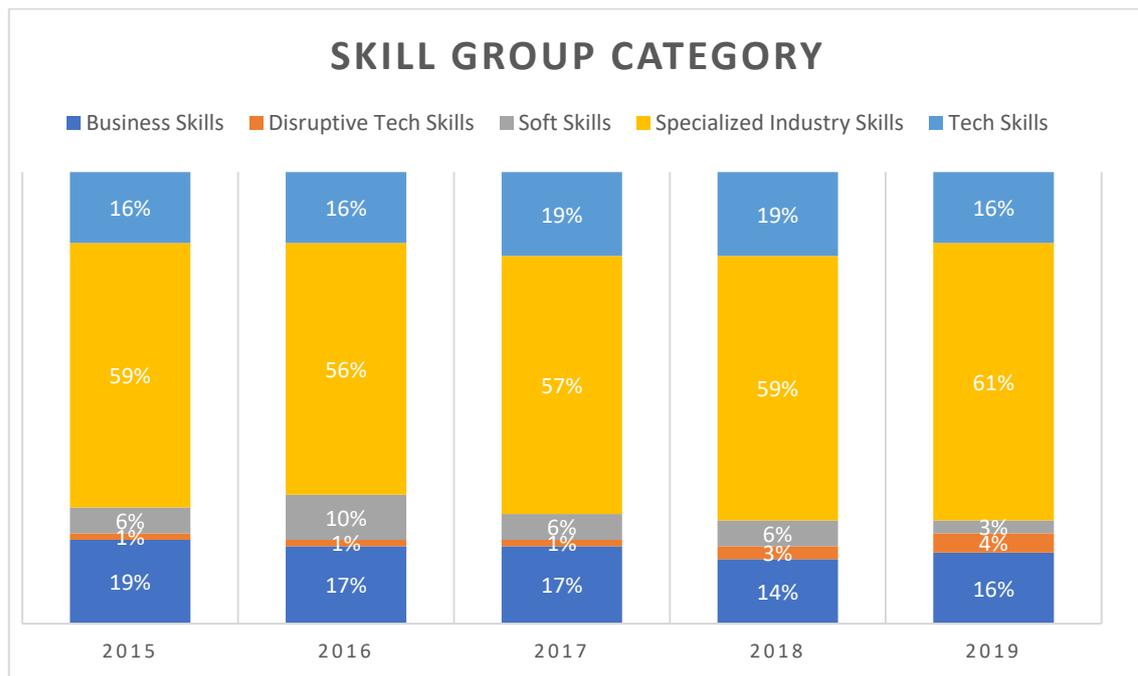


Figure no. 2. The proportion of industries that require a certain skill group category as first option

Source: We used data from <https://datacatalog.worldbank.org/dataset/skills-linkedin-data>

As previously mentioned, in each field of activity was established a ranking of the main skills needed. It is observed that in each industry, the first required skills are those represented in the previous graph (Figure no. 2). Here we notice how disruptive tech skills strengthen their position on the labor market, even if more than half of the requirements relate to the specific knowledge of each field of activity. However, the accelerated growth rate for futuristic technologies indicates an increased potential for growth in the future.

Table no. 1. The structure of the labor market need for certain skills, by industries in 2015

	Arts, entertainment and recreation	Financial and insurance activities	Information and communication	Manufacturing	Mining and quarrying	Professional scientific and technical activities
2015						
Business Skills	9%	72%	23%	36%	30%	30%
Disruptive Tech Skills	0%	0%	8%	4%	0%	2%
Soft Skills	11%	20%	11%	16%	20%	13%
Specialized Industry Skills	59%	0%	20%	34%	40%	38%
Tech Skills	21%	8%	39%	11%	10%	17%

Source: We used data from <https://datacatalog.worldbank.org/dataset/skills-linkedin-data>

Table no. 2. The structure of the labor market need for certain skills, by industries in 2019

2019	Arts, entertainment and recreation	Financial and insurance activities	Information and communication	Manufacturing	Mining and quarrying	Professional scientific and technical activities
Business Skills	3%	53%	11%	20%	25%	21%
Disruptive Tech Skills	0%	5%	9%	2%	0%	4%
Soft Skills	18%	28%	13%	24%	30%	21%
Specialized Industry Skills	55%	5%	28%	40%	35%	36%
Tech Skills	24%	8%	39%	14%	10%	18%

Source: We used data from <https://datacatalog.worldbank.org/dataset/skills-linkedin-data>

We note that in 2019 (Table no. 2), compared to 2015 (Table no.1), the demand for business skills registered massive decreases in all the analyzed industries. Also, the demand for specialized skills decreased in the industries: Arts, entertainment and recreation; Mining and quarrying; Professional scientific and technical activities. The demand on the labor market for soft skills, tech skills and disruptive tech skills increased significantly in 2015-2019. If we look more closely at each industrial sector, we will see how the share of needs in them has fluctuated.

In 2015, in the Arts, entertainment and recreation industry the most wanted skills were Specialized Industry Skills, in proportion of 59%. Along with these, but to a lesser extent, Technical skills (21%), soft skills (11%) and business skills (9%) were also wanted (Table no. 1). In 2019, the importance of soft skills increased to 18%, but also of technical skills to 24%, the share of the other two decreasing (Table no. 2).

For example, in the Financial and insurance activities industry, in 2015 the need for Business skills was 72% (Table no. 1), and in 2019 it will drop dramatically to 53% (Table no. 2). Thus, the importance of soft skills increases by 8 percentage points. Moreover, within this industry the need for disruptive technical skills and specialized industry skills was noted.

The field of Information and communication is notable for extreme changes in the demand for skills. In this industry are sought specialists with skills developed in this industry, technical knowledge, and business skills is reduced by up to 12 percentage points.

In Manufacturing and Mining and quarrying, the need for human resources with business skills shifts to the need for people specialized in these industries, with technical skills and soft skills. In contrast, Professional scientific and technical activities, which in 2015 showed approximately similar needs, stressed the need for specialists in new technologies.

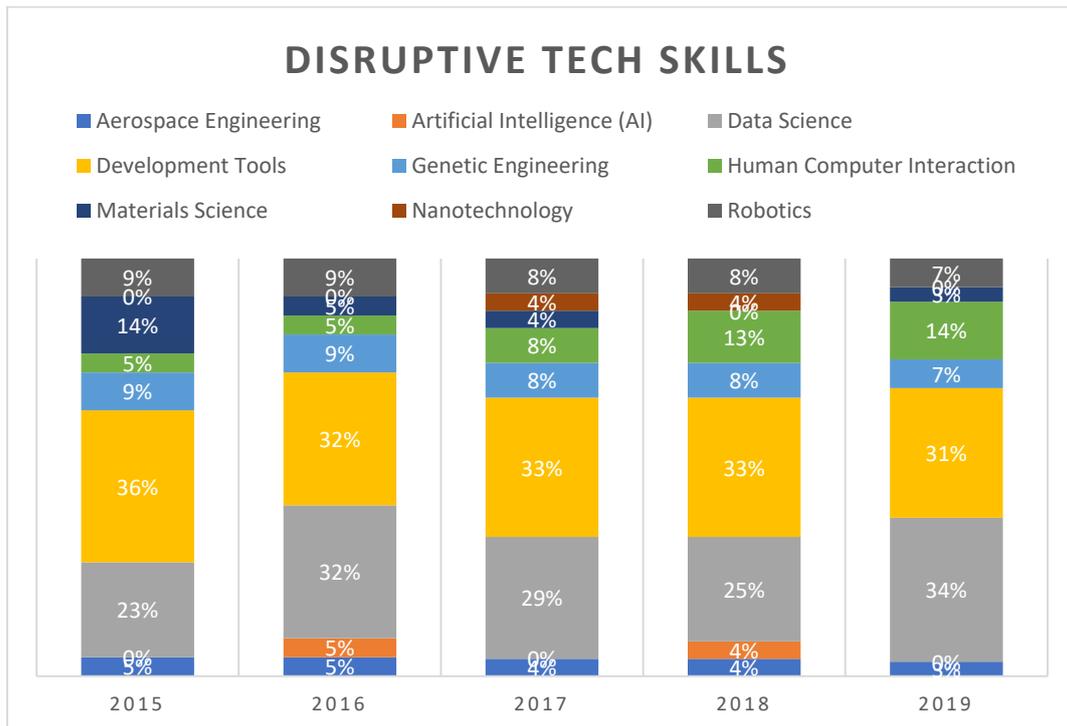


Figure no. 3. The proportion of industries that require a certain disruptive tech skill group category

Source: We used data from <https://datacatalog.worldbank.org/dataset/skills-linkedin-data>

Among the most wanted knowledge required for the use of futuristic technologies are Data science, Artificial Intelligence, Human Computer Interaction or Robotics (Figure no. 3). This would be the need for the European labor market in a context of continuous evolution. If we look at the supply of specialized human resources, we notice that in 2015 the supply was higher than the demand (Figure no. 3, Figure no.5). As we get closer to the present moment, the situation becomes equal. This makes us wonder if the needs will evolve exponentially compared to the capacity of the educational system to prepare the workforce.

Looking at the problem from the perspective of the availability of skills on the labor market and here we notice a difference between the main categories of skills. By analyzing the top 30 skills needed in each industry, World Bank in partnership with LinkedIn calculated a penetration rate based on TD-IDF statistics. This indicator shows the importance of each job skill posted on the LinkedIn social platform. In 2019, the order of average importance in the skills labor market was Tech Skills, Soft Skills, Disruptive Tech Skills, Business Skills and Specialized Industry Skills. The average penetration rate for each category differs significantly ($ANOVA: F_{calc} = 34,16 > F_{crit} = 2,37$). The novelty on the labor market is represented by these futuristic technical skills, which lay the foundations of the industrial revolution 5.0 and which are not easy to develop on the current infrastructure.

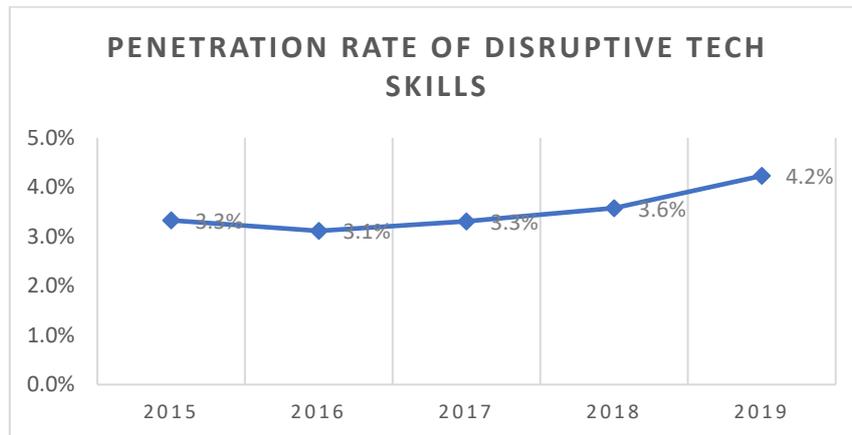


Figure no. 4. The evolution of penetration rate of disruptive tech skills

Source: We used data from <https://datacatalog.worldbank.org/dataset/skills-linkedin-data>

The penetration rate for futuristic technologies has increased in five years by about one percentage point. Their importance on the labor market exists, but it is quite low at the moment (Figure no. 4).

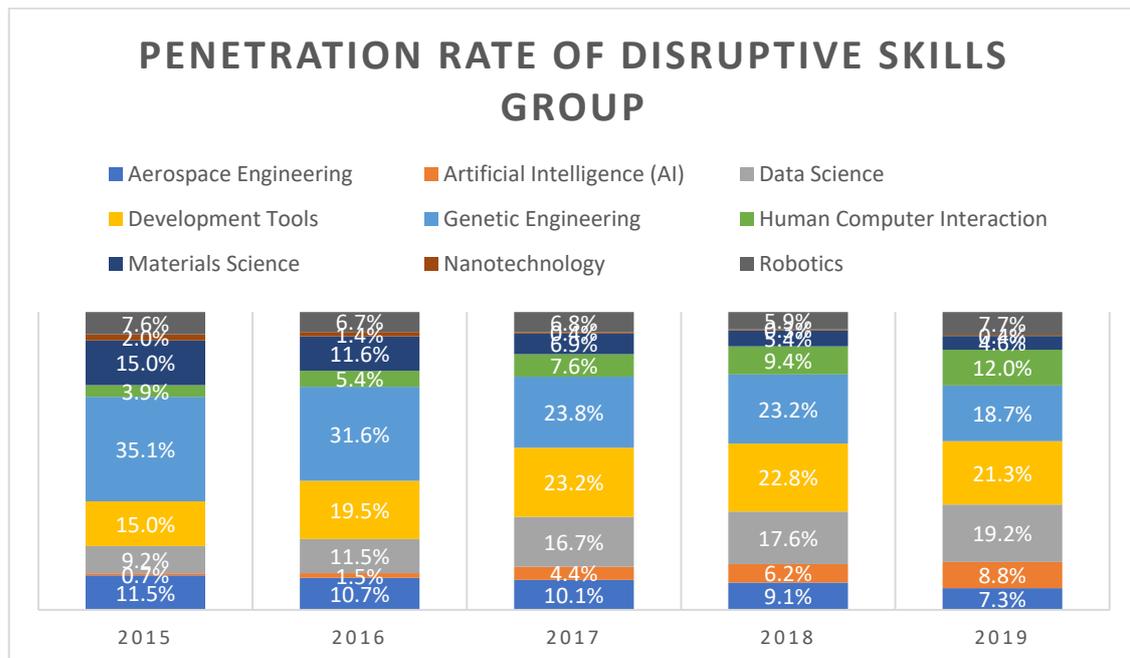


Figure no. 5. The evolution of penetration rate of disruptive tech skills by component category

Source: We used data from <https://datacatalog.worldbank.org/dataset/skills-linkedin-data>

Most of the candidates on LinkedIn were those with knowledge of using development tools, but also with knowledge in the field of data science. The penetration rate for Development Tools specialists increased from 2015 to 2019 by approximately 6.3 percentage points (Figure no. 5). Also, the demand for knowledge in the field of Data Science increased by 10 percentage points from 2015 to 2019 (Figure no. 5). A spectacular increase is observed in the case of specialists in Artificial Intelligence, which in 2015 almost did not exist on the labor market (Figure no. 5). Nanotechnology is modestly represented on the labor market, both as demand and supply (Figure no. 5). The penetration rate for specialists in the field of genetic engineering and aerospace engineering has decreased, although demand has remained constant over the years (Figure no.5). In the field of Human Computer Interaction and in the field of Robotics we notice an ascending trend of the share of specialists (Figure no. 5). The field that seems to be no longer wanted and for which specialists are no longer in large numbers is the field of

Materials Science (Figure no. 5). Although employers need specialists in Artificial Intelligence, Data Science and Human Computer Interaction, supply is much lower than demand.

Conclusions

The hypothesis from which we started can be confirmed, if we notice that there are a number of new activities closely correlated with technological developments. Practically some of them did not exist at all a short time ago. From this point of view, we can support the creative character that technology has on the labor market. Here arises the need for certain knowledge, which the human resource available on the market does not have very well defined. Demand is slightly higher than supply for jobs that require futuristic technical skills. This creates a certain imbalance in the labor market, which could deepen social differences.

We also argue that technology has changed the way we work in all industries, more or less. Thus, the needs of employers gradually began to change from one year to another. The research highlighted the dynamics of demand in the labor market in terms of skills needs specific to each industry analyzed. We have shown that the need for employees with soft skills and technical skills is growing exponentially. I also noticed how the need for niche and business knowledge are no longer as sought after. It seems that supply and demand have a similar trend of evolution, but we do not know what is the delay with which supply honors demand.

The biggest challenge is to identify areas and industries where the market has become oversaturated and redirect the surplus to other branches where human resources are needed. An oversaturation of the labor market is a negative aspect for the active population, which can risk a reduction in income. It would be beneficial for a system through which the educational offer for each field of activity varies according to the market requirements. In this way the market can meet the demand of employers in a reasonable time.

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Considerations of Public and Private Entities on Tourism in the Romanian Coastal Area in the Context of Maritime Spatial Planning

Kamer-Ainur Aivaz¹, Mari-Isabella Stan², Dragoș-Florian Vintilă³ and Ionela Ionițiu⁴
^{1) 2) 3) 4)} Ovidius University of Constanta, Constanta, Romania.

E-mail: aivaz_kamer@yahoo.com; E-mail: stanisabella@yahoo.com
E-mail: ydragos@univ-ovidius.ro; E-mail: ionelaionitiu@yahoo.com

Please cite this paper as:

Aivaz, K.A, Stan, M.I., Vintilă, D.F. and Ionițiu, I., 2021. Considerations of Public and Private Entities on Tourism in the Romanian Coastal Area in the Context of Maritime Spatial Planning. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 151-157
DOI: 10.24818/BASIQ/2021/07/019

Abstract

Undoubtedly, given the extraordinary potential of the coastal area, insufficiently exploited so far, the field of tourist services must be included with priority in Romania's development strategies. In the context of the development of the Maritime Spatial Planning (MSP), the paper aims to provide signals on the quality of services in the tourism sector and their impact on the environment and related activities with the effort of the parties interested in coastal development. The research, based on a questionnaire addressed to stakeholders, grouped in public and private entities, uses descriptive, exploratory analysis methods and outlines several aspects regarding coastal tourism. The authors consider that these results should be extremely relevant for policymakers and stakeholders, especially as they are the ones who will bear the consequences of the land-sea interaction to promote sustainable tourism development in the context of maritime spatial planning. The most important stakeholder in our research comes from the public sector and is represented by the local public administration. It has the task of getting involved in the economic development of the coastal area, having at hand the multiple possibilities to manage this approach. The obtained results revealed a series of problems related to the quality of services, maintenance, and development of infrastructure and promotion, marketing, all these being recognized as "weaknesses" by most of the interviewed entities. The research results add value to the integrated and updated analysis of conflicts/synergies of maritime and environmental use, carried out within the MARSPLAN BS-II project in which the authors are involved.

Keywords: coastal tourism, Maritime Spatial Planning (MSP), stakeholders, environment.

DOI: 10.24818/BASIQ/2021/07/019

Introduction

Maritime Spatial Planning (MSP) is considered in the broadest sense, as defined in the 2014/89/EU Directive, a public process by which authorities analyze and organize human activities in marine areas to achieve the environmental, economic, and social objectives. Sustainable planning of coastal and marine tourism needs support from several stakeholders to strike a balance between economic, environmental, and social issues (Wang, et al., 2016). Moreover, the European MSP Directive requires that land-sea interactions be taken into account to promote sustainable, integrated development and the management of human activities at sea. It is well known that maritime spatial planning (MSP) is one of the many framework conditions that shape development activities on land or at sea (SUPREME).

The coastal tourism activity that is carried out in this framework, has been enriched from year to year with new contents, has been diversified, knowing new forms: virtual tourism, soft tourism, shopping tourism, urban tourism, rural tourism, weekend tourism, adventure tourism, business tourism, cultural

tourism, birdwatching, etc. The problems in which the tourism phenomenon can be approached have also diversified - it can be seen today, as we have shown, from several perspectives: marketing, management, globalization, integration in the European Union, liberalization of international trade in services, from an ethical point of view, of e-commerce, of the ability to generate profit under the conditions of elaborating appropriate tourist strategies, and so on.

Also, the dramatic reduction of transport time and costs, the simultaneous increase of travel comfort, the emergence of new tourist segments and new tourist destinations have introduced profound changes in the tourism sector. Competition between seaside destinations is taking place both nationally and internationally, and tourism companies are increasingly focusing on gaining significant competitive advantages over competitors. Rejuvenation strategies are therefore developed to gain or retain some market power over domestic or international competitors and, ultimately, to increase revenue. A crucial part of this complex, multifaceted strategy is the signaling of high quality of tourist services, through strong, credible, externally certified quality signals (Papagiorgiu, 2016).

In a time of concern about increasing profitability and environmental impact awareness, environmental certificates (eco-labels) are used to promote tourist destinations and increase their competitiveness. Although they are very visible in the media and we are witnessing the continuous growth of quality studies on environmental certifications, quantitative estimates of the economic impact are almost non-existent. To fill this gap, this paper explores the particularities of Black Sea coastal tourism from the perspective of stakeholders as public and private entities focusing on issues related to elements of harmonization in the perspective of spatial maritime planning.

Over time, tourism development can generate jobs and financial income by providing recreational activities, education, and aesthetic pleasure to visitors, but it can also generate negative impacts on the environment (Donázar, Ceballos and Cortez-Avizanda, 2018). Environmental impacts refer to changes in the biological, physical, or chemical state of the environment that determine the quantity and quality of ecosystems and ultimately affect human health and socioeconomic performance (Hardy, Beeton and Pearson, 2002). Consequently, tourism can be a compromise and a controversial issue in protected areas. The approach to this compromise must comprehensively assess the benefits and costs of tourism. This requires integrated assessments that take into account environmental, socio-economic and cultural factors.

Literature review

Coastal tourism, along with all other forms of tourism, is an extraordinary driving force for economic growth, both at the national and zonal level, representing a significant alternative in employment and GDP creation (Sequeira and Nunes, 2008; Fayissa, Nsiah and Tadasse, 2008). Moreover, tourism initiatives promote the development of entrepreneurial activities either in less known, undeveloped areas or by groups of people who often do not participate in other large economic projects (Ashley and Mitchell, 2009). Among the various motivations for tourism, the pleasure of holidays and fun in coastal areas attract a lot of people. In recent years, public concern that these areas need to be used and managed sustainably has grown globally. Under these conditions, the issue of tourist impact on the environment should not be neglected at all. Although adequate legislative conditions have been created for the protection and use of the environment, there is an acute lack of approaches, both local, national, and international, regarding the tourist potential and implicitly in the dimension of the tourist impact on the environment (Hapenciuc, 2003).

Coastal tourism has often had an extremely negative impact on the environment. The approach was fragmentary and sometimes insufficient. However, changes in public opinion have forced policymakers to combine the use of coastal resources sustainably with the local development of the municipalities in which they are located (Holden, 2016; Hall, 2019).

In addition to the already known benefits of beaches and the sea, the introduction of elements aimed at adding value to stakeholders in their exploitation, they have made the issue of ecological development one of the strategies for increasing added value. Favoring environmental values (such as clean and certified beaches) stimulates a high-quality tourism sector, which targets a segment of the population

that usually has a higher income, thus promoting the local economy and showing more respect for natural resources and location values (Liu, 2003; McKenna, Williams and Cooper, 2011; Capacci, Scorcu and Vici, 2015). In this respect, there is evidence that those hotels that had environmental certification were less affected (in terms of financial performance, for example) by the reduction in travel and tourism that some financial crises have generated (Cavero-Rubio and Amorós -Martínez, 2020).

Methodology

The research was conducted using descriptive and exploratory methods based on a questionnaire. The questionnaire, which was addressed to stakeholders grouped in public and private entities, outlined several aspects regarding coastal tourism. The analyzed sample consisted of 71 entities, 39 private entities, and 32 public entities. Data processing and obtaining the indicators used in the statistical description was performed using the Statistical Program for the Social Sciences (SPSS).

Results and discussions

To analyze the place and role of Black Sea tourism, we must consider the role played by the services sector, including tourism services in the economy of the area, as well as the impact of its development on related branches. An important number of factors must be taken into account when considering the choice of a tourist destination. The choice is to compare personal desires and needs with several tourist products from which one, which is supposed to be closest to the customer's needs, is selected. This is the reason why a clear distinction must be made between the elements of demand (the goals that the tourist wants to achieve during the holidays) and the elements of supply (variety and diversity of existing tourist products) (Hapenciuc, 2003).

The first aspect considered was to highlight the interaction of motivations-preferences, which aimed to satisfy the motivations that generated them in a preferred manner. From the multitude of answers, most of the interviewed entities stated that the main reason is *rest, relaxation, recreation* (40 entities). This type of tourism that includes relaxing activities is usually the one practiced annually, for a physical and intellectual relaxation, characterized by a lack of dynamism.

Another reason, mentioned by 15 entities, was the cultural one, which responds to the need for knowledge, acquisition of new knowledge, and development of human personality. It can manifest by participating in music festivals, art, visiting museums, and art galleries.

A number of 9 entities mentioned sports tourism by practicing various sports, characterized as a form of active participatory recreation. There were also some situations in which the entities mentioned the reasons: increasing revenues to the local budget, developing the company by attracting new customers, the desire to change the scenery, health care, the safety of navigation. Only two entities stated that tourism is not the subject of their institution or that coastal tourism is not of interest. Although the share of subjects who opted for such answers is low, it should be emphasized that interest is only a general premise of tourism, there may be entities that are not interested in tourism, but who practice it.

The development of coastal tourism presupposes the existence of a tourist potential which, through its attractiveness, is meant to incite and ensure the integration of an area with domestic and international tourist vocation. Therefore, when asked how “the development of coastal tourism positively or negatively influences your activity”, 67.6% of the respondents agree that the activity of their organization is positively influenced by the development of coastal tourism. Coastal tourism can significantly contribute to the achievement of local development objectives, with a significant direct correlation between economic development and income generation and of course, job creation.

A particularly important issue is the advertising of tourist services. To the question “In the area where your organization operates, are there tourist objectives?”, 78.9% of the surveyed respondents answered that there are many resorts, historical, cultural objectives, 21.1% stating that there are “few”.

Undoubtedly, the Black Sea coastal area is an area with countless historical tourist attractions. Located at the crossroads of two roads, one connecting the North Sea with the Black Sea, crossing central Europe, and the other the ports of the eastern Mediterranean and the Pontic steppes, history has given Dobrogea a troubled fate over the centuries. One by one, several peoples perished: the Persians, Romans, and later, migrant peoples, followed by the Muslim domination/regime. Thus, Dobrogea has been an inhabited territory since ancient times. Archaeological research has revealed countless ancient cities unique in the world: Troesmis, Carsium, Capidava, Histria, Enisala, Argamum, Libida, and so on.

The existence of this wealth, not fully exploited, requires media coverage that must come, first of all, from the human factor, to create a complete tourist product, competitive on the international market. The approach to the issue of advertising was made by asking stakeholders “how do you appreciate the advertising made for these objectives?”. Over 70% of the interviewed entities answered that it is insufficient. It can be observed that the stakeholders involved have the perception of the economic benefit and the socio-cultural impact from the tourism promotion perspective. Stakeholders' motivational aspects of this perception may be related to their divergent views on the Black Sea coastal area.

In this context, it becomes very obvious that the capitalization of tourist resources and the elements of the cultural-historical framework in tourism can generate significant flows of visitors, which can be a crucial aspect that influences the interest of stakeholders.

Regarding the development of coastal tourism, to the question “how is your interest in coastal tourism compared to the period before the COVID-2020 restrictions”, 5.6% of the entities answered that they have an increased interest and at the same time 47.9% consider that it has remained the same whereas 36.6% appreciate that interest has decreased for tourism in the Black Sea coastal area. Therefore, it is observed that most stakeholders have a good understanding of the interests of the tourism sector, even in the context of the restrictions imposed by the Covid 19 pandemic which has both desired effects (spending holidays in their own country in greater numbers than usual) and undesirable effects on tourism activities (of course in terms of economic activity, but not only).

When properly developed, maritime spatial planning (MSP) can have significant economic, social, and environmental benefits. In this regard, stakeholders were asked how to assess the quality of environmental issues (such as landscape, air, green areas, noise) and coastal infrastructure (beaches and seaside, hospitality, traffic, restaurants, accommodation, leisure, and entertainment). According to the answers, about 30% of the respondents consider that the infrastructure of the coastal area is good and very good, while for the quality of the environment about 20% consider that it is good and very good (Figure no.1). The results of the analysis also indicate that the perceived level has a strong and negative impact on overall satisfaction. Thus, tourism service providers in the Black Sea coastal area should focus on increasing tourist attractiveness so that it increases tourist satisfaction, of course taking into account sustainable economic development and biodiversity conservation. The diversification and intensification of tourist activities in the coastal area can generate pressures on the environment.

An essential role in balancing the demand-supply ratio is played by tourist services, as a dynamizing factor of the entire tourist activity. Tourist services should not be identified only as part of the tourist offer, because they have a decisive influence in determining demand. The quality of the services and their relation with the tariffs practiced decisively influence the tourist movement, being able to constitute a stimulus or a brake. This is why the reliability of services is a vital issue for assessing the quality of services. A tourist service is reliable insofar as it has been provided correctly, of the requested term, according to the destination for which it was designed and offered.

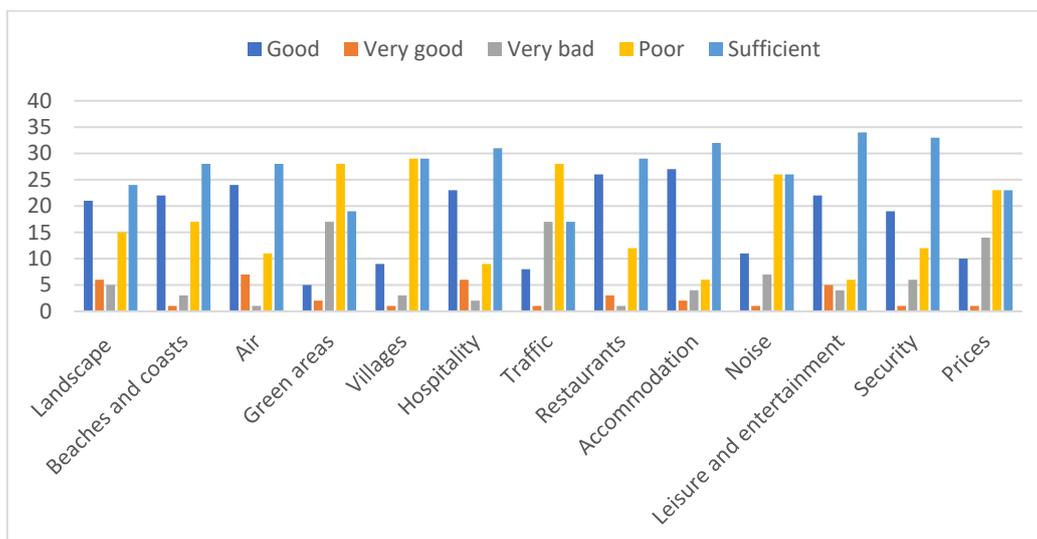


Figure no. 1. Assessment of environmental and coastal infrastructure issues

Source: own processing

To the question regarding the evaluation of the quality of some aspects/ services on the Black Sea beach, it is observed that according to the answers, 33% consider that the seawater is good, 20% appreciate the cleanliness of the beach whereas 20% consider the behaviour of those who practice water sports (surfers, jet skiers) good.

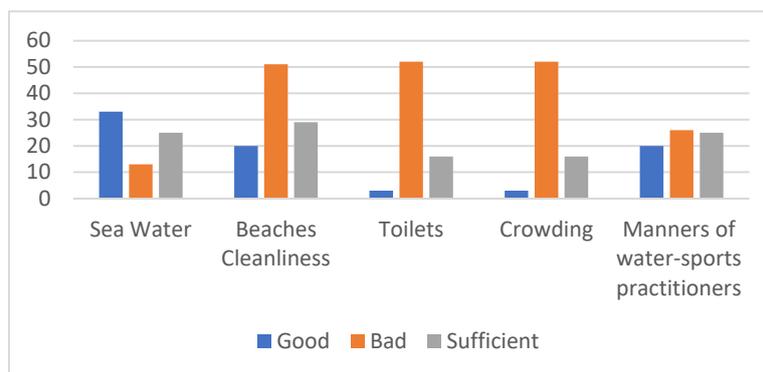


Figure no. 2. Services quality

Source: own processing

The general disagreement on beach cleanliness (51%), toilets (52%), and congestion (52%) should draw the attention of the competent public administration authorities as well as of the economic operators in the tourism field to take the proper measures to improve the degree of tourists' satisfaction.

As seen in Figure no. 2, the main problem of the Romanian coast is the quality of services. Although the questionnaire reported only a few aspects of beach services, the existing problems that directly or indirectly concerned the cleanliness of the beach were due to the existence of pets, street vendors, the insufficient endowment of beaches with showers and exchange cabins, insufficient endowment with beach bars and lifeguard services, the absence of rubbish bins by categories of waste. But this is not the only shortcoming.

The surveyed entities also feel the lack of entertainment activities, excessive congestion, and the uncivilized behaviour of those involved in providing these services. The only element that seems to be appreciated as “good” refers to the quality of seawater.

Conclusions

Sustainable local economic development is a complex process, which requires multiple resources, having implications on many aspects of economic, environmental, and social life, trying to establish an optimal balance between them. Identifying the factors involved in maritime spatial planning is an important step in developing a successful strategic plan and taking into account their perceptions of coastal tourism, as an integral part of the maritime spatial planning process is an element that cannot be overlooked. In this sense, two main categories of actors involved in local economic development were outlined. On the one hand, there are those responsible for this process, those who are actively involved in its development, such as local public entities and private entities that implement various development programs. On the other hand, it is about the beneficiaries, those who are affected by the effects of development. This category includes the local community and private entities. Undoubtedly, the most important stakeholder in our research comes from the public sector and is represented by the local public administration. It has the task of getting involved in the economic development of the coastal area, having at hand the multiple possibilities to manage this approach. The obtained results revealed a series of problems related to the quality of services, maintenance, and development of infrastructure and promotion, marketing, all these being recognized as “weaknesses” by most of the interviewed entities.

In conclusion, starting from one of the main characteristics of tourism, namely heterogeneity, and variability, sustainable development in the context of MSP involves different actions in terms of economic, social, and ecological intensity. For each service, the possible adverse effects on the current well-being of the population will be taken into account, as well as those effects that do not negatively influence the life and well-being of future generations.

Acknowledgement

This work has been supported by the European Commission through the European Maritime and Fisheries Fund, Cross-border Maritime Spatial Planning for Black Sea – Bulgaria and Romania (MARSPLAN-BS-II), EASME/EMFF/2018/1.2.1.5/01/SI2.806725- MARSPLAN-BS-II.

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Food Delivery Platforms During the COVID-19 Pandemic

Vera Amicarelli¹, Giovanni Lagioia², Rodica Pamfilie³, Raluca Mariana Grosu⁴ and Christian Bux⁵

¹⁾²⁾⁵⁾ *University of Bari Aldo Moro, Bari, Italy*

³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania*

E-mail: vera.amicarelli@uniba.it; E-mail: giovanni.lagioia@uniba.it;

E-mail: rodica.pamfilie@com.ase.ro; E-mail: raluca.petrescu@com.ase.ro;

E-mail: christian.bux@uniba.it

Please cite this paper as:

Amicarelli, V., Lagioia, G., Pamfilie, R., Grosu, R.M. and Bux, C., 2021. Food Delivery Platforms During the COVID-19 Pandemic. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 158-164
DOI: 10.24818/BASIQ/2021/07/020

Abstract

The food delivery service represents one of the best options to make food available (quite) wherever it is required and, during the Covid-19 pandemic, this has played a fundamental role in everyday life. Among others, one of the main advantages of food delivery services was to conciliate social restriction, final consumption and food supply, allowing consumers to easily receive their meals and restaurants to withstand the economic crisis caused by the pandemic. Using data from the websites of the most used food delivery companies in Italy, as well as from official reports and market studies, the present exploratory study is developed on a qualitative approach. Envisaging the most used food delivery platforms in Italy, the aim of this work is to discuss their main features and figures, focusing on their impact on food consumption behaviors and economic sustainability during the Covid-19 pandemic. The preliminary results of our qualitative content analysis illustrate mainly positive facts specific to the food delivery service in Italy; the pandemic has provided new opportunities for companies, people and the entire economy, highlighting reactivity and readiness to change as the key-variables to survive in the market. In addition, it emerged that the lockdown period has accelerated food delivery businesses like never before, guaranteeing resilience to the businesses/restaurants-consumers-couriers triangle. Since limited investigations have been destined to the role of food delivery platforms during the pandemic, this research brings novel insights in the area, highlighting the role of Covid-19 as a driver for developing new strategies for businesses active in the food services area.

Keywords

Food delivery, mobile commerce, food waste, Covid-19 pandemic

DOI: 10.24818/BASIQ/2021/07/020

Introduction

Food delivery service (FDS) represents one of the best options to make food available (quite) wherever it is required, and during the Covid-19 pandemic it has played a fundamental role in everyday life. Indeed, one of the main advantages of FDS was to conciliate social restriction, final consumption and food supply, allowing consumers to easily receive their meals and restaurants to withstand the economic crisis caused by the pandemic. FDS does not represent a novel way to understand business and food consumption activities. Immediately after the Second World War, in a context of limited possibility for everyone to buy and to prepare their own meals at home, a Women's Volunteer Service started to deliver meals to ordinary citizens affected by war consequences. This rudimentary form of business started from Great Britain and then moved to the United States and Australia, in a continuous growth which invested first restaurants, and then the so-called Ho.Re.Ca. sector (Caratù, 2018). Over

time, FDS has shown a good level of adaptability to change lifestyle and food consumption habits and, from the supply side, an interesting chance to enlarge business opportunities. Moreover, the introduction of mobile and smart technologies has deeply influenced the online FDS' offer, conquering new and increasing market shares.

It was estimated that, in Italy in 2018, among over 11 million people ordered by “telephone” or “in person” their meals, and only more than 4 million did it through online tools or digital apps (Privitera, 2019). However, these figures have been completely changed by the Covid-19 pandemic, considering its social and economic consequences. As well known, on the 11th of March 2020, the World Health Organization has declared the novel COVID-19 outbreak as a global pandemic and, in the attempt to limit and contain the spread of the disease, many countries have adopted lockdown strategies. From the 8th of March 2020 to the 3rd of May 2020, Italy has been the first Western country to implement severe lockdown measures forcing people to stay at home, imposing smart working and smart learning, closing all non-essential commercial activities and allowing a very limited range of activities. In the range of a few days, Italian lifestyle has been totally modified. In the field of food consumption habits, more than 35% of Italians who regularly consumed meal out-of-home before the lockdown had to adapt their habits (Ismea, 2020). In general, people have been forced to stay at home, reducing as much as possible the frequency of shopping occasions, buying a little more than usual in supermarkets and preparing and consuming home-prepared meals (Amicarelli and Bux, 2021). Consequently, all retail activities and particularly restaurant and coffee-shops had to switch toward more versatile and digital meal offerings, to ensure their access for all groups of consumers. In this situation, digital (web and apps) FDSs have played a fundamental role in changing the approach among final consumers. In the pre-pandemic period, the majority of Italian consumers considered online FDS as a new exciting experience, and the possibility to receive a particular meal (e.g., vegan, Chinese) as a solution to improve time management (Coldiretti, 2018). During the lockdown, on the contrary, FDS has been considered as the best self-protective behavior (contactless delivery) or the most resilient solution to receive food in the safest way, satisfying at the same time government rules and eating needs. Therefore, as a consequence of the pandemic, among the different sales channels, the e-commerce increased by 160% and the Italian online purchases in the “food and grocery” sector has been estimated in more than 2.7 billion euros, with a growth of 70%, of which FDS accounts for more than 700 million euro with a growth of 19% compared to 2019 results (Cavallo, Sacchi and Canfora, 2020; ZeroUno, 2020). In the light of these premises and considering that during 2020 the FDSs played a decisive role in redesigning retail-to-consumers interactions to address the crisis in the post-pandemic retail sector, the aim of this work is to discuss the impact of Covid-19 pandemic and the role of mobile commerce in the FDS. The analysis is based on the most used food delivery apps (FDAs) in Italy and discusses their main features and figures, focusing on their impacts on food consumption behaviors and economic sustainability.

Literature review

In recent years, scholars have been widely interested in FDS. Several authors have investigated FDSs' role in everyday life, examining the motives and reasons behind their use among people (Saad, 2020), while others have analyzed their impact on restaurant sales (Collins, 2020). However, there are limited investigations available in the FDS segment during the Covid-19 pandemic (Chang and Mayrhoefler, 2020), and research should focus on how technologies and food delivery could restore the entire food services, especially in the European Union (EU-27). Niu, et al. (2021) have analyzed the issue under the sustainable perspective, highlighting the potential of FDSs in the field of environment protection. Indeed, analyzing the difference between “Platform-to-Consumer Delivery” and “Restaurant-to-Consumer Delivery”, it emerged that logistic platforms are more environmentally friendly in times of intense market functioning, as during the pandemic. On the behavioral side, Dsouza and Sharma (2020) have estimated consumer behavior and expectation changes during the pandemic, highlighting as main driver for customers' satisfaction the need for food quality, as well as the respect for safety measures adopted either by restaurants or riders. Significant insights have underlined the role of Covid-19 as a driver for developing new strategies for business and customer retention in the future (Mehroliya, et al., 2020).

Materials and methods

The present research aims to investigate FDAs main features and figures, focusing on their impacts on food consumer behaviors and economic sustainability. According to Statista (2020), the authors intend digital (or smart) food delivery as a service solution for prepared (or pre-portioned) meals, distinguishing between: (i) Restaurant-to-Consumer Delivery segment, which presupposes that the restaurant carries out directly the delivery of meals; and (ii) Platform-to-Consumer Delivery segment, which offers services of delivery from partner restaurants not caring directly the delivery themselves. Further, digital food delivery includes services which deliver prepared meals and other food for direct consumption only via apps or websites, not accounting non-processed or non-prepared food or phone orders. In terms of boundaries, the analysis of FDAs during the Covid-19 pandemic has regarded the Italian experience. Not by chance, Italy represents the first country in the EU-27 to discover the first official Covid-19 case and to react to the pandemic, prohibiting all movements of people and closing all non-essential business activities. Moreover, the Italian online food delivery revenues have been estimated at 844 million euro in 2021, while its users have reached the amount of approximately 12 million, representing more than 6% of whole EU-27 users (194 million people) (Statista, 2020). The analysis has been managed according to a qualitative and explorative approach, and data have been collected/observed from websites of food delivery companies, official reports and market studies (Privitera, 2020). Then, data interpretation has been conducted according to a qualitative content analysis (QCA). All the gathered information read word by word to capture key facts and key concepts on food delivery, have been analyzed to explore “knowledge and understanding of the phenomenon under study” (Downe-Wamboldt, 1992). The investigation could be divided within two steps. First, in order to understand all FDAs available on smartphones, the authors have typed on the search bar of App Store and Google Play the following words: “food delivery”, “food home”, “food take away” (in Italian). This step has been essential to comprehend which food deliveries are distributed and concretely operate at national level. Among all FDAs, only those dealing with pre-portioned ready-to-eat meals (e.g., hamburgers, pizzas, sushi) have been selected, while those selling specific products (e.g., wine), offering the opportunity to online grocery or distributing more complex food services (e.g., catering or kitchen stuffs) have not been considered. Further, to understand the main search trends of such FDAs, the authors have analyzed their tendencies on Google Trends comparing each of them with the other competitors. The analysis was focused on Italy over the last year, from the 3rd of February 2020 (pre-pandemic period) to the 3rd of February 2021 (during-pandemic period). The investigated category has been “food and beverages”. In the light of these comparisons, only the top five most sought FDAs have been taken into consideration for a subsequent qualitative analysis, being intended as an interesting sample to further investigate. The second step regarded the qualitative investigation of the FDAs. To comprehend and evaluate opportunities and main challenges of the FDAs, the authors have selected some useful criteria: (i) companies’ information (e.g., year of foundation, capital, revenue); (ii) characteristics of the offer to consumers (e.g., payment method, traceability of the order, distance guaranteed by riders, average cost of delivery); and (iii) background/opportunities before and after the Covid-19 pandemic.

Results and main findings

It emerged from App Store and Google Play that a plethora of FDAs exist (e.g., Alfonsino, Cosaordino, Deliverat Italia, Deliveroo, etc.) and operate at national level. However, in the light of Google Trends results, only a few have registered a constant search throughout the year, with significant peaks in coincidence with the first Italian lock-down (from the 8th-14th of March 2020 to the 3rd-9th of May 2020). Figure no. 1 illustrates the top five FDAs in Italy pre- and during-pandemic and their related search trend.

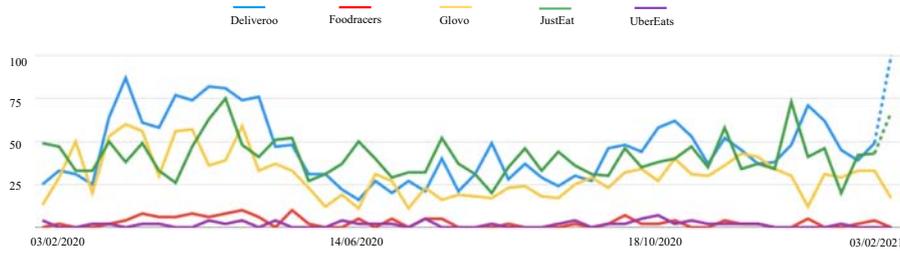


Figure no. 1. Top five FDAs search trend in Italy during the Covid-19 pandemic

Source: Personal elaboration by the authors on Google Trends results

It emerged that the most clicked FDAs are: a) Deliveroo; b) Foodracers; c) Glovo; d) Just Eat; and e) Uber Eats. Over a year, Figure no. 1 shows that all five apps have reached their peaks during the first Italian lockdown but have also recorded a slight increase as soon as the Italian government has promulgated the decree (from the 3rd of November 2020 onward) providing the division into four areas (red, orange, yellow and white) corresponding to different risk scenarios, for which specific restrictive measures have been foreseen. Further, to comprehend the variation between the pre-pandemic and during-pandemic trends, the authors have compared average FDAs results during the lockdown peak (from the 8th of March 2020 to the 9th of May 2020) with those registered in the same period, one year before (Figure no. 2). It is important to underline that the numbers (0-100) represent the search interest with respect to the highest point of the graph in terms of region, category and period, therefore they are not absolute scores. At a first glance, results show a sharp increase in all FDAs searches during the pandemic, highlighting a quite coherent and constant trend during the first Italian lockdown. Some FDAs, slightly and highly searched during the pandemic, seem not to exist only one year before (respectively, Foodracers and Glovo). Under a qualitative perspective, the sample of FDAs have been analyzed through official websites, reports (Pierre and Michaud, 2020; Just Eat, 2019; 2020), literature (Caratù, 2018; Privitera, 2019; Galati, et al., 2020) and market data (Statista, 2020) with regard to companies' information, characteristics of the offer to consumers and background/opportunities before and during the Covid-19 pandemic. As a common result, according to Just Eat (2020), it emerges a general growth trend for the entire Italian food delivery market, which nowadays represents between 20-25% of the entire home delivery service (18% in 2019). Such growth has been recorded not only in large cities, but also in peripheral areas and provinces.

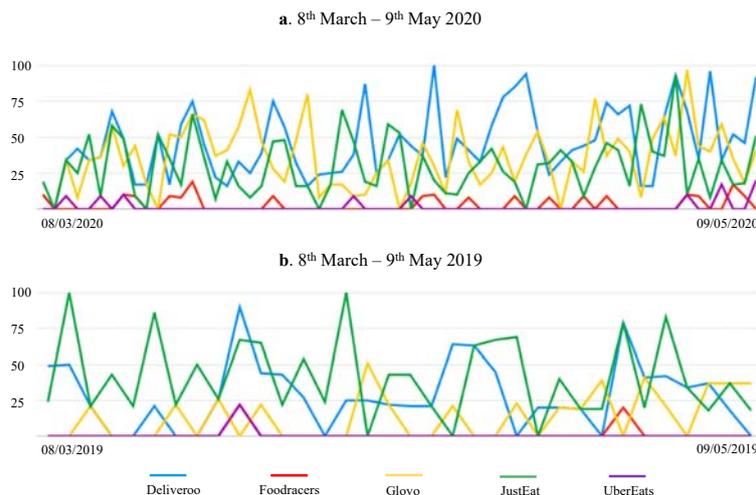


Figure no. 2. Top five FDAs search trend before and during the Covid-19 pandemic

Source: Personal elaboration by the authors on Google Trends results

Table no. 1 illustrates the companies' characteristics and the main worldwide features, highlighting some Italian details. Of course, as the pandemic is still underway, official data updated to 2020 are still not available. Therefore, table no. 1 shows the highlights updated to 2019.

Table no. 1. Food delivery companies' main features (2019)

Food delivery	Year	Headquarters	Restaurants		Couriers
			Worldwide	Italy	
Deliveroo	2013	London, UK	80,000	13,000	60,000
Foodracers	2015	Treviso, Italy	1,000	1,000	530
Glovo	2015	Barcelona, Spain	66,000	5,000	59,000
Just Eat	2000	Kolding, Denmark	53,000	10,000	N/D
Uber Eats	2014	San Francisco, USA	220,000	N/D	N/D

Source: developed by authors, based on Just Eat, 2019; Galati et al., 2020; Glovo, 2020; Uber Investor, 2020

It emerges from Italian facts that one of FDAs weaknesses is the distribution (capillarity) of the partner restaurants/couriers in the Italian country. Indeed, FDAs are mainly available in urban areas (e.g., Just Eat has reached over 900 cities, while Deliveroo barely exceeds 200 cities), therefore leading to an unequal distribution on the territory (Privitera, 2019). The delivery service in the suburbs is significantly lower, but still available in Northern Italy by Foodracers (55 cities distributed among Emilia-Romagna, Friuli Venezia Giulia, Veneto and Trentino-South Tyrol). However, it seems that the number of restaurants, due to the Covid-19 pandemic, has increased by approximately 30% compared to the previous year, justified by requests, five or six times higher (Just Eat, 2020). In terms of characteristics of the offer to consumers, all of these companies have either a desktop version (website) or a mobile one (app). According to the payment method, some FDAs allow the payment still with cash (sometimes depending on restaurants), while others require only the online payment (e.g., credit card, PayPal). Tendentially, digital payment has been estimated in 70% of total delivery payments, increasing at a rate of 36% only in 2020 (Just Eat, 2020). Moreover, several differences emerged in terms of delivery costs, registered on average between 2-5 euro. In reference to this, Deliveroo calculates delivery rates according to: a) distance between restaurants and consumers; b) service charges, intended as customer-care offered 24 hours a day, 7 days a week; c) additional supplement, added if the minimum expense indicated by the restaurant is not reached by the consumer. Likewise, some FDAs give the chance to leave a tip to the restaurant to encourage its activity. In addition, some FDAs offer the premium version, which eliminate delivery costs for each order for a fixed monthly cost. Table no. 2 summarizes the main previously mentioned highlights from the qualitative investigation.

Table no. 2. FDAs main highlights from the qualitative investigation

FDAs	Version		Payment method		Average delivery costs	Premium version (plus, prime, pass)
	Website	Mobile	Cash	Online		
Deliveroo	X	X	X	X	1-2.50 €	12.99 €/month
Foodracers	X	X	X	X	2- 5 €	
Glovo	X	X	X	X	2.50-3.90 €	7.99 €/month
Just Eat	X	X	X	X	1-2 €	
Uber Eats	X	X		X	1-2 €	9.99 €/month

Source: Personal elaboration by the authors on FDAs

In terms of company values, all declare their attention toward sustainability and environmental issues. For instance, Just Eat states that "It's time for a positive change. Whether it's our 100% compostable takeaway boxes, our commitment to reducing food waste, or low-carbon electric powered deliveries, we want to make a difference" (Just Eat, 2020), while Deliveroo has introduced the idea of electromobility for home delivery (Galati et al., 2020). Moreover, Deliveroo asks consumers whether cutleries are needed or not, calling for help to reduce waste. Lastly, it is crucial to underline that some apps have a section devoted to users' safety and health during the Covid-19 pandemic. As instance, updated on

the 1st of April 2020, Uber Eats app suggests a few options to ensure safety to the entire community either to consumers (e.g., “leave at the door” delivery) or to restaurants (e.g., best practices as sealing meals against tampering, disinfection and cleaning).

Conclusions

The Covid-19 pandemic, among other health and social challenges, has dangerously affected the economy and all sectors, from agriculture to food consumption, impacting both sides of the food services to high degrees (Amicarelli and Bux, 2021). However, despite the pandemic being defined as the worst world crisis after the Second World War, it has offered several new opportunities for companies, people and the entire economy, highlighting reactivity and readiness to change as the key-variables to survive in the market. Lockdown has accelerated the home delivery business like never before, and positive effects of the pandemic to food delivery have been reached on three sides of the business model as follows: (i) businesses/restaurants, which have even generated extra revenues in their digital channel; (ii) consumers, who had the chance to receive their food directly at home without running the risk of contagion; (iii) couriers, that made earning through flexible jobs (Pierre and Michaud, 2020). On the side of consumers, general advantages offered by FDAs regard the convenience of having meals ready-to-eat in a short time, the chance to choose the restaurants they like based on distance and offer, and the opportunity to check other users’ reviews and restaurants’ rankings already existing on the platform (e.g., Just Eat). In terms of payment, users could choose among different payment methods, from the most common cash to the online tools such as ApplePay. Moreover, in a safer way related to the pandemic, it has emerged the advantage of FDAs in terms of contactless food. Indeed, the only person that consumers meet are the couriers. On the business side, the advantage of adhering to the FDAs has consisted in increasing home sales and related revenues, without the need to hire staff and prepare tables (which, of course, is not always possible in the pandemic period). Through the usage of FDAs, the restaurants are able to publish their meals on virtual showcases, customizing the digital menu and making it more usable to customers. In addition, restaurants could choose the delivery times, the served areas and all promotional initiatives they want to advertise. Briefly, food delivery faced a sudden change during the Covid-19 pandemic. In some cases, the demand for online food products has even doubled, posing new business challenges previously neglected and putting under pressure the e-commerce and the mobile commerce players. Despite the background of Italian consumers – previously not accustomed to digital commerce – the mix of lockdown, the new needs and the new fears generated by the pandemic have imposed to users the use of digital commerce and digital payments, at the same time convincing the entrepreneurs active in the restaurant area of the need to enhance the online offer. To enhance the economy, allowing companies to resist and consumers to be fully satisfied, it is necessary that the positive growth during the pandemic persists over time.

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Macroeconomic Determinants of Tourist Demand in Romania. A Panel Data Approach

Alexandra Bobi¹ and Smaranda Cimpoeru²

¹⁾²⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

Faculty of Cybernetics, Statistics and Informatics, Romania.

E-mail: alexandra_bobi05@yahoo.com; E-mail: smaranda.cimpoeru@csie.ase.ro

Please cite this paper as:

Bobî, A. and Cimpoeru, S., 2021. Macroeconomic Determinants of Tourist Demand in Romania. A Panel Data Approach. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. 7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 165-171
DOI: 10.24818/BASIQ/2021/07/021

Abstract

The objective of the present paper is to identify the macroeconomic determinants of tourism demand in Romania. Tourist demand is measured by the number of tourists arriving in Romania from 12 different countries. Four macroeconomic factors that could influence tourism demand are investigated: the GDP per capita in the origin country, the trade between Romania and each country of origin, the cost of tourism activities in Romania, the population of the origin country. In order to reach the objective, three panel data regression models are estimated on the sample of 12 countries for the period 1995 – 2018. Hausman test reveals that the fixed effects model is the most suited for the underlying dataset. Results are in line with the specialty literature and confirm that GDP per capita, trade openness and population in country of origin have a significant positive impact on the tourist demand in Romania. On the contrary, the price of tourism in Romania comparatively to the price of tourism in the origin country is negatively associated with the Romanian tourist demand, as expected. Findings from this paper could be used by policymakers in order to develop tourism support policies, especially considering the contraction of the tourism sector generated by the COVID19 pandemic. Moreover, the present study fills a gap in the literature, since the macroeconomic determinants of Romanian tourist demand over a larger period of time is an under-researched topic.

Keywords: tourism demand, macroeconomic determinants, panel data regression models, trade openness, tourism cost.

DOI: 10.24818/BASIQ/2021/07/021

Introduction

The tourism industry is one of the most important industries of the tertiary sector. Worldwide, it accounts for about 10% of the global GDP. Its rapid development in recent years has contributed largely to economic growth especially in tourism intensive countries (Martins, et al., 2017). It is considered a generator of employment and income in formal as well as informal sectors (Khalil, et al, 2007).

The focus of the present paper is identifying the macroeconomic determinants of tourism demand in Romania. Tourism demand has been studied from various perspectives, based on qualitative or quantitative methods (Brida and Risso, 2009). However, most of the studies addressing the tourism demand employ quantitative methods and econometric models in particular (Song and Li, 2010; Leitao, 2009; Garin-Munoz and Amaral, 2000). We investigate four macroeconomic determinants of tourism demand: the GDP per capita, the trade between Romania and each country of origin, the cost of tourism activities in Romania, the population of the origin country. The choice of factors is based on the important results drawn from the literature as outlined in the next section. The tourism demand is

modelled using three panel data regression models on a sample of 12 countries for the period 1995 – 2018.

The signs of the estimated coefficients and the statistical significance of the factor variables are in line with the economic theory. The study is innovative for the field since it refers to Romanian tourism demand for a longer period of time (1995 – 2018) and includes multiple tourists' origin countries, adding to the robustness of results. Since tourism was among the most affected sectors by the COVID19 pandemic (Uğur, 2020), knowing the macroeconomic factors that influence tourism demand becomes much more relevant for developing and adjusting policies that could support tourism.

The paper is structured as follows. In the next section we review the literature of articles related to the studied topic and also motivate our choice for the macroeconomic determinants. In section 2 we describe briefly the methodology and introduce the variables used. Section 3 discusses the results of the empirical analysis and finally, last section concludes.

Literature Review

Over the years, numerous studies have been conducted to analyze the factors that influence tourists to choose a holiday destination.

Internationally, Garin-Munoz and Amaral (2000) employed panel data regression models to study the impact of economic indicators on international tourism demand in Spain for the period 1985 – 1995. The dependent variable used in their study was the number of nights spent in Spain, while the independent variables were the GNP, population, exchange rate and relative prices. Results showed that all indicators are statistically significant, the Gross National Product having a positive influence on the number of nights, while the rest of the variables a negative influence. Thus, if the price of tourist services decreases, the number of tourist nights spent in Spain increases.

In another study, Song and Witt (2006) used a Vector Auto Regression model to predict the flow of international tourists visiting Macau, based on data for 8 countries (China, UK, etc.) over the period 1992 – 2003. Arrivals of foreign tourists by country of origin, GDP and relative prices between Macau and the country of origin were used as variables. The model predicted that tourists from China will be the most numerous in the period 2003-2008.

At microeconomic level, Gokovali, et al. (2007) analyzed the factors that determine the duration of the tourist stay in Turkey at individual level. Data were collected through a questionnaire and a large number of microeconomic variables were used, among them being age, level of education, income, nationality, number of visits made in the past, etc. Regression analysis showed that the cultural environment, the level of entertainment and the promotion of tourism can affect the duration of the stay. Moreover, income and experience in traveling are positively associated with the length of stay, while the education level, number and type of annual holidays have a negative association.

Although models based on regression analysis (on cross-sectional or panel data) are predominant in determining tourism influencing factors, a paper by Louca (2006) uses Granger causality and cointegration analysis to examine whether expenditures in the tourism sector contributed to the growth of the tourism economy in Cyprus for the period 1960 – 2001. The results show that with the increase of advertising and promotion expenses, both the income and the number of tourists increase.

Referring to Romania, various empirical studies have been conducted to analyze the tourism sector, leading to a broader understanding of tourism demand. For instance, Kulcsar (2008) used the multiple linear regression to analyze if tourism GDP depends on tourist arrivals in tourist accommodation, overnight stays, and investment in the hotel and restaurant sector for the period 1997 – 2007 in Romania. The results showed that tourist arrivals and investments are significant to predict the GDP of the Romanian tourism sector. A significant correlation was obtained between investments in the restaurant and hotel sector and tourist arrivals for the analyzed period. Zaharia, et al. (2008) analyzed through simple linear regression the relationship between tourist accommodation capacity and the number of tourists who visited Suceava County during 2000 – 2006. They obtained a strong significant relationship between the two variables. Thus the number of tourists is strongly influenced by the

accommodation capacity – if the accommodation capacity in Suceava County increases, the tourist flow will also increase.

Another relevant paper is that of Podașcă (2011) where the relationship between tourist capacity and the number of foreign tourists coming to Romania was analyzed over the period 1998 – 2008. The highly significant model obtained in this paper implies that knowing the accommodation capacity of the tourist structures, one can predict the number of foreign tourists who will arrive in Romania. The research done by Popescu (2016) followed the arrivals of tourists in Romania depending on the number of accommodation structures for the 8 development regions in Romania in the period 2007-2015. At national level, there is a strong positive correlation between the two indicators. The lowest correlation was obtained in the South-East region (with a correlation coefficient of only 0.25), while the highest was recorded in the Central region.

The tourist demand in Romania was also studied by Popescu, et al. (2017), by applying three linear regression models with data from 2007 – 2015. In the first regression model, the relationship between the arrivals of tourists and the tourist overnight stays as a dependent variable is estimated. There is a strong positive relationship between the two indicators (coefficient of determination of 0.72). The second regression model, between accommodation capacity and tourist overnight stays as a dependent variable, shows that only 17.45% of the variation of overnight stays is explained by the variation of accommodation capacity, a rather small value. This may be due to the seasonal nature of tourism but also to a discrepancy between the quality of tourist services and the tariffs applied. The last model shows that the number of beds in tourist structures depends on the arrivals of tourists in Romania, with a moderate positive association between the two indicators.

Research methodology

As aforementioned, we will study the impact of certain macroeconomic indicators on the number of tourists that arrived in Romania from 12 different countries, for the period 1995 – 2018. All estimations were done using Stata 13.

Taking into account geographical and cultural characteristics, for the proposed analysis we chose 12 countries, 7 countries falling into the high-income category (USA, Germany, Italy, Hungary, UK, Greece, Poland) and 5 countries in the upper middle income category (Belarus, Turkey, Israel, Moldova, Bulgaria), same as Romania. The number of tourists coming from these 12 countries to Romania in the period 1995 – 2018 represents 65% of the total number of foreign tourists from this period.

Next, based on the specialty literature, we defined the tourist demand in Romania as a function related to the Gross Domestic Product (GDP) per capita, the trade openness, the relative price of tourism and the population of the country of origin.

$$TUR_{it} = f(GDP_{it}, TRADE_{it}, RP_{it}, POP_{it}) \quad (1)$$

The dependent variable (TUR_{it}) is the tourist demand expressed as the number of tourists arriving in Romania from country “ i ” in year “ t ”. Data for tourist arrivals were collected from the National Institute of Statistics and are expressed in thousands of people.

The independent variables are explained briefly below.

GDP_{it} is the GDP per capita of each country of origin, expressed as index 2010 = 100 at comparable prices and PPP for 2010. The data were collected from the United Nations Economic Commission for Europe (UNECE).

According to the specialized literature, we expect the number of foreign tourists in Romania to increase with the increase of the GDP per capita in the country of origin. Thus, the coefficient should have a positive sign (Garin-Munoz and Amaral, 2000).

TRADE_{it} represents the volume of trade flow between Romania and each country of origin. The higher the index, a greater influence of trade between the two countries on domestic activities is expected.

Trade openness was calculated as follows (Surugiu, Leitão and Surugiu., 2011):

$$TRADE_{it} = \frac{E_{it} + I_{it}}{GDP_{Rt} + GDP_{it}} \quad (2)$$

Where:

- E_{it} – annual exports from Romania to country “ i ” in year “ t ”, expressed in USD
- I_{it} – annual imports from country “ i ” to Romania in year “ t ”, expressed in USD
- GDP_{Rt} – GDP per capita in Romania in year “ t ” (USD, at PPP for 2010, 2010 = 100)
- GDP_{it} – GDP per capita in country of origin “ i ”, in year “ t ” (USD, at PPP for 2010, 2010 = 100)

Data for annual imports and exports were collected from the International Financial Statistics Yearbook published by the International Monetary Fund and data for GDP/capita were collected from the United Nations Economic Commission for Europe (UNECE).

RP_{it} represents the cost of tourism activities in Romania relative to the tourists’ countries of origin. To calculate it we used the following formula (Song and Li, 2010):

$$RP_{it} = \frac{CPI_{Rt}/EX_{Rt}}{CPI_{it}/EX_{it}} \quad (3)$$

Where:

- CPI_R – consumer price index for Romania in year “ t ” (2010 = 100)
- CPI_{it} – consumer price index for the origin country in year “ t ” (2010 = 100)
- EX_{Rt} – exchange rate between RON and USD in year “ t ” (average annual value)
- EX_{it} – exchange rate between domestic currency and USD in year “ t ” (average annual value)

This variable embodies a plausible decision-making process by a tourist, a decision between domestic and international tourism. Data for the average annual exchange rate were collected from the International Financial Statistics Yearbook published by the International Monetary Fund, and those for the CPI from UNECE.

POP_{it} represents the population of the country of origin. According to Hanafiah and Harun (2010), the world’s population is constantly changing, so its influence on tourism activities is obvious. Data for population were collected from UNECE and are expressed in thousands of people.

The empirical analysis proposed in this paper is based on estimating panel data regression models. As a first step we will determine whether the dataset fits a panel regression or a regular OLS regression. According to Baltagi (2005), this can be done by testing individual effects, the null hypothesis is fitting a pooled OLS model (no fixed effects) and the alternative hypothesis the existence of the fixed effects.

The next step is to decide on the most appropriate model, either with fixed effects or with random effects. Hausman test will be applied to choose among the two models. However, in the specialty literature on tourism determinants, the fixed effects model has been used more frequently because the groups under analysis are often markets or countries, which have specific individual factors that influence the other explanatory variables of the model.

Table no. 1. Results of the Levin-Lin-Chu test for stationarity

Variables	p-value for the initial series	Stationarity	p-value for the logarithmic series	Stationarity
Tourists	0.0115	Stationary	0.0007	Stationary
GDP/capita	0.0017	Stationary	0.0013	Stationary
Relative price	0.0001	Stationary	0.0000	Stationary
Population	0.0000	Stationary	0.0005	Stationary
Trade openness	0.0267	Stationary	0.0001	Stationary

Source: Authors’ own computation.

Because the series have different measurement units and scales, the logarithmic form of all variables was used. Before estimating the regression models on the panel data, we tested the stationarity of the series using the Levin-Lin-Chu panel unit root test. Table 1 shows the values of the unit root test before and after taking the logarithm of the variables. The results confirm the lack of unit root and thus the stationarity of the variables, for a 0.05 level of significance.

Results and discussion

Results for estimating the three models (pooled OLS, fixed and random effects) are presented in Table 2. According to the F-test all models are statistically significant at a significance level of 5%. The Hausman test shows that the fixed effects model is the most suitable (Table 3). The fixed effects model has also the highest value for the coefficient of determination, 91.79 % of the variation of foreign tourists' arrivals in Romania is explained by the regression model. To correct the heteroskedasticity (Table 4) we estimated the model with robust standard errors, but the results did not change significantly. For the fixed effects model, the population no longer has a statistically significant coefficient, but the rest of the coefficients remain significant.

Table no. 2. Estimation results of the three regression models

Variables	Pooled OLS	Fixed effects (LSDV)	Random Effects	Expected sign
GDP/capita	1.2494 ***	0.9284 ***	0.9030 ***	+
Relative Price	0.4276 ***	-0.2003 *	-0.1482	-
Trade Openness	0.0044	0.1051 **	0.1060 ***	+
Population	-0.2454 ***	1.2291 *	0.0054	+
Intercept	1.1217 *	-5.2201 *	0.3959	
Country 2 (dummy)		1.3447 ***		
Country 3 (dummy)		0.0133		
Country 4 (dummy)		2.1603 ***		
Country 5 (dummy)		-0.2353		
Country 6 (dummy)		1.4258 ***		
Country 7 (dummy)		-0.6270		
Country 8 (dummy)		-1.5253 *		
Country 9 (dummy)		-0.4053		
Country 10 (dummy)		0.1004		
Country 11 (dummy)		-0.2634		
Country 12 (dummy)		-0.0769		
F test / Wald test	37.79 ***	202.75 ***	88.00 ***	
Degrees of freedom	283	272	283	
R-Square	0.3482	0.9179	0.6086	
RMSE	0.4089	0.1480	0.1506	
Effect test		179.88 ***	2010.85 ***	
Sample size	288	288	288	

Source: Authors' own computation; * p-value <0.05, ** p-value <0.01, *** p-value <0.001

Table no. 3. Hausman test results

Hausman test	P-value
16.44	0.0025

Source: Authors' own computation.

Table no. 4. Results of the heteroskedasticity test for FEM

Wald test	P-value
218.00	0.0000

Source: Authors' own computation.

In what follows, we will interpret and focus on the results obtained for the fixed effects model since according to the Hausman test this is the most suited for the underlying dataset. It is also worth mentioning that for the fixed effects model, the coefficients had the expected signs according to the literature, which does not apply to the model with random effects, nor to the pooled OLS model.

Coefficients for all four independent variables are statistically significant at 5% level of significance or less, as shown in Table 2. The GDP per capita has a positive impact on tourist demand in Romania. Therefore, the higher the standard of living of a country, the more willing its inhabitants are to travel. The sign was the expected one, as obtained by Garin-Munoz and Amaral (2000), Leitao (2009), Song, et. al (2010) and Surugiu, Leitão and Surugiu (2011).

Also, the trade openness between Romania and the country of origin has a positive influence on the tourist demand. The higher the trade flow, the higher the number of international tourist arrivals. The same result was obtained by Leitao (2009) and Surugiu, Leitão and Surugiu (2011).

Another significant variable that positively influences the flow of international tourists is the population of the country of origin. This was also included in the study conducted by Leitao (2009) and Surugiu, Leitão and Surugiu (2011), obtaining similar results.

The model shows that the price of tourism in Romania in relation to that of the tourism in the country of origin is an important factor in determining tourism demand. Therefore, domestic tourism is used as a factor of comparison when a person plans their international travels. This variable negatively influences people's decision to visit a destination, a result that was also obtained by Botti (2006), Song and Li (2010) and Surugiu, Leitão and Surugiu (2011).

The fixed effects test showed that there are significant individual effects, so the fixed effects model is more appropriate than the pooled one. Also, according to the Hausman test, the fixed effects model is preferred to the random effects model.

Conclusions

The aim of the present study is to identify potential macroeconomic determinants of tourism demand in Romania. Tourism demand is measured by the number of tourists arriving in Romania over the period 1995 – 2018, from 12 countries. Tourists arriving from these countries account for 65% of the total foreign arrivals. The macroeconomic variables investigated as potential determinants of Romanian tourism demand are: GDP per capita in the country of origin, the trade between Romania and each country of origin, the cost of tourism activities in Romania, the population of the origin country.

The tourism demand is modelled using three panel data regression models (pooled OLS, random and fixed effects) on the sample of 12 countries for the period 1995 – 2018. The fixed effects test and the Hausman test revealed that the fixed effects model is the most suitable for the dataset. Coefficients for all four macroeconomic variables are statistically significant at a 5% level of significance.

GDP per capita in the origin country is positively associated with the tourism demand suggesting that individuals from better developed countries are more likely to travel to Romania. Moreover, the higher the trade flow between the country of origin and Romania, the higher the number of tourists arriving from that country. As expected, the price of tourism in Romania compared to the one in the origin country is significantly negatively related to the tourism demand.

Therefore, in order to increase foreign tourist arrivals, authorities should focus on attracting tourists from countries where the tourism cost is higher than in Romania, have a good development level and have significant trade flows with Romania. Results are of great importance for policymakers since the COVID19 pandemic requires new measures for supporting and reshaping the tourism industry.

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Agricultural Sector Human Capital Remuneration Development Within the Third Millennium

Mihaela Țifui¹

¹*The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: tifui.mihaela93@gmail.com

Please cite this paper as:

Țifui, M., 2021. Consumers' Agricultural Sector Human Capital Remuneration Development Within the Third Millennium. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 172-177
DOI: 10.24818/BASIQ/2021/07/022

Abstract

Performance of the agricultural sector recorded a lower level. Lack of competitiveness is reflected by low productivity, low economic growth and a shortage of food trade balances, given that agriculture and food industry fail to keep pace with the rising food demand, driven by overall economic growth is fast and can not face foreign competition, particularly from UE. Poverty incidence is considerably higher in rural areas and among employees in agriculture. In recent years, the Romanian economy has improved and poverty has declined too. Although there has been significant progress in reducing absolute poverty benefits of the new wave of growth do not reach all segments of the population.

We therefore performed a quantitative analysis of national economic and financial developments in the agricultural sector. I started with the primary analysis of import and export trade to highlight the ability of the agricultural sector, then we continued with the analysis of human factor earnings. Finally, we reported our research strategies to be implemented at European Union level.

Keywords

human factor, agriculture earnings, trade capacity, competitiveness.

DOI: [10.24818/BASIQ/2021/07/022](https://doi.org/10.24818/BASIQ/2021/07/022)

Introduction

Human capital is the accumulation of knowledge, habits, social and personal qualities, including creativity, involved in the ability to work, which in turn leads to the production of material goods and services (Goldin, 2014).

The theory of human capital is approached in close connection with the study of human resource management, also being found in the practice of business administration and macroeconomics

In the recent literature, the new concept of human capital needed to accomplish a particular task was theorized in 2004 by Robert Gibbon, a professor and economist at the Massachusetts Institute of Technology (MIT), and Michael Waldman, a professor and economist at Cornell University.

The concept emphasizes that in many cases, human capital is accumulated depending on the nature of the task (or the skills needed to perform a task), and can be used in several companies that require transferable skills (Gibbons and Waldman, 2004).

Under the National Rural Development Programme 2014-2020 - Fourth version, December 2017 Romania enjoys a significant growth potential, but unused. With a total area of 238 thousand km² and a population of over 21 million inhabitants, Romania is the largest, the second new member of the European Union after Poland.

Therefore, it represents 6% of the total EU and 4% of its population. Investment and competitiveness in Romania are still issues to be improved to be able to accelerate economic growth and ensure income convergence with the EU.

Methodology

For this I used calculation and evaluation methods (quantitative and qualitative determinations of the studied phenomena), statistical research methods and methods for comparative determination of indicators.

Economic and financial analysis of the agricultural sector in terms of imports and exports

The main component in the sphere of material production, agricultural industry as a major contribution is reflected in GDP growth but also growth in general. Its development is in close interdependence with other components of the national economy but which is delimited.

Look out below in terms of agricultural market development approaches economic statistic on the importance of agriculture in Romania's macroeconomic structures.

During 1.I-30.XI 2017 FOB exports amounted to 113.2724 billion lei (26.7103 billion euros). Compared with the corresponding period of 2016, exports decreased by 2.5% to values expressed in lei (15.9% in value in euro).

According to statistics published by the National Institute of Statistics, the structure of exports during 1.I-30.XI 2017 was as follows:

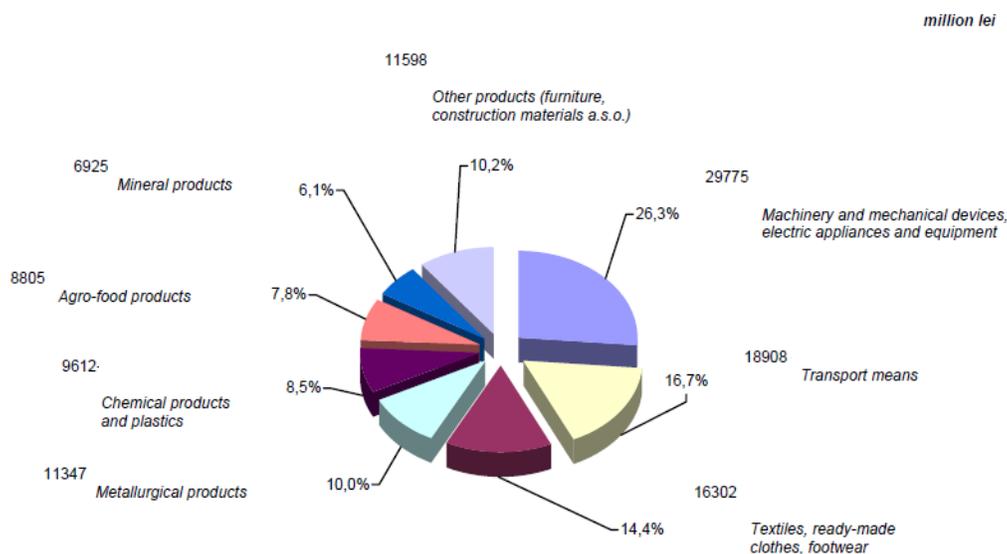


Figure no. 1. Export structure 1.I-30.XI 2017

Source: INSSE, 2017

In November 2017, exports FOB value was 11.7941 billion lei (EUR 2.7497 billion), higher than November 2016 to 22.2% in lei (7.0% at values expressed in euros).

Partner countries holding the top 10 places for exports during 1.I-30.XI 2017 (representing 67.8% of total exports) were: Germany (19.2% of total exports), Italy (15.4%), France (8.2%), Turkey (4.9%), Hungary (4.3%), Bulgaria (3.8%), United Kingdom of Great Britain and Northern Ireland (3.4%), Netherlands (3.2%), Spain (3.0%), Austria (2.4%).

Regarding agricultural markets see exports falling at a rate of 7.8% (along with other relevant products low in the other 7 parts without large sectors of industry). The percentage of 7.8% was EUR 8.805 billion.

During 1.I-30.XI 2017 CIF imports amounted to 150.9358 billion lei (35.5981 billion euros). Compared with the corresponding period of 2016, imports decreased by 23.2% to values expressed in lei (33.7% in value in euro).

According to statistics published by the National Institute of Statistics, the structure of imports during 1.I-30.XI 2017 was as follows:

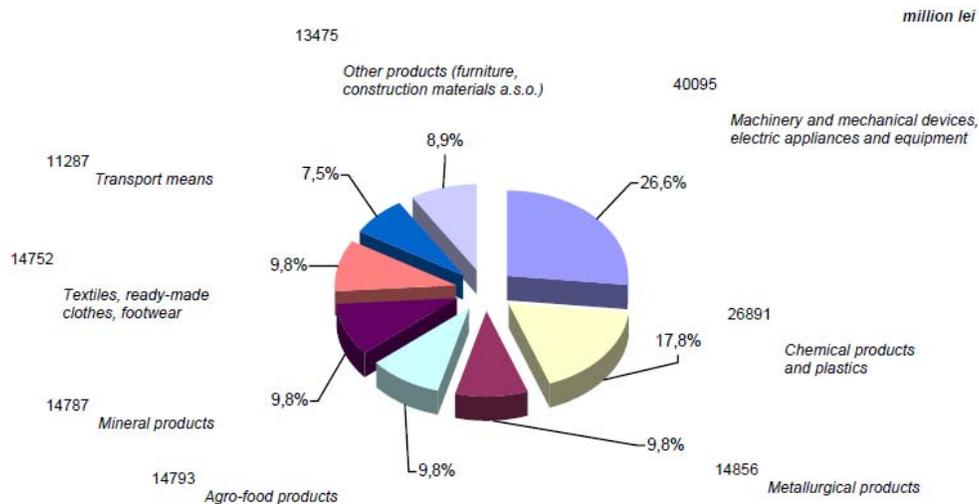


Figure no. 2. Import structure 1.I-30.XI 2017

Source: INSSE, 2017

Partner countries holding the top 10 places for imports during 1.I-30.XI 2017 (representing 68.3% of total imports) were: Germany (17.3% of total imports), Italy (11.8%), Hungary (8.4%), France (6.2%), China (4.8%), Austria (4.8%), Netherlands (3.8%), Turkey (3.8%), Russian Federation (3.8%), Poland (3.6%).

In November 2017 CIF imports were 15.3559 billion lei (3580.0 million), lower value compared to 5.8% in November 2016 in lei (17.7% of the values expressed in euros).

Regarding agricultural market noted that imports falling at a rate of 9.8% (along with other relevant products in the other 7 low in thin large industrial sectors). The percentage was 9.8% EUR 14.793 billion.

Commercial deficit FOB-CIF during 1.I-30.XI 2017 was 37.6634 billion lei (EUR 8.8878 billion), with 42.5414 billion lei (EUR 13.0586 billion) lower than 1 period . I 30.XI 2016.

Analysis of human capital remuneration in agricultural area

On household income, it varies from one household to another, such as average rural income / person per month is about 95 euros, while in urban areas is set around the amount of 135 Euros. Income to rural households, derived primarily from agricultural production and provide about 45% of total income, while in urban areas at a rate of 61.1% comes from wages. Average revenue from non-agricultural activities at household level was in 2005, approximately 12 per month representing only 4.1% of revenue. And in 2018 reached a rate of 1940 RON, approximately 461.90 euros. What marks a significant increase.

Monthly income of farmer households is usually smaller than those of ordinary rural households.

Performance of the agricultural sector recorded a lower level. Lack of competitiveness is reflected by low productivity, low economic growth and a shortage of food trade balances, given food and fail to keep pace with the rising food demand, driven by rapid overall economic growth and cannot cope foreign competition, particularly the EU.

Poverty incidence is significantly higher in rural areas and among employees in agriculture. In recent years, Romanian economy and poverty has declined too. Although there has been significant progress in reducing absolute poverty benefits of the new wave of growth do not reach all segments of the population.

Table no. 1. Current status of agricultural wage

Category	Average earning in February 2018			
	GROSS		NET	
	LEI	% From January 2018	LEI	% From January 2018
Total Economy	1940	98,6	1411	98,9
Agriculture, forestry and fishing	1389	98,9	1026	99,3
Agriculture, hunting and related services	1351	97,3	999	97,8
Forestry and logging, fishing and aquaculture	1471	102,2	1084	102,6

Table no. 2. Wage developments in agriculture

	Feb 2017	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb 2018
Total Economy-GROSS	1863	1922	1930	1855	1887	1901	1845	1860	1881	1866	2023	1967	1940
Agriculture, forestry and fishing	1320	1326	1363	1320	1308	1369	1327	1322	1354	1337	1610	1404	1389
Agriculture, hunting and related services	1250	1249	1260	1226	1228	1280	1239	1241	1263	1237	1314	1388	1351
Forestry and logging, fishing and aquaculture	1457	1482	1570	1518	1479	1565	1523	1503	1551	1536	2196	1439	1471

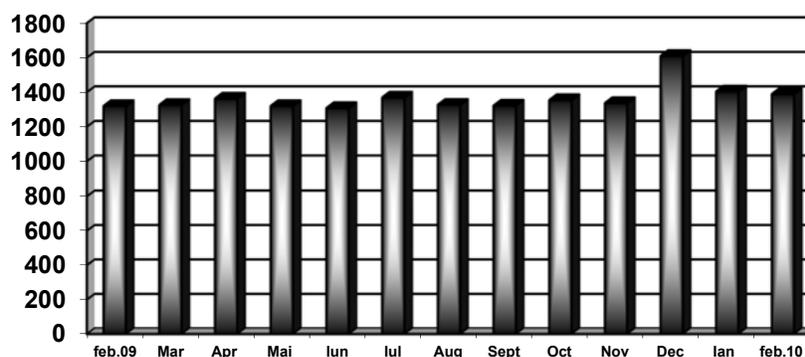


Figure no. 3. Evolution of the group earnings in Agriculture, forestry and fishing

Increased participation and employment rates in rural areas mask hidden unemployment. Participation rate in rural areas exceeds the 5-10% level in urban areas in 2002-2005, though it falls on a downward curve. Convergence between rural and urban participation rates was a consequence of the aging rural population constant and increased attractiveness of the labor market in urban space. Employment rate in rural area and beyond it, with a significant percentage on the urban area, resulting in an unemployment rate much lower than the rural-urban.

To guide our efforts and progress, there is broad consensus that the EU should agree on a limited number of key objectives for 2020. These objectives should be representative for the prospect of smart growth, sustainable and inclusive.

Objectives must be measurable, capable of reflecting the diversity of situations in member countries and based on sufficiently reliable data to allow comparisons. The following targets were selected on this basis - their performance will be key to our success of 2020, including a wide number of citizens living below the national poverty threshold should be reduced by 25%, which would mean removing more than 20 million people in poverty and employment rate of people aged 20 and 64 years should increase from the current 69% to at least 75%, including through greater involvement women, older workers and a better integration of migrants in the labor market.

These objectives are interrelated. For example, providing higher levels of education promote employability and recording progress in terms of increasing the employment rate of workers contribute to poverty reduction.

Conclusions

Overall increase European exporters will provide new opportunities and competitive access to essential imports. Must use all instruments of external economic policy to stimulate growth in Europe through our participation in open and fair markets worldwide. This principle applies to the external aspects of our various internal policies (e.g. energy, transport, agriculture, research and development), but applies, in particular, trade and international macroeconomic policy coordination. An open Europe, operating in a regulated internationally, is the best way to exploit the benefits of globalization, which will enhance growth and employment. At the same time, Europe must make its presence felt on the international scene in a more effective, assuming a leading role in shaping future global economic order and pursuing European interests through active use of all instruments at our disposal.

Therefore, Romania has to align with European standards in this area further than this to succeed to the crisis.

Contribution

This project aims to contribute to a wide range of initiatives at EU level taking part and inter-institutional collaboration exercises. It has supported better informed decision, making, finding gaps in knowledge, facilitating vulnerability assessments and suggesting methodologies for enhancing preparedness to the human capital remuneration development within the third millennium.

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Big Data in the Context of the Essential Facilities Doctrine

Sergey Petrov¹

¹⁾ *Institute of Economics and Industrial Engineering SB RAS, Novosibirsk, Russia.*

E-mail: petrov.s.p@mail.ru

Please cite this paper as:

Petrov, S. 2021. Big Data in the Context of the Essential Facilities Doctrine. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021.7th *BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 178-183 DOI: 10.24818/BASIQ/2021/07/023

Abstract

Digital transformation of economy leads to changes in industrial markets and firms behavior on them. They begin to compete basing not on expansion of their market share but on creating a benefit for a consumer. So far increase of firm competitiveness requires knowledge about preferences and behavior of consumers within a broad range of indicators. In such a situation firms operating big data obtain competitive advantage. As gaining a benefit from big data is connected to high fixed cost they gain monopoly power. Big data do not cover a market entirely but impose limitation on competitiveness of those who do not possess them. As a result it leads to creation of entrance barriers on the market. In this case question arises about possibility of big data consideration basing on the essential facilities doctrine. The purpose of this article is to analyze big data from the perspective of the essential facilities doctrine and to reveal specific features of big data market functioning distinguishing it from traditional markets of essential facilities. The research is based on the essential facilities doctrine and its application to building of optimization model of big data market firms behavior. The matter of big data attribution to essential facilities is solved basing on study of approaches to interpretation of big data category, analysis of interrelation and size of big data processing costs, building a model of big data operator behavior when supplying firms on neighboring markets with processed information. It is shown that big data in processed form can be attributed to essential facilities as their collection and processing are connected to high initial costs which block possibility of their duplication by competitors. But a specific thing here is that they do not entirely block market entering availability and define firms competitiveness on it. As a result growth of normal profit on markets connected to big data creates entrance barriers. Such results set a question about further and more accurate study of the big data phenomena as their incorrect regulation or absence of any regulation can result in decrease of markets functioning effectiveness and results of industrial and antimonopoly regulation.

Keywords

Big Data, Essential Facilities, Digitalization, Competition, Costs of Big Data, Processed Information

DOI: 10.24818/BASIQ/2021/07/023

Introduction

Digital transformation of economy is one of main directions of modern society development. The influence of digital technologies changes not only composition of goods to better correspondence to consumer preferences but also the mechanisms of industrial markets functioning. Implementation of digital technologies leads to emergence of new and changes in existing forms of markets functioning, economic systems and social structures. The ongoing transformation opens new ways of marketing, goods promotion, building relations between suppliers, producers, sellers and consumers, as well as consumption maintenance by the aid of digital platforms, smart things, big data and so on (Markova, 2019). Thanks to these new mechanisms of market competition which reflect transition from struggle for market share to leadership in creating benefit for consumers and sustainable business environment are formed. Along with that these processes are accompanied with opposite effects. On one hand digital

technologies allow to cut transactional costs through decrease of costs of information searching and contracts making. The consequence is market borders smoothing and supply chains decentralization. On another hand such technologies like the Internet of things and platforms concentrating both production and sales sphere within digital giants allow to improve control of production processes, increase of ability of specific subjects to control supply chains. Consequently at the current day economies of many countries came to concentration of digital markets in hands of small number of firms (Tsarikovskiy, 2018).

One of specific features of the digital epoch is that digital technologies became an important element of a firm competitiveness on markets. The reasons for that are changes in market borders, the mechanism of benefit gaining, ways of added value formation, net effects etc. For example, functioning of markets with multisided net effects is connected to positive externalities which could be internalized through mediation of platforms (Marciano et al., 2020). On such markets utility gained by buyers and benefits gained by sellers are connected both to transactions with a good itself and to a platform service. Functioning of multisided net effect results in concentration of platform consumers who are both sellers and buyers of goods, which is the reason of platform owners market power increase (the operating system by Microsoft, the Internet platform Aliexpress could be an example) (Evans, 2011).

Together with digital platforms positive externalities are created due to big data. However the process of their gathering, processing and commercialization is connected to high costs because of big data specific features which could be demonstrated in the three V model (Fig. 1).

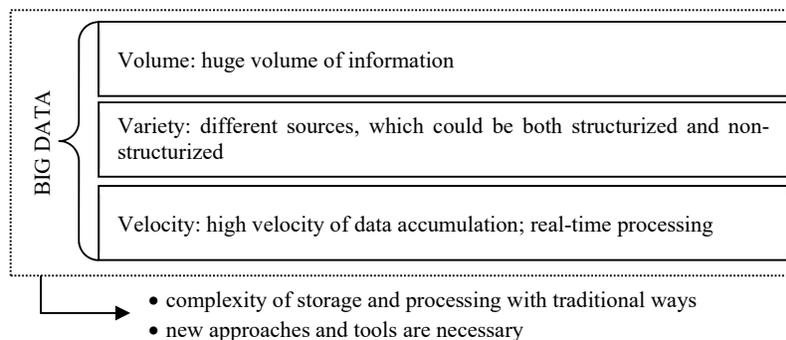


Figure no. 1. Three V of big data model

Source: composed by the author basing on (Laney, 2012; Tsarikovskiy, et al., 2018)

Most frequently big data are interpreted as a huge volume of structured and non-structured data including different factors and indicators, for instance, data about buyers and their orders. Hence complexities appear due to growth of such data volume storage costs. Along with it high diversity of big data appears as they include text data, different structure, code and so on. This also leads to arising of market functioning complexities as different systems of their collection are necessary together with, even more important, complex mechanisms of their processing, for instance, mathematical algorithms, methods of non-structured data processing. The last aspect of big data is velocity, namely acceleration of data accumulation thanks for digital technologies development. In particular this acceleration occurred due to spread of the mechanism of free data transfer from consumers, for instance, in social networks or internet shops (Navickasetal., 2015).

Thanks to information which could be obtained from big data firms can improve their competitiveness. For example, G. Lee and T. S. Raghu showed how a firm’s rating in a mobile application has an impact on sales performance (Lee and Raghu, 2014), M. Seo, O. Yang and Y. Yang identified the main determinants of consumers rating of various applications (Seo, et al., 2020). Thus such an aspect of digital economy as data economy was outlined. It is based on the potential contained in big data analysis, which is expressed in better consideration of consumers tastes and preferences so today firms are aimed at supply of unique needs satisfaction, but not unique goods. At the same time the complexities arising as a consequence of functioning of connected to big data markets resulted in

limited opportunities of firms for their gain, accumulation and processing, which led to concentration of the big data market. The purpose of this article is to analyze big data from the perspective of the essential facilities doctrine and to reveal specific features of big data market functioning which distinguish it from traditional markets of essential facilities. In the first section existing approaches to the essential facilities concept interpretation and possibility of attribution of big data to them are considered. In the second chapter the costs connected to big data collection and processing are discussed as well as influence of these costs on availability of big data duplication and their link to the statements of the essential facilities doctrine. In the third chapter incentives of a big data operator separated from neighboring markets to grant access to such data to firms on neighboring markets are modeled.

The essential facilities concept and big data

The essential facilities doctrine originates from the practice of antitrust regulation in the USA. It is mentioned for the first time in the case *United States vs. Terminal Railroad Association of St. Louis* (Reiffen and Kleit, 1990). There were outlined such conditions of the doctrine application as control of essential facilities by a monopolist, physical or economic impossibility of their duplication, denial of access to them by the monopolist while he would be capable to provide it. As S. Golovanova notes, the problem of essential facilities is in that their owner can directly influence on neighboring along technological chain markets by changing access to them. Along with it its interest in limitation of competition on such markets is not always evident as he could not be present on them (Golovanova, 2013).

I. Graef notes that the essential facilities doctrine played an important role in competitive law of the EU, where it was applied both to physical infrastructure (for examples, ports and railways) and to intangible assets protected by author's rights. The Author underlines that such assets as online platforms data or ranking, for instance, in search systems, are the base of majority of digital markets and can form the object of the essential facilities doctrine (Graef, 2019).

Z. Abrahamson justifies that to regard any data to essential facilities they have to meet the same requirements that are affirmed in the essential facilities doctrine (Abrahamson, 2014):

1. The Owner of data have to control and to be able to block access to the data.
2. Competition have to decrease without access to the data.
3. Competitors have to be not able to duplicate the data.
4. The owner have to possess the tools of data change.
5. The owner have to possess monopoly power on a data market.

Along with that Z. Abrahamson introduces the term of essential data and underlines that data monopolists in emerging industries do not fall under the theory of pure monopoly as, the first, the same data set can provide both zero and infinite number of finished goods, and the second, the monopolist could have no ability to define the amount of supplied goods with the use of essential data. As a result, uncertainty can smoothen the curve of final demand, which the data monopolist faces to. It excludes application of tool of neighboring markets participants enforcement to selling a monopoly amount of goods.

It is necessary to noted that, despite the growth in the number of works on the topic of big data (Ogreaan, 2018), the matter of whether big data are regarded to essential facilities is a debatable one. For instance, C. Tucker mentions that data are often not valuable for users. Also digital data have an attribute of non-competitiveness and there are many sources of them (Tucker, 2019). It appears that the arguments brought by the author are sooner related to unprocessed data, as information, which is a public good, really has the attribute of non-competitiveness and it often has no value in its unprocessed form. However in our opinion the matter is not in access to data when analyzing the essential facilities doctrine, but in mechanisms of data processing and their transformation into the state of readiness for use, which requires high costs. It is necessary to consider the information obtained from these data which is valuable for users. Along with it C. Tucker points out that competitors have access to data but this us

because of possibility to purchase them from a databroker. Valuableness of brokers service depends not only on scale of data but also on what brokers can gain from them.

Costs on the big data market

Analysis and use of big data have their own structure of costs. And their accumulation, storage and processing require large data centers, highly productive servers, specialized software, advanced system of digital protection and specialized labor force, which results in high fixed costs of data centers maintenance (Horak and Boksova, 2017). The process of information gaining itself after tuning all the systems is not connected to significant costs, i.e. variable costs are very small. The latter is stipulated by that just as on traditional markets, households form demand on goods and supply production factors. Thus because of their activity in the digital environment individuals supply the information as a production factor to firms for free. That is the reason of low variable costs while fixed costs are high. Along with it the question about effectiveness of resources distribution occurs as the problems of information overproduction and high market entrance barriers creation for firms not having tools to process this information appear. They are analogous to those described in the Kaldor's model of advertisement overproduction (Kaldor, 1950).

In the economy of knowledge and hence on markers in the epoch of digital transformation limitation of access to big data storage and processing due to high fixed costs while variable costs are minimal leads to the problem of essential facilities. They are a necessary condition of successful activity on a given industrial market while high costs for their creation result in complexity of their duplication. Hence the owner of essential facilities can influence on competition level on neighboring markets of supply chain by varying access to them and supporting some participants groups so far, even when he is not present on these markets.

Usually the essential facilities doctrine is considered in the context of natural monopolies, however ongoing processes of digital transformation result in widening of its application. On big data markets it means that such an entrance barrier as customers loyalty formation can become one of the most significant as limitation of access to information leads to absence of supply of goods satisfying individual needs of customers, which would decrease competitiveness of individual firms and hence the competition level. An important feature is that in contrast to goods on standard markets of essential facilities big data do not lead to the total loss of ability to function on a market. Firms can possess necessary resources to save their presence on the market, but big data allow to obtain competitive advantages. J. Begenau, M. Farboodi and L. Veldkamp showed that larger firms get higher benefits (Begenau, et al., 2018). The absence of government tariffs imposed on activity of big data owners and very low marginal costs of obtaining such data together with non-price methods allow to use price methods of demand influencing as well (Avdasheva and Shastitko, 2018).

Big data as essential facility

Let us use the essential facilities doctrine to reflect the opportunity of big data attribution to this category in theoretical aspect and firms behavior analysis within the doctrine concept. Regarding to the standard essential facilities doctrine it is necessary to outline a specific feature of the big data market functioning as the market of essential facilities. Let us consider a variant when a big data operator is absent on neighbor market. Let $q_{BD} = kn_{BD}$ is volume of demand on information obtained as a result of big data processing, where n_{BD} is a number of firms on a neighboring market which are big data buyers; k is a proportionality ratio defining the size of firms and setting therefore the volume of demand from a separate firm. $P_{BD}(q_{BD}) = 1 - q_{BD}$ is an inverse function of demand on services of the big data operator (essential facility owner) and $TC_{BD} = A + c_{BD}q_{BD} + f(n_{BD})$ is a function of the operator costs, where A is fixed costs of big data infrastructure maintenance; c_{BD} is variable costs of big data operator service supply, and A is significantly bigger than c_{BD} ; $f(n_{BD}) = tkn_{BD}$ is transactional costs of granting access to essential facilities, where t is transactional costs of one big data buyer servicing, which depend on the size of the buyer, i.e. on k . Then the big data operator profit would be:

$$\pi_{BD} = P_{BD}q_{BD} - A - c_{BD}q_{BD} - f(n_{BD}) = (1 - kn_{BD})kn_{BD} - A - c_{BD}kn_{BD} - tkn_{BD} \quad (1)$$

Profit maximization on the number of big data buyers allows to calculate the optimum number of such firms on neighbouring markets, which would be $n_{BD}^* = \frac{1-c-t}{2k}$. It can be seen that the lower are marginal and transactional costs of one firm servicing the higher number of firms would be serviced by the big data operator. An important difference from the standard essential facilities doctrine is that the costs of service supply on digital markets are low, hence in contrast, for instance, to natural monopoly markets, probability of competition limitation on neighboring markets by the big data operator, i.e. the owner of essential facility of a digital market, is lower. Higher impact is created by size of firms on neighboring markets which are buyers of the big data operator services, among other things it is caused by potential ability of large firms to create their own center of big data processing. Therefore for correct making of conclusions regarding to consequences of big data control by firms it is necessary to make a deeper analysis of their activity, as the given case does not confirm the thesis that limitation of competition on markets neighboring to essential facilities markets meets the interests of these facilities owners*

The problem of initially high costs sets the main rule of firms functioning on digital markets, which suggests necessity to gain monopoly power in order to repay these costs and obtain positive benefits. The history of development of information and communication technologies markets first, and of digital markets now reflects passage of the same stages, which were pointed out by Tim Wu, who called these regularities as cycles (CapitolReader, 2011). The strive to market monopolization could weakly reveal in the horizontal aspect, but vertical limitations could make a stronger impact both on the market where the firm is present and on neighboring markets. All of this results in limitation of markets competition. However these conclusions could not be definitive as revealing specific features of digital markets which positively influence on social wealth requires consideration and analysis of all described above factors of industrial markets functioning in the epoch of digital transformation of economy.

Conclusions

As a result we can note that in our opinion big data can be considered as essential facilities as they create capability for their owners to influence on neighboring markets and cannot be duplicated by competitors due to high initial costs. Along with it their specific feature differing them from traditional essential facilities markets is that they do not entirely close entrance to a market but influence on the competitiveness level of such data consumers, thus creating an entrance barrier. There is no definitive answer to the question of influence on social wealth. On one hand high initial costs of creation centers of big data processing gives their operators the monopoly power. On another hand the thesis that limitation of competition on markets neighboring to essential facilities markets meets the interests of these facilities owners is not confirmed. But in the given article the variant of absence of a big data operator on neighboring markets was considered. Therefore to specify the incentives of an essential facility owner on such markets it is necessary to widen the model to the variant of their presence on neighboring markets, which, in particular, is confirmed by the practice when digital platforms sooner or later limited access to the resource. For instance, it happened in interaction between Twitter and PeopleBrowsr in 2012 (Tombal, 2020).

Acknowledgement

The research was carried out with the plan of research work of IEIE SB RAS, project «Integration and interaction of mesoeconomic systems and markets in Russia and its Eastern parts: methodology, analysis, forecasting», № 121040100284-9.

* The given model of essential facilities on a big data market is build basing on the model of essential facilities of full vertical separation, presented in (Avdasheva and Shastitko, 2018).

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Convergence Points in the Literature Concerning the Topics of Food Security and Added Value

Vlad Constantin Turcea¹ and Marius Constantin²

¹⁾²⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: vladturcea@gmail.com; E-mail: marius.constantin@eam.ase.ro

Please cite this paper as:

Turcea, V.C. and Constantin, M., 2021. Convergence Points in the Literature Concerning the Topics of Food Security and Added Value. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 184-190
DOI: 10.24818/BASIQ/2021/07/024

Abstract

Increasing economic pressure is pushing the agri-food industry to choose yield instead of environmental care, whereas added value should be ideally created without radically deflating food output whilst using harmless practices. In this regard, several topics have been commenced in this paper, directly referring to the research results. The starting point of this study's design locates the key scientific subtopic that shapes the present academic interest and is followed by a convergence analysis based on the metadata processed after querying the Scopus database in a relevant manner. This facilitated to conclude this study with the interest analysis in form of a heat guide that is pointing towards current research trends. This specific paper aims at revealing emerging convergence points in research literature, quantitatively measuring peer-reviewed bibliometric metadata. The main research result refers to the surprising identified nexus point that confers a multidimensional approach to food security fulfillment, reflecting current sustainable trends, as well as the potential for increasing agricultural economic performance. Agriculture is known to become a more visible player in the climate change mitigation scene, especially through efficient resource allocation. However, the results of this paper indicate that key sustainability-driven elements, such as renewable energy, are already shaping the agri-food industry, as well as the research interests in this field. In the literature, the converging theme in the case of food security and added value is that of biomass, a possible equilibrium point that calls for a more economical-competitive orientation of the academic research work, without neglecting the sustainability factor. In this regard, research interests will continue to be influenced by the implementation of the SDGs roadmap and of the European Green Deal.

Keywords

food security; added value; value creation; food supply chain; biomass; sustainable development

DOI: 10.24818/BASIQ/2021/07/024

Introduction

As global food demand grows especially in developing regions, agricultural expansion is utterly necessary and to be doing so in a fashionable manner that no further negative impact over the environment is required. Enormous difficulties are currently undergoing in the agricultural sector (Foley, et al., 2011) and with the increasingly pressure to global food security fulfilling, the only viable solutions identified in multiple studies are targeting both consumption behaviours (FAO, 2020) and production expansion without further increasing the environmental harm (Dinu, et al., 2020; Voicu-Dorobanțu, et al., 2021).

The expansion of agriculture proved to negatively impact global carbon level, soil quality, natural habitats (Foley, et al., 2005; Ramankutty, et al., 2008; Andrei et al., 2020; Istudor, et al., 2019). Agricultural models, historically, are known to focus on production effectiveness (DeFries, et al., 2004), but in modern times, the ideal conditions in which agriculture is treated are more relying on

resource sustainability and environmental harmless practices (Pătărlăgeanu, Dinu and Constantin, 2020; Drăgoi, et al., 2018a). Additional challenges are also arising due to international food value chains' pressure (Ignat and Constantin, 2020a) and increasing urbanization (Gil, et al., 2019 Ignat and Constantin, 2020b).

Food system's globalization brings value along the chain, helping locals accessing broader markets and diversified investment capital (Godfray, et al., 2010). It was also noted that regional and national food production specialization is also increased, fact that is enhancing food appropriateness compatibility.

The global food demand is accelerating, croplands across the world are sitting with yields below their potential, and the general agricultural expansion forecasts on abiding environmental impact. Several indications have been already pointed, in order to address universal food security, such as natural diversity conservation, greenhouse gases contraction (Constantin, et al., 2021), proportional technological breakthrough transfer, enhancing soil fertility techniques usage, more adequate nutrient employment, and land clearing mitigation (Tilman, et al., 2011; Drăgoi et al., 2018), all of these aspects are more crucial today than ever before and can make a real change, especially in the SDG 2 roadmap to fulfilment.

The Sustainable Development Goals (SDGs) cover multiple layers of sustainability of both developing and developed countries recalling collective efforts to achieve prosperity, peace for the people and the planet through an equitable partnership (UN, 2015; Steffen, et al., 2015). The only goal that is integrating food security, hunger elimination and sustainable agriculture is SDG 2 "Zero Hunger".

It is more obvious, and especially in current times that food, livelihoods and natural resources management are compactly handled. Agriculture should be classified as a key sector in climate change mitigation and through sound indicator alacrity, SDGs could upscale into a management tool for countries in the resource allocation plans (FAO, 2016).

Considering the rising interest in the literature concerning, on the one hand, the topic of food security, and, on the other hand, the topic of added value in the agri-food industry, the objective of this research paper was to quantitatively review the literature and map convergence points based on the metadata of the existing papers concerning the research topics of interest.

Research methodology

Based on the research objective, the need for a quantitative method was implicit. Therefore, in this research paper, the bibliometric analysis was considered optimal for carrying out the quantitative study on the papers in which both the topics of food security and added value in the agri-food industry were treated.

Bibliometrics has become one of the standard tools for research trends analysis, involving multiple techniques that can be used to assess and monitor scientific resources (Pătărlăgeanu, Dinu and Constantin, 2019). This research was carried out with the help of the VOSviewer software tool, version 1.16.16, designed by Ness Jan van Eck and Ludo Waltman. This tool has been widely used in bibliometric studies with the aim of quantitatively reviewing specific areas of the literature. Since VOSviewer has a user-friendly interface, it was proven to be effective in this research regard and has made the quantitative analysis of the scientific publication' keywords more facile. VOSviewer enables the generation of maps and heatmaps that graphically represent the density and link power between keywords and word structures used in the title and abstract of the identified scientific publications on specific database queries. Paper metadata represents the foundation and instruments needed to construct and project bibliometric networks and maps.

Taking this into account, the bibliometric analysis carried out in this research paper was based on the Scopus database, which indexes content from more than 7,000 active publishers. Titles are rigorously vetted and selected by an independent review board. The information technology behind the Scopus database uses a rich underlying metadata architecture. Therefore, the Scopus database provides the 'raw materials' needed for the development of quantitative research analyzes in various fields, including the ones of food security and added value in the agri-food industry. Consequently, the Scopus database was queried in the following manner: (*TITLE-ABS-KEY ("food security") AND TITLE-ABS-*

KEY ("added value"). This query was performed in March 2021 and led to the identification of 73 publications indexed in the Scopus database. These publications contained the "food security" and "added value" word structures in the title, abstract or keywords. Connecting these structures in the same query represented the premises of identifying only the scientific publications specific to the topics of food security and added value in the agri-food industry.

Results and discussions

The intensification of the research scientific interest starting from 2016, as it can be noticed in Figure 1. This can be tied to the fact that the 2030 Agenda for Sustainable Development was published in 2015 and more scientific interest was paid to the implications of maximizing added value along the global agri-food chain, while still ensuring food security, meeting the SDGs and transitioning to the circular agriculture model (Pătărlăgeanu, et al., 2021). The peak of the scientific interest in this regard was reached in 2019, when 17 papers (representing 23.29% of the total) were published and indexed in the Scopus database.

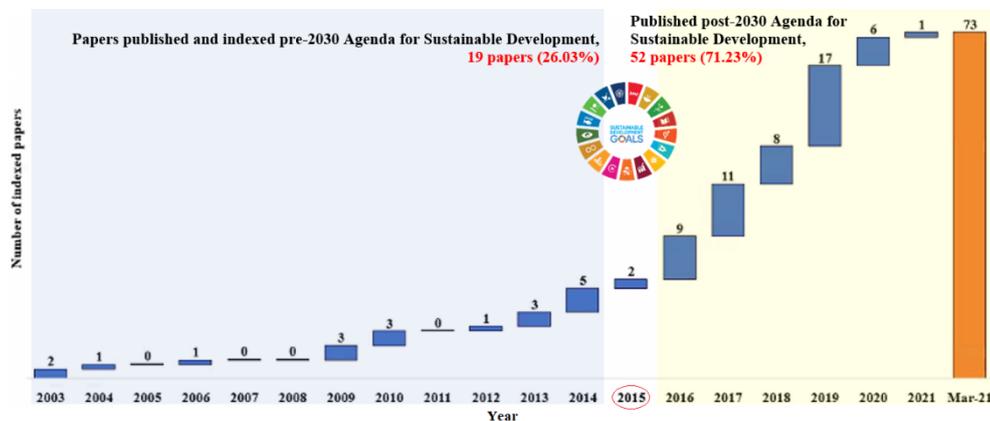


Figure no. 1. Waterfall chart of the evolution of the scientific interest concerning the topics of “food security” and “added value”, manifested under the shape of the scientific papers indexed in the Scopus database

Source: Authors' visual representation, based on Scopus metadata (2021)

According to the Scopus data graphically represented in Figure 2, most of the 73 identified papers were published under the subject area of *Agricultural and Biological Sciences, Environmental Science, Social Sciences*. One of the main components of any bibliometric study is the analysis of the correlations between the keywords associated to each of the publications indexed in the Scopus database. In the case of this research, the 73 indexed documents had 784 associated keywords. However, only 115 (14.66%) of them occurred in more than 2 papers. These 115 keywords were graphically represented in Figures 3 and 4. *Food security, food supply, agriculture, sustainable development* and *human* were the most frequently used keywords or keyword structures. Regarding food security and the added value in the agri-food industry, ‘biomass’ is the keyword that connects these topics in the literature, as it can be observed in Figure 3. But do these topics really converge towards the idea that biomass is an actual solution for ensuring higher levels of food security globally in a sustainable manner, while still maximizing the added value in the agri-food industry? Regarding Figures 3 and 4, one can notice that biomass is connecting various research areas, including those referring to economic profitability and food security: *biomass–added-value products–environmental monitoring, biomass–food security–land use planning*.

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Tourism Education During the Pandemic: Students' Perspective

Claudia Rodica Popescu¹, Iuliana Pop², Delia Popescu³ and Olimpia State⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: rodica.popescu@rei.ase.ro; E-mail: iuliana.pop@rei.ase.ro;

E-mail: delia.popescu@com.ase.ro; E-mail: state.olimpia@com.ase.ro

Please cite this paper as:

Popescu, C.R., Pop, I., Popescu, D. and State, O., 2021. Tourism Education During the Pandemic: Students' Perspective. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 191-198

DOI: 10.24818/BASIQ/2021/07/025

Abstract

The onset of the social distancing during the pandemic and the shift from face-to-face to digital teaching and learning prompted researches to study the adaptation and change process of tourism education. The paper aims at identifying the students' views on the learning experience in the context of virtual education environment. A survey was conducted among undergraduate and master students at the Faculty of Business and Tourism, Bucharest University of Economic Studies. The questionnaire was streamlined along three major themes: education competencies, communication and interaction, and impact on the future professional career. Based on the feedback of 269 sampled students, the findings point to: 1) high level of involvement and motivation supported by the availability of digital technologies and students' computer skills; 2) enhanced interaction and team working; 3) varying content engagement along disciplines and lecture/seminar classes; 4) relative loss of creativity in the absence of real-life inter-relations. We found that the self-identification of students with the 'online generation' is strong, yet controversial due to both positive and negative emotions. Overall, we notice the mixed effects of the online education on students' personality, life style and learning. Finally, our paper demonstrates that the integration of online educational tools requires curriculum updates and improvements of teaching methods to meet students' expectations.

Keywords

Tourism Education; Online Teaching and Learning; Pandemic; Students; Romania

DOI: 10.24818/BASIQ/2021/07/025

Introduction

Since the early 2020, the outbreak of the pandemic has opened a new age in the history of humankind forcefully marked by the 'globalization of isolation'. Tremendous life style and socioeconomic changes have affected people and nations across the world within the emerging 'new normal' paradigm (Ateljevic (2020; Brouder, et al. 2020). Tourism and education were among the mostly hit sectors of the socioeconomic life (Ye and Law 2021; Higgins-Desbiolles 2021; WTO 2020; UNESCO 2020).

Tourism industry worldwide has come under siege due to stringent health security requirements, travel restrictions, and partial or complete closure of many destinations. The World Tourism Organization (WTO) reports a 74% decline of international tourist arrivals and a loss of revenues eight times more than the loss in 2009 as a consequence of the global economic crisis. The future is rather challenging as the return of the international tourism to 2019 levels is expected by 2023 (WTO 2020). New trends emerged like 'staycations' and 'workcations', while other forms of tourism (self-organized tourism, small group and solo travel tourism, virtual tourism) gained more grounds and are expected to remain dominant in post lockdown future (Kaushal and Srivastava, 2021). Changes in business strategies,

consumer behavior and travel demand will be reflected in the forthcoming tourism policies aiming to support the industry's rebound. The pandemic highlighted the vulnerabilities of tourism based on growth strategy with over-tourism effects (Gössling, et al. 2021) and reignited the debates on the need of de-growing and sustainable approaches (Hall, et al. 2021).

Education has also been profoundly challenged by the ongoing pandemic. According to UNESCO (2020) 8.3% of the student population was affected globally by school closures, with more than 1.4 billion students from over 26 countries being out of school. University education seemed to be more able to address the needs of students through online classes; notwithstanding the digital teaching and learning led to disruptions for both teachers and students. Moreover, certain domains of higher education dependent on practical sessions (medical, arts, tourism and hospitality) were negatively affected. Adaptation and change are the coping mechanisms called to empower both tourism industry and education to find alternatives for 'survival amidst the pandemic and subsequent revival' (Kaushal and Srivastava, 2021).

In line with the current research efforts at international level, this paper attempts to frame the changing context of teaching and learning process driven by the shift from face-to-face to online education from students' perspective. The focus of the research is to identify and assess the meanings and understandings attached to online education. Specifically, we search to investigate the students' learning experience in terms of benefits and challenges related to the virtual education environment as compared with traditional classes. To this aim we worked out and disseminated a questionnaire structured along three main themes: education competencies, communication and interaction, and prospects for a professional career. The sample is represented by the undergraduate and master students enrolled at the Faculty of Business and Tourism, The Bucharest University of Economic Studies. The structure of the paper runs as follows: the next section is devoted to reviewing the literature on tourism education; the description of research method then follows; results and discussion of findings and conclusions complete the paper.

Literature review

A burgeoning literature on COVID-19 from different perspectives has emerged recently; yet, research on the impact of the pandemic on hospitality and tourism education remains scarce (Ye and Law, 2021). Besides the early assessments searching to pertain to the major challenges faced by the hospitality and tourism industry (Kaushal and Srivastava 2021), another stream of research has been consistently developed on the tourism higher education. The move from face-to-face to online education has focused the research on the adaptation needed to accommodate new tasks and teaching roles (Phi and Clausen, 2020; Stefanini, et al. 2020) as a response to the changes in information delivery, knowledge sharing and ways of learning. Most of these studies are based on surveys to reflect students' view on various aspects related to teaching and learning process in the attempt to identify the benefits and challenges related to online education in comparison with the traditional face-to-face learning environment.

Special attention is paid to education competencies acquired through interdisciplinary approach, teamwork, student skills and engagement (Stefanini, et al. 2020). Largely grounded on experimental research on limited groups of students, previous studies revealed that motivation and prior knowledge determine knowledge assimilation and explain academic results (Garcia-Almeida, et al. 2012). Studies also pointed to the moderating role of the learning environment and knowledge sharing to strengthen the relationship between knowledge acquisition and cooperation culture (Huang, 2020). Innovation competencies are key education assets to foster the response to various issues of tourism industry. Methods such as design-based and value-based learning prove to be effective in activating critical thinking, creative problem-solving and team working (Phi and Clausen, 2020). Moreover, employing co-competition strategies and design thinking enhances students' creativity and critical thinking of issues related to tourism sustainability and development of tourism products (Liu, et al. 2017; Sándorová, et al. 2020). The examination of students' perception of blended learning platform and course satisfaction demonstrates the mediating role of cognitive and emotional engagement (Gao, et al. 2020). The ease of use and playfulness allow students to engage in game-based learning. However, the effects are mixed: positive in knowledge acquisition but neutral in terms of attitudinal changes and game usefulness (Chan, et al. 2020).

A long standing debate addressed the role of digital technologies in tourism higher education (Liburd and Christensen, 2013; Huang, et al. 2013). The online communication and interaction via social media and virtual learning platforms are regarded as an useful complement to face-to-face education providing incentives for students' engagement and motivation. The provision of diverse learning opportunities and experiences contribute to the better understanding of core concepts and engagement into course content (Schaffer, 2017). Nevertheless, the integration of online educational tools requires curriculum adjustments to correlate learning objectives and teaching processes in the attempt to meet students' expectations (Liburd and Christensen, 2013). Within the pandemic environment where the hybrid or online education prevailed, increasing concerns are cast on the de-personalized character and the lack of real-life interactions. In particular, the integration of 'soft skills' deeply sensitive to social dynamics, such as innovation and creativity in online courses, very different from traditional classrooms, was examined by recent research (Liu, et al. 2017).

Tourism higher education is aimed at providing qualified entrepreneurs and employees to support the development of the industry in terms of services quality and customer satisfaction. Skilled employment is even more important in the tourism industry than in other economic sectors as tourism is highly dependent on human capital. Tourism education is central to determine the career intentions of students and to ensure high levels of post-graduate employability through the course contents and programs but also through extracurricular activities (Unguren and Huseyinli, 2020). However, early career decisions of tourism students have often an unplanned character rooted in the extent of social structures and employment experiences (Walmsley, 2012). Moreover, Al-Romeedy, et al. (2020) maintain that between the university curricula, the tourism labor market requirements, and the students' needs there is a significant gap with far-reaching managerial consequences. In the same vein, Văduva, et al. (2020) argue that the education levels of tourism employment matched with the need for educational initiatives should reflect the perspectives of entrepreneurs and managers from the tourism sector. Consequently, other studies go even further on (see, for example, Crawford et al. 2020) and sustain the need to reverse the skill building process (with an emphasis on 'soft' skills) by analyzing the way managers teach employees on the job in order to provide faculty members a better understanding and means to replicate the process.

Much of the extant literature presented above has focused on descriptive quantitative assessment of education competencies and skills focusing on a large range of topics, such as creative thinking and problem-solving, goal orientation, engagement, motivation and positive emotions, team working and teacher-students interaction. As against this heterogeneity of topics, these studies share a common framework of research, namely the combined context of face-to-face and online education systems. Most of them rely on survey as a method of analysis addressing the views and expectations of students as incentives to create content and adapt knowledge delivery means (Huang, et al. 2013; Liu, et al. 2017; Stefanini, et al. 2020; Phi and Clausen, 2020). While we adhere to this research method, our intention is to provide a preliminary evaluation of students' perspective on teaching and learning exclusively based on a digital environment. With the radical socioeconomic and technological changes prompted by the ongoing pandemic, we draw the attention of tourism education academics, entrepreneurs and policy makers to the challenges of the higher education.

Research method

Guided by the tourism education studies at international level, we proceed to examine the students' perspective on online education as an exclusive tool of teaching and learning during the pandemic. The data for the analysis were collected through a students' survey carried out in February – March 2021 on Google Forms. The survey was designed to elicit students' perspective on the impact of the pandemic on the content, quality and tools of teaching and learning. The survey was administered to a sample of 639 second and third grade B.A. and master students in Business and Tourism. The total number of students enrolled is 1,832 of which 34.88% were targeted in the survey. The breakdown of the students by grade and specialization was the following: two-thirds were students in B.A. business and tourism studies and one-third in M.A. programs in administration of tourism affairs, management and marketing in tourism, geopolitics and business. Therefore we consider that our sample is representative for students' community in Business and Tourism studies. The response rate was 42.09%

(269 out of 639 sampled students) enabling us to conduct the analysis of results and find answers to the research questions grounded on the appropriateness of the method to the set of data.

In order to grasp the perspective of students the questions were condensed into three major themes. The questionnaire consisted of end-closed questions to frame the changing context of teaching-learning process and open-ended questions to allow the identification of personal meanings and understandings attached to online education. Initially, the survey was piloted to a reduced group of students to check the readability and clarity of the content and make necessary adjustments. After collecting the students' responses, we also addressed the reliability of the results based on comparison and organization in compliance with our research question. To ensure the consistency of interpretation and to reduce subjectivity, the authors engaged independently in constructing and cross-checking the evidence. Finally, the results were fully agreed by the authors.

We used control questions related to gender, age and the study program attended by the respondents. The main part of the questionnaire included inquiries into thematic areas of research identified in international literature. The themes refer to *education competencies* (content engagement, computer skills, involvement, creativity and innovation); *communication and interaction* (teacher-student and among students interaction during lecture/seminar classes, team working) and *prospects for future career* (impact of online training, benefits and challenges of online education; the sense of belongingness to the 'online generation' of students). Concerning the first two themes, the students were asked to rank the extent of their answers on a 5-point Likert scale while the effects of online education were appreciated in terms of personal meanings and understandings through open questions.

Results and Discussion

The sample of respondents shows a homogenous group of students according to age (93.6% aged 18 to 23), gender (68.8% females) and education program (77.7% undergraduate students). These similar attributes translate into consistently convergent responses to end-closed questions. Unsurprisingly, the open questions enabling a much more freedom of expression fuel opposing views with regards to online education benefits and challenges. Next, we take an in-depth analysis of the responses and discuss the main findings according to our research objectives.

The teaching and learning process has been largely performed on the institutional platform of the university (online.ase.ro) and zoom sessions. Additionally, some other education and communication channels were used, such as meet.google, whatsapp and skype. At a large extent, students have available technological resources (88.5%); yet 11.2% encountered issues related to poor connection to internet or the lack of video and audio devices. Supported by the digital technologies and computer skills, the students were able to attend the online classes with full attendance (75.8% of them) suggesting a high level of involvement and motivation. Asked to assess the difficulties associated with online classes, the students mentioned the access and ability to use digital resources as being the least demanding.

Nevertheless, there are both benefits and challenges related to online education (questions in the first half of the questionnaire). More than three quarters of the students consider the communication with teachers as 'good' and 'very good', but difficult with the administrative department and counselling office. In terms of teacher-student interactions, the students value more the seminar classes (80.3%) than the lecture classes (11.9%). Having to accomplish different tasks during the seminar classes raises the motivation, involvement and cooperation and enhances the creative thinking and problem-solving skills. Driven by positive knowledge competencies, team-working on common interest topics is a valuable exercise of interaction and cooperation with peers. Almost 70% of the students rank communication during team working as 'good' and 'very good' (Figure no. 1). On the contrary, the less favorable view on more theory-centred lectures points to the need of changing the knowledge content in line with the virtual learning environment, especially in terms of knowledge delivery. The integration of online educational tools requires curricular updates to facilitate students' interaction with knowledge content and engagement in learning.

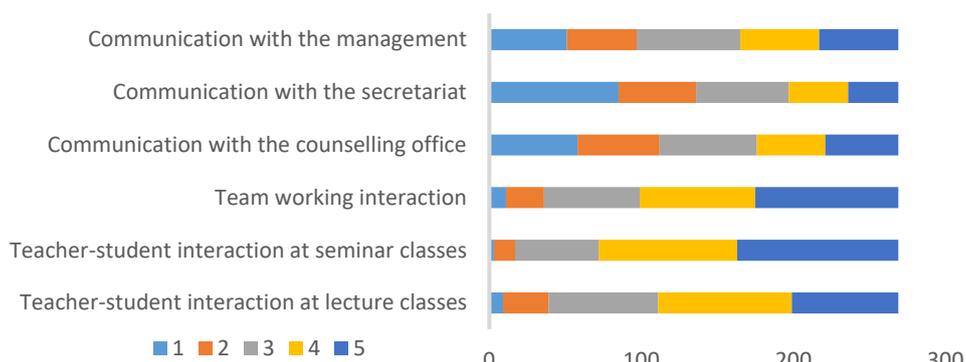


Figure no. 1. Responses to Q2 - On a scale from 1 (low) to 5 (high) how do you assess the interaction in online system?

Source: by the authors

According to students’ opinion, the lack of face-to-face interaction hampers the depth and efficiency of learning (Table no. 1). Some courses are less corresponding to online education, such as mathematics, accountancy or econometric modeling and need interactive learning experiences to enhance knowledge achievement. The online education system has negative consequences on creativity. About 55% of the students consider that the lack of social interaction reduces creativity and innovation. Closer inter-connections and exchange of ideas between teachers and students and among students is key to foster creativity. This has short term consequences (the current training period) as well as long term effects (within the future work environments as entrepreneurs and managers). There are other drawbacks emphasized by students as regards the online education. They complain about the work overloading and, consequently, their inability to manage time efficiently. Somehow, this comes in contradiction with the students’ statement that online education allows schedule flexibility and more time devoted to work and family.

Table no. 1. Advantages and disadvantages of online education from students’ perspective

<i>Advantages</i>	<i>Disadvantages</i>
Accessibility of learning resources	Lack of face-to-face interaction
Diversity of learning tools	Communication barriers
Schedule flexibility and time savings	Works well with selected disciplines
Friendly-learning home environment	Work overloading and time management issues
Enhanced capacity to adapt	Classes spread randomly throughout the day

Source: by the authors

The comparison between face-to-face and online classes highlights relevant insights into the understanding and meaning attached to education. Two questions placed in a sequential manner are referring to the way students regard the virtual education on its own and in comparison with traditional classroom-based learning (Q6 – ‘how do you assess the online education?’ and Q9 – ‘how do you understand online education as against face-to-face education?’). The answers to the former question were that online education is ‘necessary’ (48.7% of total responses) and ‘interesting and useful’ (40.1% of total responses). The students are aware of the constraints related to social distancing, thus online classes represent a novel and beneficial approach in times of crisis. The answers to the latter question add significant nuances on the distinction between online and face-to-face education environment. More than three quarters of the students (77.3%) regard the online education as ‘different’ from face-to-face classes suggesting that approaches of both teaching and learning have to be re-assessed in line with the opportunities and challenges of the virtual environment.

Based on students’ feedback, the impact of digital education on future career of tourism professionals was assessed from different angles (Q15, Q16 and Q17). First, the utility of practical session under online environment fuel confusing understandings. More than 40% of the answers stated ‘I do not know/answer’ while 58.3% viewed the online practical activities as ‘very useful’ and ‘useful’. Second,

the education and extracurricular activities in university campus are central to the professional training (73.9% of students assessed the contribution of real-life activities as very important and important). Third, the overall impact of online education on future career is described as ‘challenging’ due to the changes of the education system and the uncertainty of the tourism labor market.

Table no. 2. Self-identification with the ‘online generation’ - understandings and meanings

Positive	Negative
‘A generation open to take challenges and adapt’	‘A sacrifice generation, isolated and dis-oriented’
‘A hybrid, different and unique generation’	‘The ‘un-visible’ generation
‘The digital and flexible generation’	‘The lost generation’ of ‘pandents’ (<i>pandemic students</i>)
‘The change-maker generation’	‘We are subject to poor empathy and low personal development’
‘We are the ‘zoomers’’	

Source: by the authors

Currently, the students experience the third semester based exclusively on online classes. The time passed since the outbreak of the pandemic (almost one year) encouraged us to scrutinize the students’ perspective on the on-going education transformations and the pathways to professional development. Within the radically changed education environment, students were asked to define their generation (the last three open questions of the questionnaire). The sense of belongingness to the ‘online generation’ is strong, although controversial (Table no. 2). Either positive or negative, their self-identification revolves around the lack of social interaction. Some of the students argue that the hardships encountered during pandemic made them more adaptable and flexible to respond to challenges and engage in breakthrough changes. They show a high level of confidence to approach the future and make a difference. Taking an optimistic view, students in this category rely on their personality strengths: smart, free, well organized, and responsible to embrace the future. On the contrary, some other students feel lost, confused, purposeless and marginalized. They emphasize the negative personal traits, such as chaotic, introverted, sad, unhappy, and anxious to define themselves. In particular, this group of students needs guidance and support to change the mindset and successfully confront the future. Undoubtedly, the teachers play a central role in empowering students with determination and trust.

The focus of the paper connects with worldwide concerns on educational disruptions caused by social distancing and the shift toward the technology mediated learning environment. The switch from traditional classrooms to digital education has changed the ways to access and deliver information, knowledge sharing and learning environment. Our case study on students’ perspective on tourism education reveals that the innovative modes of teaching and learning have both positive and negative outcomes. Our findings echo those of other recent studies supporting the need of higher education to better adapt the curriculum alongside emerging tasks and teaching roles (Phi and Clausen, 2020; Stefanini, et al. 2020). Teacher-student communication and interaction are key to fostering the motivation and involvement of students in learning and team working. As suggested by the sampled respondents it seems that integration of creativity is more challenging for online courses; this conclusion is consistent with the assumptions of previous studies (Huang, et al. 2013 and Liu, et al. 2017). Mediated by real life social environment and dependent on individual and contextual factors, the loss of creativity in engaging to critical thinking and problem-solving within virtual learning environment should be addressed by adapted teaching guidelines to foster students’ interaction with knowledge content and peers. Overall, we notice the combined effects of the online education on students’ personality, life style and learning.

Concluding remarks

The stringent requirements of social distancing and medical protocols to reduce the spread of the COVID-19 pandemic have urged the tourism higher education to innovate and adapt the ways of knowledge sharing to avoid potential disruptions in teaching and learning. Currently, the tourism higher education is challenged to reconsider the teaching and learning processes and practical sessions to respond to the students’ expectations for training and employability. The global pandemic context opened new directions of research aimed at identifying the benefits and challenges of virtual education

as a self-standing system and not as a complement to face-to-face education as before. Our research contributes to the emerging literature on education competencies grounded on different socioeconomic and development settings by adding insights into the impact of the novel pandemic context on tourism education.

Although preliminary and based on a small research sample, our study points to some important characteristics of the digital teaching and learning process through the students' perspective. As the beneficiaries of the education system, the students' views are central to guiding the forthcoming changes to better connect tourism education and the digital environment. Supported by computer skills and technological means, the interaction and communication between teachers and students and among students facilitate a high level of engagement and motivation. However, as previous studies argued the integration of new educational tools calls for curricular updates and improvements. The absence of the face-to-face interactions urges curriculum adaptation to embody the educational response to the needs of society and economy. Therefore, curriculum revisions are required to align learning objectives and methods with computer-based means to create and transmit knowledge, values and skills. In particular, the lack of real-life social environment to support creativity should be addressed through clear and systematic instructions and guidelines to trigger interactive learning experiences.

Based on the students' feedback, we argue that the pandemic as an external shock factor for the education system, bears far-reaching consequences on the 'online' generation of students. The impact on students' personality, life style and learning requires interdisciplinary approaches of education, sociological and psychological, and management sciences. The education studies should also focus on teachers' opinions to complete the understanding on producing the knowledge and skills required in the tourism labor market. Given that the tourism industry itself is undergoing deep changes, the task of tourism education to provide professionals under uncertain and unstable circumstances is even more challenging and ask for convergent efforts of teachers, students and business managers. Finally, more studies that examine in detail the themes regularly identified in education research regarding competences and skills, interaction and communication and impact on professional careers alongside the enlargement of the geographical coverage to other cultural, educational and economic contexts will add deeper insights on a comparative basis.

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Ecological subjectivity – Q-methodology Study in Rural Area of Dornelor Basin, Suceava County

Violeta Florian¹, Mihai Alexandru Chițea², Marioara Rusu³ and Ioan Sebastian Brumă⁴

¹⁾²⁾³⁾ *Institute of Agricultural Economics, Romanian Academy, Bucharest, Romania.*

⁴⁾ *“Gh. Zane” Institute for Economic and Social Research, Romanian Academy, Iași, Romania.*

E-mail: florian_violeta@yahoo.com; E-mail: mihai_chitea@yahoo.com

E-mail: rusu.marioara@gmail.com; E-mail: sebastianbruma1978@gmail.com

Please cite this paper as:

Florian, V., Chițea, M.A., Rusu, M. and Brumă, I.S., 2021. Ecological subjectivity – Q-methodology Study in Rural Area of Dornelor Basin, Suceava County. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021.7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 199-205 DOI: 10.24818/BASIQ/2021/07/026

Abstract

The design and implementation of agro-environmental policies would have an increased social efficiency if it started from the opinions, attitudes, ideas and appreciations of social actors involved in the production of ecological goods. In this paper, the approach to ecological subjectivity was based on Q methodology, which is both a qualitative research method and a statistical one. The study made it possible to identify the main types of personal micro-universes, of subjective models constructed according to the existing ecological issues. The study was conducted in Dornelor Basin, Suceava county, an area characterised by ecological concerns and farming practices, and it identified four major types of subjective configurations built on the basis of the impact of adopting environmentally friendly farming practices on: i) local labour force; ii) rural economy; iii) working conditions; iv) provision of ecosystem services.

Keywords: ecological subjectivity, Q method, ecological farming practices, rural stakeholders' opinion, pyramid shaped matrix, factor analysis

DOI: 10.24818/BASIQ/2021/07/026

Introduction

Knowledge of personal mechanisms, starting from opinions and attitudes, offers the possibility to identify favourable or inhibiting elements of ecological subjectivity. Furthermore, the known subjectivity allows the involvement of social actors in the design and implementation of agro-environmental policies. In the case of ecological production activities, the scientific identification of subjective mechanisms, the evaluation of various aspects/domains can be made by using the Q methodology that “combines quantitative and qualitative data and analytical techniques” (Zabala, Sandbrook and Mukherjee, 2018).

The aim of the study was to identify the subjective factors, at the level of opinions and attitudes, of the main subjective micro-universes where certain subjective perceptions and especially subjective projections of ecological evolutions are present. The main objective was to identify the opinions and attitudes concerning the impact of adopting ecological farming practices in the following fields: rural economy, working conditions, labour market and provision of eco-system services. Practical data were collected from a group of 20 rural stakeholders with ecological production behaviours, persons who were interested in multiplying the ecological activities, involved in research activities or in promoting eco-friendly relations. The Q method was used, creating a “pyramid-shaped matrix”, together with the statistical analysis (factor extraction, rotation and estimation) and factor analysis and interpretation.

Review of the scientific literature

Q method has a rich history, starting with the psychological works by Stephanson W in 1936 and continuing with the conceptual development and its use in multiple scientific fields. Later, it was adopted, also, in political science (Watts and Stenner, 2012) and other fields (Zabala, Sandbrook and Mukherjee, 2018). Used to examine subjectivity and succeeding in obtaining response models on the basis of which efficient inductive reasoning can be developed, the Q method has the “*capacity to allow a more effective form of policy making and implementation process.*” (Barry and Proops, 1999). In the methodological approaches, Q Method has a special status due to the complexity and original mix between the valences of an instrument for qualitative and statistical research. Susan Ramlo and Isadore Newman (2015) explain that “*some call it a constructivist (or a qualitative) method, and some call it a positivist method (or a quantitative method)*” (Molenveld, 2020). Out of this reason, it is used in the studies on subjective ecology: “*The method demonstrates a way forward in ecological economics to better capture representative values and perspectives in ecosystem service management and help design climate and environmental policies with greater acceptance.*”(Grimsrud, Graesse and Lindhjem, 2020). The method has spread across the entire area of ecological knowledge, with increasingly sophisticated adaptations and refinement: “*Applications of the Q method have increased significantly in areas of ecological economics, environmental management and conservation research in recent years (see e.g. review by Zabala et al., 2018), some also using the ES framework directly or indirectly (e.g. Sy et al., 2018; Bredin et al., 2015; Pike et al., 2015; Armatas et al., 2017; Hermelingmeier and Nicholas, 2017; Simpson et al., 2016; Barrena et al., 2014)*”(Grimsrud, Graesse and Lindhjem, 2020). “*Q-method is frequently used to delineate and understand different stakeholder perspectives across such diverse fields as energy, land use, fisheries management, mining, wildlife conservation, agriculture, and water resource management, making it particularly salient as a means to inform sustainability practice and policy*” (Sneegas, et al., 2021).

Research methodology

The study was conducted in a rural area dedicated to agricultural activities that use eco-friendly farming practices, namely *Dornelor Basin*. Located in the south-western part of Suceava county, it is mainly characterised by high altitude and wet cool weather that are favourable for forests and grassland that cover large areas, being the most important natural resources. At the same time, organic farming is a constant presence in this area, both in terms of organically certified area and number of certified cattle. The extensive farming based on environmentally friendly practices prevails in Dornelor Basin, with positive effects on the environment.

The approach to ecological farming practices can have (hypothetical) effects on the provision of ecosystem services, on the working conditions of farmers and hired farm workers, on the rural labour market and rural economy. The study of opinions and attitudes was made with the help of: i) group (R-set) consisting of 20 rural stakeholders - experts, farmers users of eco-friendly practices, informed persons involved in ecological farming issues. The group of respondents was characterised by: prevalence of women (70% of total participants), persons with consolidated/significant experience (the share of persons with 5 – 20 years of experience in practical or theoretical ecological issues was 90%); ii) Q-set consisting of 26 statements* referring to the hypothetical effects of using ecological practices in the four areas. The statements referred to the likely impact over the next 10 years. According to the literature, we considered that R-set represents “observations” while Q-set represents “variables” (Grimsrud, Graesse and Lindhjem, 2020).

The likely impact of ecological practice approach was analysed on the basis of appreciations/evaluations on the four areas. The evaluations were ranked on a scale from - 4, totally disagree to + 4, totally agree. All questions received valid responses. The “pyramid shaped matrix” was used.

The steps taken in using the Q method approach were those recommended by PQMethod, a statistical programme dedicated to this type of study. In this sense, the factor analysis was used for the analysis of interactions; a correlation matrix was constructed between the number of respondents and the number of Q-sorts.” *The number of eigenvalues above one, produced at the correlation matrix stage*

the basis for farming activities, all the more so as seasonal labour will be increasingly difficult to find locally” (R.16). The reasons given are in the following order: specificity of the ecological system in the investigated area, tradition, and organization of agricultural holdings; b) multiplication of ecological farms – the motivational arguments are based on the difficulty of such a process: *“I believe that the target of 50% of farms in the area adopting ecological farming practices in the next 10 years cannot be reached”* (R 18); c) rural economy resilience – perceived in terms of permanent decrease: *“The Romanian village will no longer be as resilient...”* (R5).

There are strongly positive opinions and/or attitudes (subjective positioning +4) in the following areas: a) strict certification of organic farms; b) increase in the number of seasonal workers; c) multiplication of farms – the opinions referring to the increase by 10% of the number of ecological farms, in the next 10 years, are strongly positive. The reason is the specificity of the investigated area: *“In the next 10 years, I believe that at least 10% of farms in the study area will adopt ecological practices, Suceava county being among the top counties in terms of ecological potential (large HNV areas)”* (R20).

The results of the statistical analysis (specific to Q method) consisted in the self-referential construction of 4 factors. At the level of each factor, there is a mix of economic and ecological assessments and opinions. The best outlined factors, the most consistent subjective micro-universes are 1 and 2, because they have significant loads: for Factor 2 [the values are 0.9265 (R2), 0.8599 (R4) and 0.8213 (R5)] while for Factor 1 [0.7154 (R8), 0.8069 (R11) and 0.6241 (R13)]. The analysis of correlations between factors reveals a moderate level; a significant direct relationship was found between Factor 1 and 3 (0.68); the correlation between Factor 1 and 2 (0.52) is also noteworthy; Factor 4 had the least significant correlations.

Factor 1 – Pragmatic with economic attitudes, normative ecological tendencies, is that of respondents with clear opinions on the labour market: *“The use of family labour will decrease”* (value is -4), *“Farmers will have to increase their level of skills”* (the value is 3), and working conditions – *“The nature of work on farms will be more physically demanding”* (-3). Respondents believe that the number of ecological farms will increase – *“10% of farms in the case study area will adopt ecological farming practices,”* (value 4), in the conditions in which *“There will be a tight certification to define farms as ecological”* (value 3).

Factor 2 – Pragmatic with economic and ecological attitudes, bring together the subjective perspectives of those who particularly appreciated, like those captured by Factor 1, labour force market and ecosystem services. Definitely, respondents appreciate, family labour will not decrease, *“Family labour will decrease”* (value -4) but *“Farmers will have to increase their level of skills”* (value 3). The use of ecological practices will have a well-targeted impact, *“water quality will improve”* (value 3), the rural areas will be not significantly affected - *“The rural areas will become no more attractive for residents and users”* (value -3). Like in the case of Factor 1, there is a positive valorisation of ecological certification, at the level of farm: *“There will be a tight certification to define farms as ecological”* (value 4).

Factor 3 – Pragmatic ecological, with economic tendencies – respondents perceive that there will be an increase in the number of ecological farms: *“10% of farms in the case study area will adopt ecological farming practices”*, value 3, in the conditions in which *“There will be a tight certification to define farms as ecological”*, value 3 but there will be no relationship between them, *“Ecological farms will form clusters of closely connected farms”* value-3. The changes triggered by the wider use of ecological farming practices will not have a significant impact on the space for using the ecosystem services, *“The rural areas will become no more attractive for residents and users”*, value -4, but they will bear an influence on rural economy, because *“Consumers will not buy a lot more of their food locally”* value-3.

Factor 4 – Pragmatic economic – bring together the opinions of those who fully disagree with the statement *“The wider rural economy will be more resilient”* value -4; their opinion is that *“10% of farms in the case study area will adopt ecological farming practices,”* value 4, but they will not be organised *“Ecological farms will form clusters of closely connected farms”*, value-3. The changes triggered by the wide use of ecological practices will have a significant impact at farm level *“Family labour will decrease”*, value 3, but not at zonal level, *“The rural areas will become no more attractive*

for residents and users”, value 3; they will not influence the agricultural labour market “*Employment opportunities in farming will increase*” value -3.

The z-score values are not high, indicating a moderate attachment of the 4 perspectives to the items; the highest value of z-score is 2.142, in the case of Factor 3, item “*There will be more need of seasonal labour*”. If we analyse the results obtained by each factor and the items specific to Q-sets, we can find that:

- Factor 1 – **Pragmatic with economic attitudes, ecological tendencies** – there is a significant/strong relationship to items referring to labour market, to certain labour force issues: “*Family labour will decrease*”, z score: -1.972, “*There will be more demand for female labour for manual operations*” z score: -0.812, “*There will be more need of seasonal labour*”, z score: 1.164.

- Factor 2 – **Pragmatic with economic, ecological attitudes** – the strongest perspective is on items referring to the provision of ecosystem services, more precisely on the ecological aspects: “*There will be a tight certification to define farms as ecological*” z score: 1.960, “*Water quality will improve*”, z score: 1.608, “*The rural areas will become no more attractive for residents and users*”, z score: -1.297.

- Factor 3 – **Pragmatic ecological** – attachment to items referring to the provision of ecosystem services: “*The rural areas will become no more attractive for residents and users*”, z score: -1.758, “*There will be a tight certification to define farms as ecological*”, z score: 1.521, “*Water quality will improve*”, z score: 1.164

- Factor 4 – **Pragmatic economic** stands out by the z scores obtained by items focusing on rural economy – “*The wider rural economy will be more resilient*”, z score: -1.745 and labour force, “*The use of family labour will decrease*” z score:1.624, “*Employment opportunities in farming will increase*”, z score: -1.624

The calculation of z scores and of differences between them in particular allowed a more accurate identification of subjective perspectives (Chart no.1).

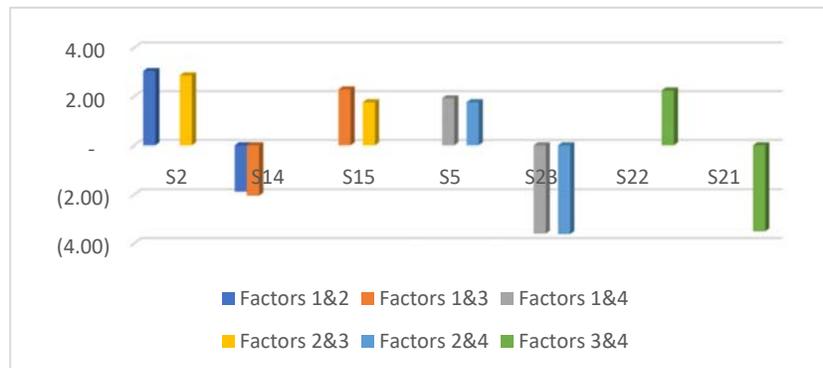


Chart no. 1. Descending array of differences between factors

Source: authors' processing

Statements' legend: S2- “10% of farms in the case study area will adopt ecological farming practices.”; S14- “Farmers will cooperate more with neighboring farmers and farms close to them.”; S15- “Consumers will not buy a lot more of their food locally.”; S5- “Water quality will improve.”; S23- “The use of family labor will decrease”; S22- “There will be more need of seasonal labor.”; S21- “Rural areas will become no more attractive for residents and users.”

Between Factor 1, **Pragmatic with economic attitudes, ecological tendencies** and Factor 2 **Pragmatic with economic, ecological attitudes** there is consensus for the items “*The use of family labour will decrease*”, the difference is 0.021, “*Little change will happen to soil quality*”, the difference is 0.041, “*Employment opportunities in farming will increase*”, the difference is 0.045; there are striking

differences for items “10% of farms in the case study area will adopt ecological farming practices, the difference is 3.048, “More livestock farmers will use mob/strip grazing”, the difference is 1.725.

The result of comparing the four factors led to the identification of similar opinions as well as to determining the subjective distance, expressed by disagreement. The existence of zero scores indicates the lack of importance that respondents attach to these items; the values assigned to statements reflect the importance of one aspect or another of the investigated issues. In this sense, we think that the presence of 0 score denotes indifference or strong disinterest in one aspect or another (Table no.1).

Table no. 1. Consensus versus Disagreement

Category	Statements	Factor 1	Factor 2	Factor 3	Factor 4
Ecosystem services	Water quality will improve.	2	3	2	-1
	There will be little change in the landscape appearance of rural areas.	1	2	1	2
	Little change will happen to soil quality.	1	1	1	1
	There will be no change in the number and/or size of hedgerows.	0	-2	0	-1
Rural economy	50% of farms will adopt ecological farming practices.	0	2	-1	-2
	10% of farms in the case study area will adopt ecological farming practices.	4	-3	3	4
	Ecological farms will form clusters of closely connected farms within the case study area.	-1	1	0	-3
	The wider rural economy will be more resilient	-1	-2	0	-4
	Farmers will cooperate more with neighbouring farmers and farms close to them.	-3	1	1	0
	Consumers will not buy a lot more of their food locally.	1	0	-3	-1
Labour market	Employment opportunities in farming will increase.	1	0	-1	-3
	The need for labour work of an individual farmer will be spread throughout the year.	-1	1	-2	-2
	Farmers will need to increase their level of skills.	3	3	2	2
Working conditions	The farmer's daily routine will become more varied.	-2	0	-2	1
	The nature of work on farms will be more physically demanding.	-3	0	-1	0

Source: authors' processing

Obtaining some subjective factors generating configurations has been achieved both in environmental management and ecological economy's studies; for example, the perception and opinions regarding ecosystems have generated five types of factors: the non-economic utilitarian, the critical idealist, the anti-utilitarian, the methodologist and moderate economist (Hermelingmeier and Nicholas, 2017). The values and perspectives, representative for managing ecosystem services, fundamental for factors, are present in ecology's economy studies (Grimsrud, Graesse and Lindhjem, 2020, Zepharovich, Ceddia and Rist, 2020)

Conclusions

The four patterns of opinions and attitudes reveal, in an objective way, the subjective perspective on issues referring to the impact of adopting ecological farming practices on the provision of ecosystem services, working conditions on the farms, labour force market and rural economy. It is obvious that there is an intense subjective relationing to the acute problem of labour force, rural area and provision of ecological services; in all the 4 subjective configurations, we can find opinions and projections referring to the situation and evolution of labour force and ecosystem services. The indirect subjective relationing to the structure of rural economy, that can be changed by the increase of the number of ecological farms, reveals the major interest in the evolution of the share of these farms. There is also an indirect appetence for the institutionalization and normativity of ecological farms, denoting the

modern behaviour of those engaged in the organic farming process. Without forcing upon the significance of results, we can advance the hypothesis that the agro-ecological policy measures will find a point of support, for their implementation, in these opinions and attitudes oriented, first of all, towards labour market, institutionalisation of ecological farm certification and provision of ecosystem services.

Acknowledgements

This research work was carried out within the LIFT Project, “Low-Input Farming and Territories – Integrating knowledge for improving ecosystem-based farming” that received funding from the European Union’s Horizon 2020 Research and Innovation Programme under Grant Agreement no. 770747, May 2018 – April 2022.

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”I Consume, Therefore I Am?” A Qualitative research on New Generation’s Perception on Romanian Consumer Society

Lelia Voinea¹, Dorin Vicențiu Popescu², Teodor Mihai Negrea³ and Razvan Dina⁴
¹⁾²⁾³⁾⁴⁾ The Bucharest University of Economic Studies

E-mail: lelia.voinea@com.ase.ro; E-mail: dorin.popescu@com.ase.ro;
E-mail: teodor.negrea@com.ase.ro; E-mail: rdina@ase.ro;

Please cite this paper as:

Voinea, L., Popescu, D.V., Negrea, T.M. and Dina, R., 2021. “I Consume, Therefore I Am?” A Qualitative research on New Generation’s Perception on Romanian Consumer Society. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 206-215 DOI: 10.24818/BASIQ/2021/07/027

Abstract

An evolved form of the capitalist system, consumer capitalism proposes a new way of life, centered on material values, in which consumption tends to become an end, but also a value in itself, which is a culmination of hedonism. In this context, we can speak of a new form of culture, the culture of consumption, in which consumption becomes the center of gravity of human existence. In other words, the new capitalist system produces consumers and a culture of consumption. The central objective of the present research, which is qualitative in nature, was to capture the main features of consumer society in Romania, with a focus on understanding the extent to which the new generation of Romanian consumers is influenced by consumerism. We set out to answer the question of whether consumption is a central value for young consumers in Romania and, in context, how they relate to the basic elements of consumer culture. The target group of the research were students from two Master's programs at the Academy of Economic Studies in Bucharest, from which a sample of 27 people was drawn. The method used for the investigation was the structured online interview. From the analysis and interpretation of the data it emerged that, in the case of young Romanian consumers, compared to other age groups, there is a different structure and dynamics in terms of consumption, with the predominance of satisfying complex needs of an emotional nature, such as the search for and expression of one's own identity or the differentiation of social status, to the detriment of satisfying primary consumption needs. The younger generation of consumers also tends to seek out the 'new' as they move from American-style globalization to multicultural globalization.

Keywords: consumer society, consumer culture, new consumer, consumer behavior, trend, globalization

DOI: 10.24818/BASIQ/2021/07/027

Introduction

In consumer culture theory, consumption is approached as a center of gravity of human existence, reflecting what, in practice, we call consumer culture. One thing has become very clear today: consumer culture, or in other words life built around mass-produced goods, media and shopping malls, is a phenomenon that is spreading all over the world.

Based on the particularly important role that consumption has acquired in contemporary society, Ritzer (2010) refers to consumer culture as a new form of culture, the main argument of his approach being the central value status that consumption has acquired.

While many scholars, such as Trentmann (2012), Lipovetsky (2007), have defined consumption as a phenomenon integral to human existence, Campbell (1998) points out that, especially in developed societies, consumption is no longer just about acquiring the bare necessities of existence, but is seen as

valuable in its own right. This is revealed by the multitude of individuals who are everywhere involved in the acquisition of goods and are surrounded by their peers who, in any context, flaunt (sometimes even ostentatiously) their purchased goods (Stanciu, et al., 2019).

Analyzing contemporary consumers from the perspective of active involvement in consumer culture, young people have a disproportionate influence compared to older people. The importance of young people as a category is justified primarily by the fact that they represent a profitable current market, but also a future market. As young people are important players in the consumer capitalism market, we believe that their perception requires special attention.

This study, situated in an academic community, as the participants are students of a master program of The Bucharest University of Economic Studies, investigates students' view about specific aspects of Romanian consumer society. The study draws on the insights emerged from online interview data and represents an attempt to understand to what extent the behavior of the new generation of consumers from Romania is influenced by consumerist ideology.

Taking as a starting point the importance of the younger generation in contemporary consumer culture, our study raises the following questions: Is consumption a central value for the new generation of consumers in Romania? How does the new generation of consumers in Romania relate to the basic elements of consumer culture (consumer goods, brands, consumer spaces)?

The paper is divided into five sections. After the Introduction comes the section of Literature Review, which is followed by Research Methodology and Results and Discussion. The paper ends with the section dedicated to Conclusions.

Literature Review

As it was shown by Sassatelli (2007), in consumer culture, material goods have become the main tools by which consumer builds and expresses his individuality and, beyond their material existence, they represent, in fact, messages of the owner's self. The fact that contemporary individuals build their identity around the imperative of excessive consumption of commodities, that could bring them an immediate satisfaction is a recurrent theme both in scientific literature and in public discourse, especially in developed societies (Abrudan, et al., 2015; Vasiliu, et al., 2016). Lipovetsky (2007) points out that the contemporary individual's appetite for consumption and the tendency to construct identity around consumer goods is one of the consequences of the 'fashion plot', embodied in the 'morally driven obsolescence' of products, which began to affect the industrial world after the Second World War, culminating in recent decades in a veritable inflation of the new, generated by the accelerating pace of model renewal. But this whole 'fashion plot' could not have achieved its purpose if it had not been doubled by an 'advertising plot' and, by implication, the media, which have shaped people's vision of the contemporary world (Kellner, 1983). Alongside fashion, advertising has also plotted in its own way, the main aim being to sell a concept, a vision, a lifestyle associated with the brand along with the product. This explains why consumers turn coded symbols into brands to express their identity and lifestyle.

The global adoption of the consumer mentality as a *modus vivendi* has come about because the capitalist system of recent decades, unable to rely solely on the production of goods and services, has had to focus on the production of consumers and consumer culture. The impact of capitalism has been enhanced by Americanization, which has resulted in the spread of typical American goods (Coca-Cola, blue jeans, etc.), typical American consumer settings (the fast-food restaurant, the chain store, the themed supermarket, the shopping mall, the casino, the amusement park, etc.), and American patterns of consumption all over the world (Ritzer, 2010; Cantaragiu and Ghinea, 2020). Against this backdrop, a number of shifts in consumer behavior have occurred globally, with the chronic desire for material goods, the shopping virus and the passion for the new becoming legitimate. Therefore, living better, enjoying life's pleasures, not depriving oneself of anything or disposing of unnecessary things have become goals in themselves for consumers. All this has inevitably led to a way of life centered on materialistic values.

But although the era of abundance of recent decades seems to have created a favorable climate for the heyday of hedonism, the persistence of social inequalities, especially those caused by poverty, has inevitably led to an exacerbation of inter-human conflict. In this context, Lipovetsky (2007) speaks of a paradox of happiness in consumer society, pointing out that although the satisfactions individuals can access are more numerous than ever before, happiness is still as inaccessible as in the past, with increasing disappointment and frustration increasingly evident.

Research Methodology

Attempting to provide a deep understanding of new generation's perception on consumer society in Romania, present qualitative research draws on online interview data provided by master students of The Bucharest University of Economic Studies. The interview as method of data collection is considered by scholars a useful tool for capturing many of the subjects' views on a specific phenomenon (Kvale and Brinkmann, 2009; Qu and Dumay, 2011).

While the main objective is to highlight participants' view about specific aspects of Romanian consumer society, the research questions were formulated as follows: *Is consumption a core value for the new generation of consumers in Romania? How does the new generation of consumers relate to the basics of consumer culture?*

The sample consisted of 27 respondents, 8 men and 19 women, aged from 21 to 45 years. All the respondents were students at the Bucharest University of Economic Studies, following the courses of two master programs: "Quality Management, Expertise and Consumer's Protection" and "Commercial Business Administration". Respondents were born in different regions of Romania, both in urban or rural areas. Appendix 1 shows the characteristics of the sample.

Considering the restrictions imposed on the background of Covid-19 pandemic, the research team conducted online interview. The format of the interview was asynchronous, which means that the participants and the members of the research team were not online at the same time. While synchronous interviewing online is conducted in real time and tends to follow a pattern that is familiar to in-person interviews, asynchronous interviews are more like open-ended surveys (Kozinets, 2020).

Even though the asynchronous interview has a major limitation to not allowing participants and researchers to converse in real time and to take benefits from all the visual elements specific to face-to-face interviews, the reason why the research team chose this tactic was not only to allow participants to answer questions at their convenience, but also to encourage the reflective process among them (Lindlof and Taylor, 2017). As Bryman (2012, p. 669) point out, even though greater motivation is required for completing an online interview, however, replies could be sometimes more detailed than in a face-to-face interview. Moreover, as it is highlighted by Kozinets (2020), interviewees' answers in asynchronous online interview tend to be more deliberate and calculated because they have more time to reflect on answers. There is an obvious advantage of a 'clean' transcript when conducting an asynchronous interview, but, if the interviewer hopes for spontaneous moments of revelation, this format is less effective than the real-time one.

As the interview was conducted entirely in a textual context, a structured interview form, consisting of a list of questions, was used to collect the answers from participants (Appendix 2). In designing the interview guide, which is often called a 'discussion guide', the research team followed Kozinets's (2020, p. 235) advice who claims that the more structured the approach to the interview, the more important it is to use a carefully constructed, pretested, and revised interview/discussion guide.

Being aware that another major issue for asynchronous interview is that respondents may read all the questions and then reply only to those that they feel interested in, the research team sent via email the list of questions to a large number of students and took into account to include in the sample only those interviewees who provided detailed answers to all questions, eliminating the others. The process of data collection started in October 2020 and ended up in January 2021, with interviewee no. 27, when the research team considered that data saturation had been achieved, meaning that no significantly new information was produced (Kvale and Brinkmann, 2009). In this respect, data analysis was approached by the research team as an ongoing process, data collection and analysis were being occurred alongside

each other. The collected data were coded with the support of Microsoft Word and Excel (by counting relevant keywords) and categories were built-up. The relationships between categories were further analyzed. During the process of data analysis, the pursuit for internal consistency through alignment across research question, collected data and analytical process was the focus of the research team (Bryman, 2012).

Keeping in mind that a compelling story, resulting through data and theory narrative, is the very essence of qualitative research (Bansal, et al., 2018; Bansal and Corley, 2012) the research team tried to do a comprehensive treatment of collected data and to extract findings in the attempt to discern insights of young consumers' perception on Romanian consumer society.

Results and discussion

Themes resulted from data analysis

Reflecting on consumption

Analyzing the data sources resulting from the research, we identified in the responses of the study participants a suite of valences of consumption, as follows: means of identity expression, source of satisfaction, source of status differentiation and necessity (Table 1).

Table no. 1. Reflecting on consumption

Valences of Consumption	Respondents	Quotes
Consumption as a means of expressing identity	R13	<i>"Romanian society is deeply affected by the culture of consumption, and the identity and meaning of individuals' lives are defined through consumption, through the purchase and use of consumer goods".</i>
	R19	<i>"I believe that we should not identify ourselves with the things we possess or the services we benefit from, because this kind of behavior distances us from our self, making only possession important to us."</i>
	R21	<i>"People identify with the goods or services they consume".</i>
Consumption as a source of satisfaction	R14	<i>"The feeling of satisfaction when we buy something is very strong, but most of the time when we get home, we realize that we don't actually need the good we just bought."</i>
	R27	<i>"Consumption has acquired in my life a value of ritual and routine... I believe that consumer goods can satisfy certain emotional needs".</i>
	R4	<i>"We feel free people when we consume and consider consumption as a reward in the struggle for success. We are very happy when we purchase something, but often come to realize that we don't need it."</i>
Consumption as a source of differentiation	R1	<i>"To consume is to exist in the eyes of others, whom we imagine to be envious and admiring of our possessions."</i>
	R21	<i>"The desire to own more than the bare necessities derives from people's need to feel superior, to provoke envy in others...The flaunting of possessions is an increasingly common practice that is also easily spread through social media."</i>
Consumption as necessity	R9	<i>"Consumption is at the basis of our existence, we can't live without acquiring certain things."</i>
	R8	<i>"Consumption is the main reason a person exists. People are born to consume."</i>
	R25	<i>"Since ancient times man has been a consumer, starting from basic resources for certain basic needs to the more complex needs of today."</i>

The opinions expressed by most of the respondents converge towards the idea that consumer goods are used by Romanian consumers as tools for expressing identity and lifestyle. This result is in line with Arnould and Thompson (2005) claim that goods are the main instruments through which consumers assert their individuality and, beyond their concrete, material existence, they are in fact messages, expressions of the possessor's self. In general, theorists who have turned their attention to the relationship between the consumer's approach to identity creation and the structural influence of the market argue that the market produces certain consumption patterns that consumers can choose to occupy. While individuals pursue personal goals by occupying these consumption

patterns, they also adopt and personalize cultural scripts that align their identity with the imperatives of the global consumer economy.

Consumption as a source of personal satisfaction as well as differentiation of the state is another idea that emerges clearly from respondents' responses. This finding is in line with Featherstone (2007) and Baudrillard (1970) who pointed out that satisfaction derived from consumption of goods is linked to their social significance. People use consumer goods and consumption experiences to create either social bonds or distinctions.

Always searching for something new

The analysis of the data collected from the interviews shows that the continuous aspiration towards "something new", one of the defining features of contemporary consumer behavior as Lipovetsky (2007) points out, is also found among the new generation of consumers in Romania, mainly as a result of the symbiosis between the inflation of novelty and advertising (Table 2).

Table no. 2. *Always searching for something new*

Respondents	Quotes
R1	<i>"Advertising and media pressure stimulate the desire to get hold of something, but once the act of buying is done, the desire for a new purchase arises."</i>
R16	<i>"Many times, consumers don't make the best decisions, they act irrationally and their decision is influenced by some misleading information."</i>
R4	<i>"In my opinion, consumption is driven, both by the society we live in and by each of us. Discussions with friends are mostly about sharing impressions of products purchased and buying tips."</i>
R11	<i>"I fail to be immune to the consumerist assault in the air I breathe. Sometimes it seems like everything around is a buzz that says 'Consume! Consume!!!'."</i>
R7	<i>"We buy products because the market presents them to us as useful, not because we really need them. Consumption is due to marketing strategies by which we are lured into consuming willingly or unwillingly."</i>
R17	<i>"The cult of brands is particularly noticeable among the new generation of consumers and especially in certain categories of goods: clothing, electronics (mobile phones), cars."</i>
R13	<i>"Young people put emphasis on the brand/brand and not on the quality of the product because they are influenced by their entourage and do not want to be inferior"</i>
R7	<i>"We humans are always looking for something new".</i>
R16	<i>"There is a risk of losing our rationality and the more we consume, the more we will want to consume more and more."</i>
R2	<i>"People today want more and more and not necessarily because they need it...thus increasing unnecessary consumption."</i>

Respondents state that the abundance of goods marketed in different consumer settings and the transformation of shopping into a leisure mode are the main factors likely to stimulate the perpetual desire for the "new", as it was highlighted by Underhill (2007).

Another factor indicated by respondents as having a decisive contribution to stimulate the desire for something new is also advertising, through which, as Schroeder (2017) emphasized, brands address individuals in the position of consumers by promising to fulfil their unsatisfied desires and needs. A large part of the respondents agree that aggressive advertising (both in the media and in social media) has led to a real cult of brands, including luxury brands, among the new generation of consumers in Romania. An explanation of this behavior can be found in Lipovetsky (2007), who pointed out that advertising, whose rhetoric now emphasizes emotion, on meanings that go beyond the objective reality of products, no longer sells only products, but also concepts, visions, lifestyles associated with brands. Moreover, as it was shown by Strizhakova et al. (2008), brands with global notoriety, being generally associated with an idea of high quality, have the ability to set a standard and convey that myth of cosmopolitanism, to which many consumers around the world aspire.

In conclusion, based on the opinions expressed by the respondents, the equations reflecting the causes and implications of the unrestrained desire for something new in Romanian consumer society can be stated as follows:

Inflation of the new + advertising = passion for the new

Abundance of goods + cult of brands = excessive consumption and waste

However, the views expressed by a number of respondents criticize the continuous desire for 'something new', showing that this type of consumer becomes trapped in a vicious circle of excessive and unnecessary consumption, which, unchecked, can lead to shopping addiction (Miltenberger et al., 2003).

In addition, respondents are also aware that purchasing power is essential to maintain the quality of active consumer, noting that poverty is one of the stigmatizing inequalities in Romanian consumer society. Not having money can become a profound social handicap in a consumer society because money facilitates participation in consumption and the ability to engage in the central practice of consumer culture (Goodman and Cohen, 2004).

Tasting the American lifestyle

Analysis of data sources shows that the American model of consumption (consumer goods, media products, consumer decor) has been enthusiastically adopted by Romanian consumers (Table 3).

Table no. 3. Tasting the American lifestyle

Respondents	Quotes
R21	<i>"The Romanian society is affected by the Americanization phenomenon because people like anything new, trendy, that can make life easier. Of course, this phenomenon also has negative aspects (for example, shopping malls and casinos are places designed to waste time and money)."</i>
R14	<i>"Our country is directly involved in the phenomenon of Americanization through customs and traditions and holidays taken over, but also fast food."</i>
R18	<i>"What is sad is that by borrowing American traditions (which we find more interesting) we often forget our own traditions and cultures, which makes us vulnerable as consumers because we can no longer distinguish quality - our own traditions from what is imported and imposed through various marketing strategies."</i>
R17	<i>"Romanian culture is strongly influenced by Americanization by taking over many American customs. Thus, in our country we can observe the popularization of American holidays (Halloween, Valentine's Day, etc.), which have no cultural importance for us, but are mainly a means of consumption. At the same time, we are facing the expansion of shopping malls that have turned shopping into a way of spending leisure time."</i>
R4	<i>"Shopping is seen as a therapy that can help us to detach, for a while, from the social problems we face and that influence our lives."</i>
R24	<i>"Fast food has become very popular in Romanian culture due to the speed of preparation and appealing sensory characteristics. However, eating these foods can lead to digestive system disorders, which in time can lead to overweight and even obesity."</i>

The opinions expressed by respondents on the impact of Americanization on Romanian consumer society show both a positive perception and an awareness of the negative social implications. The main advantage of Americanization as perceived by the respondents concerns the possibility of mass access of the younger generation to typical American consumer goods and media products (films, series, music, etc.), which were inaccessible to previous generations (their parents). This finding reinforces Ritzer's (2010) claim according to which the global spread of the American model of consumption is recognized as one of the most important indicators of Americanization, reflected in the attribution of labels to certain phenomena manifested in the sphere of consumption, such as "McDonaldization", "CocaColonization" or "Starbuckization".

Among the negative effects of Americanization, respondents most often list the tendency of Romanians to celebrate holidays imported from the Americans (Halloween, Valentine's Day), which, beyond the consumption of specific products, are devoid of any cultural significance. And as a result of the aggressive promotion in the media and social media of these holidays, Romanian consumers tend to neglect the local traditions.

An ambivalent attitude is noted among respondents regarding typical American consumer settings, metaphorically called by Ritzer (2010) as "cathedrals of consumption" (malls, chain stores, themed superstores, fast food restaurants, casinos, amusement parks). The consumer settings most often associated by respondents with the idea of Americanization are the mall and the fast food restaurant. Although respondents appreciate the shopping mall for its diversified offer that meets all needs, they also see it as a place for wasting time and money, and also responsible for compulsive shopping. In the case of the fast-food restaurant, although they indicated the speed of preparation and service as the main advantage, respondents are aware of the negative effects of frequent consumption of specific products.

The explanation for the appeal of many American forms exported to the world (media products, consumer goods, consumer decorations) lies in the fact that they have succeeded in conveying to the public the idea of malleability and adaptability to local cultures. However, the American affiliation is clear.

Research trustworthiness

Regarding the validity and reliability of our research, we followed the approach of Lincoln and Guba (1985) who introduced the alternative concept of *trustworthiness* as more appropriate to qualitative research. Apart from a long engagement of the research team with data sources, in order to reduce the biases, data validation was done through challenging the findings by three of the research participants (R20, R24, R16). As they confirmed that the interviews' findings are comprehensive and linked to reality, we considered that respondents' validation had been obtained, this fact contributing to the strengthening of the research findings credibility.

Conclusions

Contemporary society seems to have generated an unquenchable appetite for consumption, so that any saturation of one need is immediately followed by the emergence of another, which then materializes into a new demand. As a result of increased social mobility and the possibility for everyone to take part in the world of consumption, access to consumer goods is no longer so strictly marked by the dominant-dominated antagonism, but rather the market oscillates between 'always more' and 'always newer'.

The main valence of consumption, in the case of the new generation of Romanian consumers, as the research shows, is the marked transition from satisfying primary consumption needs to satisfying complex needs, many of an emotional nature, aimed at expressing identity, the self, personal lifestyle, through the choice and consumption of "fashionable" material goods, a choice ultimately directed by the contemporary market, which creates different patterns of consumption and consumers. In other words, young Romanian consumers choose what they are and are what they choose, they pursue, in an often predetermined context, the differentiation of social status and the increase of self-esteem, within the social ties they develop.

The new generation of consumers in Romania, following the dominant contemporary lifestyle, is in constant search of the "new", under the influence of aggressive advertising which, today, no longer sells only products but, above all, concepts, visions, lifestyles, including through the exacerbated promotion of the cult of brands/brands, which stimulates the desire to be "in trend". As a result, there is a tendency towards irrational consumption, strongly marked by hedonism, towards waste, consumption becoming a value in itself, in other words, a center of gravity of human existence.

The constant search for the new, as a distinctive feature of the consumer behavior of the younger generation, is partly due to the globalization of the American lifestyle. From the analysis of the data, an ambivalent attitude of the new type of Romanian consumer clearly emerges, in terms of relating to this model of consumption that has become dominant. Thus, he/she looks positively at the easy access to consumer goods and media products, while adopting imported holidays, but also observes that, by accepting this lifestyle, he/she buys products without cultural significance, to the detriment of local products and traditions. They also quite readily accept consumer settings, i.e. the shopping mall and the fast-food restaurant, which are frequently associated with 'Americanization', due to the benefits expressed in the form of a diversified offer (in the case of the shopping mall) and the ease of preparing

and serving food (in the case of the fast-food restaurant), respectively, even though they sometimes find that these are in fact forms of time-wasting and irrational spending of money or sources of promoting unhealthy eating.

In this context, the original meaning of Descartes' statement – “I Think, therefore I am” - is perceived by the new generation of consumers to some extent as “I Consume, therefore I am”. Obviously, we must consume in order to exist, but nevertheless consumption should not be valorized and elevated to the privileged status of a value in itself.

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Appendix 1

Respondents' profile

Crt. no.	Respondent's Initials	Respondent's code	Gender	Master programme	Age	Marital status
1.	AC	R1	F	M1	23	unmarried
2.	BA	R2	M	M2	21	married
3.	CO	R3	M	M2	23	unmarried
4.	CC	R4	F	M2	24	unmarried
5.	DR	R5	F	M2	21	unmarried
6.	GI	R6	M	M2	22	unmarried
7.	HB	R7	M	M1	23	unmarried
8.	ID	R8	F	M1	23	unmarried
9.	IF	R9	F	M1	24	unmarried
10.	IT	R10	F	M2	22	unmarried
11.	LR	R11	M	M1	45	married
12.	MR	R12	F	M1	24	unmarried
13.	MV	R13	F	M1	24	unmarried
14.	MI	R14	F	M1	24	unmarried
15.	MD	R15	M	M1	23	unmarried
16.	MR	R16	F	M1	36	married
17.	OM	R17	F	M2	21	unmarried
18.	PT	R18	F	M1	24	married
19.	RO	R19	F	M1	24	unmarried
20.	RN	R20	M	M2	22	unmarried
21.	SA	R21	F	M1	21	unmarried
22.	SD	R22	F	M1	23	married
23.	SC	R23	F	M1	22	unmarried
24.	SA	R24	F	M2	21	unmarried
25.	SM	R25	F	M1	22	unmarried
26.	TS	R26	M	M2	22	unmarried
27.	VA	R27	F	M1	23	unmarried

Appendix 2

Discussion guide

Crt. No.	Questions
1.	What do you think are the reasons why consumption has become important in the everyday life of consumers around the world?
2.	Comment on the following statement “Consumption is a value in itself for me. I consume, therefore I am”. Explain in which extent this reflects your consumption behavior.
3.	How do you explain the never-ending desire for “something new” of Romanian consumers? What do you think is fueling the appetite for consumption of Romanian consumers? What are the consequences of this behavior?
4.	What do you think are the reasons behind the culting of brands in Romanian consumer society?
5.	What does Americanization mean to you? What do you consider to be the positive side of Americanization in the Romanian consumer society? But the negative one?
6.	Comment on the inequalities determined by gender, social class, age and poverty within the Romanian consumer society. Which of these sources of inequality do you consider to have the greatest power of stigmatization within today's Romanian consumer society? Explain why.

Perspectives and Impacts of Accelerating the European Funds Absorption in Romanian Economy

Andrea Feher¹, Miroslov Raicov², Lavinia Cuc³ and Silviu Gabriel Szentesi⁴

¹⁾ *Banat's University of Agricultural Sciences and Veterinary Medicine "King Michael I of Romania" from Timisoara, Romania.*

²⁾ *Romanian Academy, Branch of Timisoara, Research Center for Sustainable Rural Development of Romania, Timișoara, Romania.*

³⁾⁴⁾ *"Aurel Vlaicu" University of Arad, Romania.*

E-mail: andreafeher@usab-tm.ro; E-mail: miroslov.raicov@academiatm.ro

E-mail: laviniacuc@yahoo.com; E-mail: silviuszentesi@yahoo.com

Please cite this paper as:

Feher, A., Raicov, M., Cuc, L. and Szentesi, S.G. 2021. Perspectives and Impacts of Accelerating the European Funds Absorption in Romanian Economy. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 216-224
DOI: 10.24818/BASIQ/2021/07/028

Abstract

This article presents an analysis of the evolution of European funds intended for Romania's financing programs for the financial years 2007-2013 and 2014-2020. The purpose of this approach is to identify the extent to which Romania is able to absorb the European funds allocated to it. This is particularly important in view of the future funds allocated through the new multiannual financial framework 2021-2027, as well as recovery and resilience assistance through the post-pandemic instrument NextGeneration EU. In this regard, we analyse the sectors that enjoy better absorption and those in which the degree of absorption is inadequate, mentioning the main obstacles that determine this situation. The analysis of the evolution of financial flows highlights the fact that the process of using the allocated funds started with delays in Romania. Until the end of April, 2020 (7th year of implementation for the financial year 2014-2020), the absorption degree of European funds was only of 42.48%, with large differences between destination categories. The effective absorption rate is totally inadequate, leading to the non-achievement of proposed national objectives. We notice that for Romania additional efforts are to be made to increase the rate of European funds absorption. Early preparation of projects, increasing the administrative capacity for planning and managing European funds, a correct and stable ranking of priorities, the adoption of a strategic development plan, represent the key factors for reviving the absorption rate.

Keywords

Cohesion Policy, Structural funds, Romania, Operational Programs, Absorption Rate.

DOI: 10.24818/BASIQ/2021/07/028

Introduction

Cohesion policy is one of the most important policies of the European Union (Marin, 2020). It is defined by one of the fundamental values of the EU, namely cohesion. Its scope is to support the process of reducing the gaps between most developed regions and less developed regions and member states of EU. The primary legal basis of the cohesion policy is the Treaty on European Union (Title XVII, Economic and Social Cohesion', and Article 148 on the European Social Fund). The objective to strengthen economic and social cohesion is explicitly mentioned under Article 2 of the Treaty of Amsterdam, as a high level objective of the European Union. More specifically, Article 158 states cohesion as a prerequisite for the harmonious development of the EU, underlining the will of "reducing

disparities between the levels of development of the various regions and the backwardness of the least favoured regions or islands, including rural areas”.

Following the enlargement of the European Union between 2004, 2007 and 2013, the issue of the disparities within it has become more visible. The problem of gaps between the economic levels of the member states has always existed and it has appeared before, throughout the creation of the European Union, but did not have the same amplitude (Dinu, 2016; Hapenciuc, et al., 2013). Lately, we have been witnessing a widening of disparities between member states, a sign that key restructuring of EU policies needs to be considered.

In the past programming period (2007-2013) and in the present period (2014-2020) structural funds represented and represent one of the main instruments which the EU uses to sustain regional development and to eliminate gaps between member states (Andrei and Darvasi, 2012; Feher, et al., 2020; Zaman and Cristea, 2011). Under the EU's cohesion policy, post-communist member states in Central and Eastern Europe are the main beneficiaries of European Structural and Investment (ESI) Funds (Batory, 2020).

Romania's accession to the European Union meant a radical change in the country's development potential, given the opportunities of cohesion policies and other sectoral policies promoted by the European Union. Romania is a net beneficiary of financial sources from European funds. The amounts received exceed well ahead Romania's contribution parts to the Community budget (Table no. 1).

Table no. 1. The evolution of the financial flows between Romania and the European Union during the period 2007-2018 (Net financial Balance at 31.07.2018, EUR million)

Specification	Period 2007-2013	Period 2014-2018	Total
Amounts received from EU budget	21,087	29,041	50,128
Amounts paid to EU budget	9,202	7,579	16,781
Balance	11,885	21,462	33,347

Source: Authors' development based on Ministry of Public Finance, 2020.

The annual evolution of the financial flows between Romania and the European Union, starting with the year of 2007, is shown in Figure no. 1. There can be noticed a sharp increase in the amounts received by Romania from the European Union, from its accession until the year 2016, when there is recorded a maximum level of European funds inflows of over EUR 7.3 billion. This was followed by a sharp decrease in 2017 to EUR 4.8 billion, and in 2018 to EUR 4.4 billion. These large fluctuations, from a period to another, are due to the accelerated settlements made on projects completed in the last year of the financial year 2007-2013 and to the actual settlements during the extension period (according to the N+2 principle, which was in fact extended at N+3). In addition, in 2014-2016, the amounts received (including pre-financing) related to the multiannual financial framework 2014-2020 overlapped. We mention that the amounts received are not fully settled; sometimes a part of the amounts advanced can be withdrawn by the European authorities. According to the algorithm for calculating Romania's contribution to the European Union budget, the amounts paid are relatively constant, of about EUR 1.5 billion in recent years. Payments made are well below the level of revenue from the Community budget, resulting in a positive annual balance recorded in all years since Romania is a member of the European Union, with a maximum level reached in the year 2016, of over EUR 5.8 billion.

In terms of financial support, Romania was beneficiary of all types of funds that are made available to Member States from the general Community budget. These funds cover clearly defined objectives in the programs developed at national level by each country. For the period 2021-2017, EUR 81 780.2 million are allocated for Romania from the community budget. Of this amount, EUR 51 280.2 million are allocated through the **multiannual financial framework 2021-2027**, and EUR 30 500 million through the **NextGeneration EU** instrument for the reconstruction of Europe after the pandemic period.

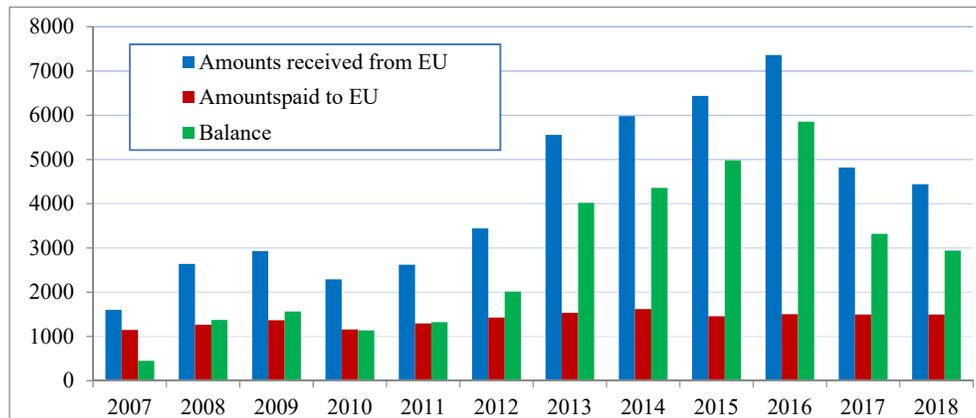


Figure no. 1. Evolution of the financial flows between Romania and the European Union during the period 2007-2018 (EUR million)

Source: Authors' development based on Ministry of Public Finance, 2020.

The absorption of European funds is an objective of national interest for Romania. It significantly influences investment in support of future developments and sustainable economic growth, with a number of positive effects on society as a whole (Feher, et. al., 2017). The article presents the financial flows, by programs, received and spent by Romania in two financial years, respectively 2007-2013 and 2014-2020. In this regard, we analyze the sectors that enjoy better absorption and those in which the degree of absorption is inadequate, mentioning the main obstacles that determine this situation. Through this analysis we want to make an x-ray of the absorption capacity of community funds in Romania, with the hope that the ideas, solutions and suggestions can be used for future programs.

Review of the scientific literature

Numerous studies emphasize the importance of structural funds and show that these funds have a positive impact on economic growth (Štreimikiene, 2016; Lesniewska-Napierała, et al., 2019) with a clear connection between cohesion and convergence. Lolos (2009) underlines the positive impact of structural funds support on regional growth in Greece parallel with enhancing income convergence. Mohl and Hagen (2010) analysed the economic growth effects of EU structural funds over 126 NUTS-1/NUTS-2 regions and they concluded that Objective 1 payments in particular do, in fact, promote regional economic growth, whereas the total amount of Objectives 1, 2 and 3 do not have a positive and significant impact on the EU regions' growth rates. Some analyses are suggesting that structural funds are irrelevant to economic growth (Esposti and Bussoletti, 2008; Percoco, 2017) and have no impact on development due to lack of convergence of regional income, nor do it lead to increase growth in the regions that are lagging behind.

The EU's cohesion policy and public opinion on the European integration are also widely debated in the literature (Bachtler, et al., 2014). Much of these articles consider the impact of cohesion policy on citizens' attitudes to the European Union (Aiello, et al., 2019). Recent studies (Fratesi and Wislade, 2017) highlight an increasing impact of EU's Cohesion Policy, with a rising impact in recent programming periods, in particular determined of policy learning mechanisms. However, the arguments and conclusions that cohesion policy has an impact are not, in itself, sufficiently useful. Due to the large amounts engaged, an impact should be expected, at least at the level of demand.

Research methodology

In this section, the methodological approach of the research and the process of data collection are described. The article analyses the evolution of financial flows received by Romania for financing the operational programs for the 2007-2013 programming period and the 2014-2020 programming period (Ministry of Public Finance, 2020). Based on the allocated amounts, of made payments and reimbursements received from the Community budget (Ministry of European Funds, 2020; Ministry of

Agriculture and Rural Development, 2020), we calculated the absorption degree of various programs financed from European funds. The final absorption rate of the EU share of contribution is broadly used by the authorities, the media and the researchers as an effective indicator for measuring national or regional (i.e., NUTS2 level) performances.

From a technical perspective, in order to longitudinally illustrate Romania's performance regarding the absorption of different funds, the annual absorption rates were calculated. The annual absorption rate is calculated as the ratio between the accumulated payments at the end of the year to the commitments allocated to the country or region for the whole programming period, updated annually. The absorption rate can be expressed in two ways: either by reference to the EU contribution quota, or by total funding, including co-financing. Because total commitments may vary over time, annual updated flows include any increase or decrease from either the EU (ie, EU decommitments in case of delayed allocated expenditure) and / or country (ie, reduction of co-financing). In general, the absorption indicator ensures a normalization of the payments based on the actual commitments, allowing the assessment and comparison of the performance of the managing authorities. However, this indicator may obscure the strategies of low-performing managing authorities to increase absorption.

In order to draw conclusions regarding the policy learning mechanisms we superimposed the evolution of the effective absorption rate of the structural and cohesion funds on the financial year 2007-2013 versus 2014-2020. Within the analysis of the absorption degree of structural and cohesion funds we used the comparison method of the situation registered in Romania for the 2014-2020 programming period, with the one encountered within the other new member states of European Union. It is obvious the unsatisfactory position occupied by Romania in this ranking of the countries that joined the Union after 2004.

The absorption degree of European funds is much discussed in the most diverse environments, based on incomplete information provided by the bodies responsible for managing these funds. The information available at a certain date is usually not definitive, it undergoes changes from one period to another. National programs are constantly being updated with new versions. It sometimes happens that the amounts advanced by European bodies (pre-financing) are later reduced. All these facts create an obvious uncertainty, as well as difficulties in formulating certain and definitive conclusions.

The primary data used in the elaboration of this paper were taken from national and international statistics, European Commission releases and ministries of resort, various national and international publications in the field.

Results

Overview of E.U. funds allocated to Romania. Period 2007-2013 versus 2014-2020

For the previous financial year (2007-2013) Romania has been allocated structural and cohesion funds in the amount of EUR 18.7 billion, to which are added EUR 13.7 billion for the Common Agricultural Policy (EUR 8 billion for the National Rural Development Program, EUR 0.2 billion for the Operational Program for Fisheries and Maritime Affairs, and EUR 5.5 billion for direct payments in agriculture) (Table no 2).

For the period 2014-2020, the total allocations for the Structural and Cohesion Funds are EUR 22.5 billion, with EUR 3.8 billion over the previous financial year. For the Common Agricultural Policy there have been allocated EUR 20,7 billion, of which EUR 8.1 billion for the National Rural Development Program, EUR 0.16 billion for the Operational Program for Fisheries and Maritime Affairs and EUR 12.4 billion for direct payments. To these are added EUR 0.44 billion for the Operational Program Helping Disadvantaged People. Increasing the level of national ceiling for direct payments to a maximum level of EUR 1.9 billion per year, starting from 2019, made the total amount of direct payments allocated to agriculture to increase from EUR 5.6 billion to EUR 12.4 billion (+121.9%). Decreases in the amounts allocated by type of program are recorded in the Operational Program for Competitiveness, the decrease being of EUR 1.2 billion as well for the Operational Program for Fisheries and Maritime Affairs, where the decrease is of EUR 0.1 billion (Table no. 2).

Table no. 2. European funds allocated to Romania by sector (EUR million)

Period 2007-2013		Period 2014-2020		Share 2014-2020 vs. 2007-2013
Regional development	3,966	Regional development	6,860	+72.9%
Environment	4,412	Large infrastructure	9,218	+5.9%
Transport	4,288			
Competitiveness	2,537	Competitiveness	1,330	-47.57%
Human resources	3,200	Human resources	4,372	+36.6%
Administrative Capacity	208	Administrative Capacity	553	+165.9%
Tech. Assistance	170	Tech. Assistance	253	+48.8%
Total structural and cohesion funds	18,781	Total structural and cohesion funds	22,586	+20.3%
Rural Develop.	8,097	Rural Develop.	8,128	+0.4%
Maritime and Fisheries Fund	261	Maritime and Fisheries Fund	168	-35.6%
		Help Disadvantaged people	441	-
Agriculture	5,586	Agriculture	12,394	+121.9%
TOTAL E.U. FUNDS	32,725	TOTAL E.U. FUNDS	43,717	+33.6%

Note: European Territorial Cooperation Programs are not included in all European funds. Source: Authors' development based on Ministry of European Funds, 2020, and Ministry of Agriculture and Rural Development, 2020.

Detailed presentation of the absorption rate of EU funds by programs

Until the date 30/04/2020 (7th year of implementation for the financial year 2014-2020), the absorption degree of European funds from the current financial year was of 42.48%, with large differences. The absorption of direct payments in agriculture has an effective absorption rate of 75.78%, followed by the National Rural Development Program which records an effective absorption rate of 56.46% and the Structural and Cohesion Funds which, in total, records an effective absorption rate of 23.14%. The lowest absorption degree is registered in the Program for Regional Development (20.57%) and the Program for Administrative Capacity (21.21%) (Table no. 3). The comparative graphical expression of absorption degree of the structural and cohesion funds, by years of implementation, in the two financial years, is shown in Figure no. 2.

Table no. 3. Allocations, payments and absorption rate of European funds 2014-2020 (situation at 30.04.2020)

Programmes	E.U. allocations 2014-2020 (mil. €)	Payments at 30.04.2020			Absorption rate with prefinancings (%)	Effective absorption rate (%)
		Total, from which: (mil. €)	Prefinancings (mil. €)	EU refunds (mil. €)		
Regional development	6,860	1,724	807	1,411	32.35	20.57
Large infrastructure	9,218	2,428	924	2,189	33.77	23.75
Competitiveness	1,330	510	131	337	35.22	25.36
Human resources	4,372	1,435	407	1,032	32.95	23.62
Administrative Capacity	553	136	54	117	31.06	21.21
Technical Assistance	253	159	29	137	66.27	54.46
Total structural and cohesion funds	22,586	6,394	2,355	5,225	33.56	23.14
Rural Development	8,128	5,032	325	4,554	60.04	56.46
Maritime and Fisheries Fund	168	58	15	42	34.41	25.13
Total structural and investment funds (ESI)	30,882	11,485	2,695	9,822	40.54	31.81
Help Disadvantaged people	441	138	48	120	38.31	27.31
Agriculture	12,394	8,691	0	8,628	75.78	75.78
TOTAL E.U. FUNDS	43,717	20,315	2,744	18,571	46.47	42.48

Source: Authors' development based on Ministry of European Funds, 2020, and Ministry of Agriculture and

Rural Development, 2020.

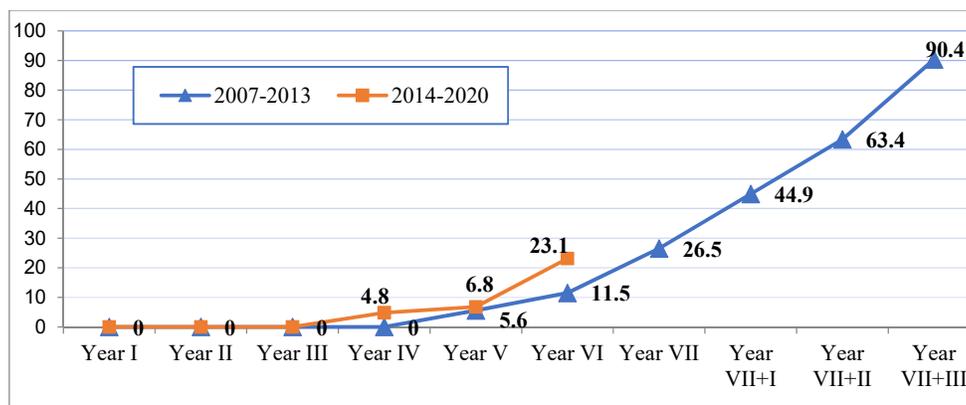


Figure no. 2. Evolution of the effective absorption rate (%) of structural and cohesion funds. Comparative situation 2007-2013 vs. 2014-2020

Source: Authors' development based on Ministry of European Funds, 2020.

Within the analysis of the absorption degree of structural and cohesion funds, using the latest available data from February 2020 (Figure no. 3), we believe useful to compare Romania with the other new member states of the European Union, both in terms of absorption level of these funds as well as their absorption rate. It is obvious the unsatisfactory position occupied by Romania in this ranking of the countries that joined the European Union after 2004. From the shown graph there is noticed to second to last position occupied by Romania, with an absorption degree of only 29.9% (EUR 339 per inhabitant). At the same time, Hungary has an absorption rate of 42.7% (EUR 931 per inhabitant), Poland an absorption degree of 43.5%, with EUR 879 per inhabitant, and Estonia with absorption rate of 46.3% (EUR 1,231 per inhabitant).

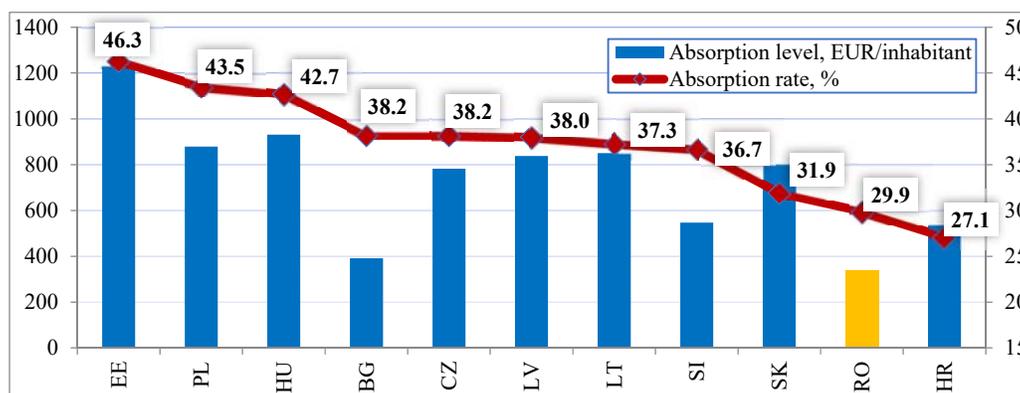


Figure no. 3. Absorption of structural and cohesion funds 2014-2020 (EUR/inhabitant) and absorption rate (%) in new Member States (February, 2020).

Source: Authors' development based on Fiscal Council - Annual Report, 2020.

Discussion

For net beneficiaries countries of EU funds (generally the New Member States), Community support for development projects is a great opportunity, which must be fully exploited. The degree to which a country can benefit from the funds made available to it is expressed in its absorption capacity. However, this consumption of funds differs from one country to another, depending on a multitude of factors.

In Romania, for the current programming period, the absorption degree of structural and cohesion funds is still low, of only 29.9% (February 2020). This indicator is 31.9% in Slovakia, 36.7% in Slovenia, 38.2% in the Czech Republic, 43.5% in Poland and 46.3% in Estonia. For the rural development fund the situation is much more encouraging. There is a multi-layered set of obstacles (Apostolopoulos, et. al., 2020) related to the absorption capacity of funds, which we can divide into five categories:

- obstacles related to the level of information, knowledge and skills of the population;
- obstacles regarding the way of design European programs;
- obstacles coming from institutional structures;
- obstacles related to the institutional framework;
- obstacles related to the wider socio-economic environment.

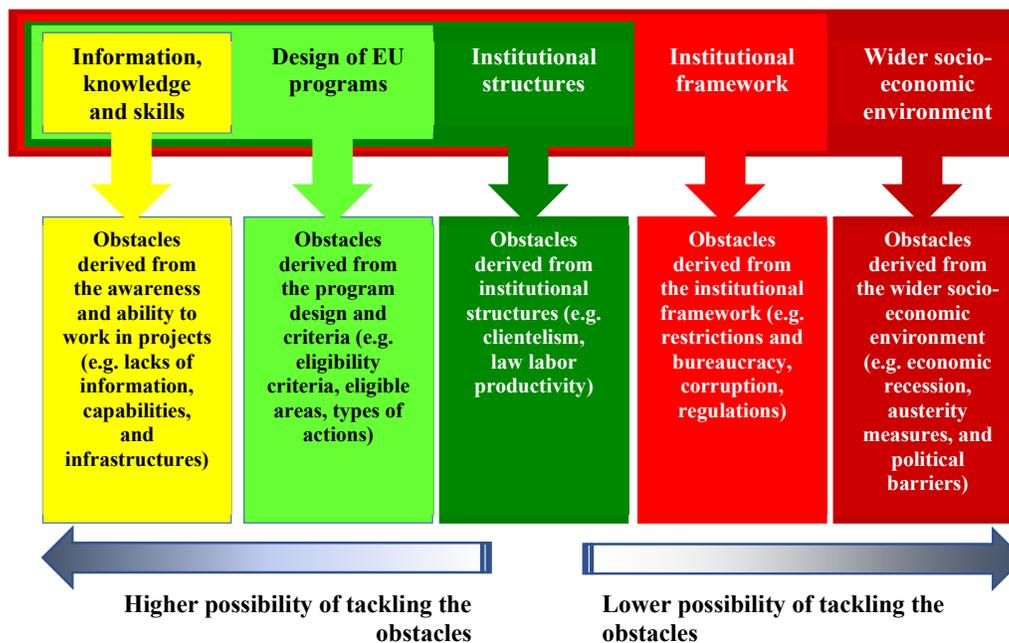


Figure no. 4. General framework on the multi-layered approach of limiting factors (obstacles) in the absorption of European funds.

Source: Authors' development based on Apostolopoulos et al., 2020.

The multitude and diversity of factors (obstacles) that hinder the absorption process is obviously a broad topic of discussion (Aivazidou, 2020; Orboi, et al., 2016; Patru, 2008; Zaman and Cristea, 2011) and depends very much on the specificity of each country. As they are described in Figure no. 4, the possibility to lift/remove them becomes more and more limited as we move from left to right, from the lower to the upper layer. There is also a strong impact of the upper layers on the lower ones. For example, if setting up a business (in any field) there are many regulations, approvals, excessive bureaucracy, then the absorption capacity of the funds that contribute to the realization of this project is lower, facing many obstacles. Similarly, if European regulations provide for restricted eligibility criteria, absorption capacity is achieved with many obstacles. So these layers of limiting factors are correlated with each other.

A future research topic on possible ways to improve the absorption degree of European funds in Romania could be a comprehensive study on the range of influence of these obstacles. A comparison with another European Union country with has similar socio-economic characteristics but superior in terms of absorption, would be a good "learning mechanism" exercise.

Conclusions

The motivation of the conducted researches within this article results from the need to increase the absorption degree of European funds destined for Romania, in order to approach to the performance level of the other member states of the European Union. Romania's accession to the European Union meant the radical change of country's development policies, to adjust national policies to community policies, including investment behaviours based on development projects.

The analysis of the evolution of financial flows of structural and investments funds intended to the financing programs of Romania under the financial years 2007-2013 and 2014-2020 highlights the fact that the process of using the allocated funds started with a delays. The experience gained in the previous period allowed to achieve a higher absorption degree within the current programming period, reaching a percentage of 23.1%, compared to 11.5% the actual absorption in the previous year, at the end of the sixth year of implementation. Until the date 30/04/2020 (7th year of implementation for the financial year 2014-2020), the absorption degree of European funds from the current financial year is of 42.48% with large differences between the programs they cover up. In the case of development programs whose implementation is the responsibility of the central state institutions, the absorption is the smallest. The highest degree of absorption we find in the case of direct payments for agriculture (because no projects have to be drawn up here), followed by National Rural Development Program, where most of the beneficiaries are private beneficiaries. This raises a big question and alarm about the low efficiency of the public system in Romania.

Considering the slow start of the implementation of funding program 2014-2020, accompanied by a gradual widening of the gap with the European Union average, we notice that for Romania additional efforts are to be made to increase the rate of European funds absorption. Early preparation of projects, increasing the administrative capacity for planning and managing European funds, a correct and stable ranking of priorities, the adoption of a strategic development plan, represent the key factors for reviving the absorption rate. We hope that the ideas, solutions and suggestions formulated in this paper can be used in the development of future programs.

Future research perspectives and research limitations: The authors accept that this current study has some limitations derived from the originality of the study, the limitation of the actual research at Romania, and the methods used in data analysis. For the future, a comparison between Romania and other states in the European Union which have a high degree of absorption of funds, in order to apply the learning mechanism, could be the topic of additional research. Also, applying a mix of research methods may improve the technical limitations of the outcome of this study.

Author Contributions: All authors have contributed to the study and writing of this research.

Conflicts of Interest: The authors declare no conflict of interest.

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The Development of Circular Economy at EU Level

Alina Zaharia¹, Maria Claudia Diaconeasa² and Adina Sabrina Goga (Lise)³

¹⁾²⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

³⁾ *Nephrology Clinical Hospital "Dr. Carol Davila", Bucharest, Romania.*

E-mail: alina.zaharia@eam.ase.ro; E-mail: maria.diaconeasa@eam.ase.ro;

E-mail: sabrina.lise15@gmail.com.

Please cite this paper as:

Zaharia, A., Diaconeasa, M.C. and Goga, A.S., 2021. The Development of Circular Economy at EU Level. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 225-231 DOI: 10.24818/BASIQ/2021/07/029

Abstract

Consumption and production of goods and services are constantly growing, in order to face the rises and diversification of people's needs, which are continually developing. Also, the raw materials needed in production are declining and waste is increasing, affecting the achievement of sustainable development. Most waste ends up in the environment, instead of being reduced. This is why, actions have to be taken to improve production processes, technologies, business strategies, and to change consumption patterns for achieving sustainability. This paper aims to assess the evolution of circular economy's indicators, such as the ones proposed by the European Commission through its circular economy's action plans. Based on the indicators that are tracked, we analyzed the evolution of the indicators during the past 4 years, identifying the member states with the highest and also the lowest growth rates, in order to assess the possibility of achievement of the circular economy's goals in the EU action plans.

Keywords

Sustainability, consumption, production, recycling, raw materials, waste

DOI: 10.24818/BASIQ/2021/07/029

Introduction

The notion of "circular economy" refers to an economic system aimed to eliminate waste and the continual use of resources. This concept was developed long time ago, but it has been more intensely discussed since the 1970s (Wautelet, 2018). The circular systems employ reuse, sharing, repair, refurbishment, remanufacturing and recycling to create a closed-loop system, in order to minimize the use of resource inputs and generating waste, pollution and gas emissions (Geissdoerfer, et al., 2017). Its purpose is to ensure sustainable consumption and production. The European Commission implemented a policy in this regard in 2015, called Circular Economy Action Plan, which included 54 actions (European Commission, 2021). In order to assess the development of circular economy, EU reports several indicators, which target self-sufficiency for raw materials, waste generation, recycling and recovery rates, and other topics related to trade, investments and research output. The aim of the paper is to assess the circular economy's indicators at EU27 level during 2015-2019, by conducting a secondary data analysis of the main indicators in time and space.

The paper is structured as follows. Firstly, a literature review is performed on circular economy's targets and reporting indicators topics from both qualitative and quantitative perspective. The quantitative approach is based on a bibliometric analysis, which investigates the research areas, citations and other trends of the scientific publications on circular economy's indicators during 2015-2019. Further, we performed an analysis of EU27 indicators relevant to indicate the development of

circular economy for the past years. Finally, the conclusions highlight the recommendations proposed by the authors in improving the achieving of circular economy's objectives.

Theoretical background

The bibliometric analysis used in this section aims to expose the evolution of scientific literature related to simultaneously considering the terms “circular economy” and “indicator*” on Web of Science platform during 2015-2019. The search criteria generated a total of 339 papers in the analyzed time frame, from 15 documents in 2015 to 155 records in 2019. The continually increasing trend of publications shows that the research on circular economy's indicators are receiving more and more interest from both academia and various international or national organizations, such as European Commission – with approximately 13% of 339 papers, National Natural Science Foundation of China – with 8.8% of 339 records, and Portuguese Foundation for Science and Technology – with 2.6% of 339 documents published on Web of Science database. Most of the publications are in the field of environmental sciences, engineering, and other topics of science technologies – with more than 40% of the papers per each research area, while 12.6% of all are in the area of business economics. Further, more than 98% of the 339 scientific publications are written in English, while approximately only 2% are in Spanish, Russian, and Portuguese, making the research accessible unfortunately only to the people who know these languages, especially predominantly English. In terms of the document type, 79.3% are articles, 15.9% are proceedings papers, and the rest of them are reviews, book chapters and editorial materials.

The most prolific authors in discussing the research on the circular economy's indicators are Geng Y. – with 11 papers, De Meester, S., Dewulf, J. Irabien, A., and Liu Z. with 5 papers each. However, the most cited authors and papers, with over 100 citations, are those of Ghisellini, et al. (2016), Genovese, et al. (2017), Krausmann, et al. (2017), Elia, et al. (2017), McDowall, et al. (2017) and Pauliuk (2018).

Some of them illustrate aspects of circular economy at theoretical level (Ghisellini et al., 2016), while others (Genovese, et al., 2017) gather more practical evidence for better substantiating the importance of this model. Ghisellini, et al. (2016) presents a review on circular economy for highlighting the good practices in achieving the goals of this model. Genovese, et al. (2017) show that circular economy can provide better advantages than a conventional one when comparing 2 case study at industrial level. Krausmann, et al. (2017) makes an inventory of the use of material and energy resources at global level, while assessing the uncertainties related to the stocks relations. McDowall, et al. (2017) emphasize the similarities and differences of circular economy policies between Europe and China, in terms of conceptual understandings from the discourses of policies, media and research publications, as well as in terms of the assessment indicators used for evaluating the circular economy's progress. Finally, Elia, et al. (2017) and Paulik (2018) conclude that the quantitative assessment tools for circular economy are not currently consistently and entirely considered, although existing methods and indicators, like resource depletion ones and other assessment standards, could be used.

With the help of VosViewer software (Van Eck and Waltman, 2016), the main topics of all 339 papers on circular economy's indicators extracted from the title and abstract sections from Web of Science are illustrated in Figure 1.

There were 9259 terms identified in the publications presented in figure 1 and 297 terms occur more frequently than 10 times. The words with more than 200 appearances are: indicator, circular economy, system, analysis, waste, result, and model, while the ones with occurrences between 100 and 200 times are: study, paper, approach, development, product, process, resource, framework, sustainability, method, material, level, use, production, industry, value, economy, assessment, performance, country, China, impact, city, strategy, efficiency, and sector.

Methodology

This paper presents a secondary data analysis of the main EU indicators for assessing the progress of circular economy. Considering the fact that the first Circular Economy Action Plan at EU level was implemented for 5 years, this analysis emphasizes the assessment of the areas targeted in it for all the 27 EU Member States during 2015-2019.

thousand euro. The evolution of this indicator between 2016 and 2018, shows that countries like Malta, Ireland and Luxemburg had the highest drop of the indicator (around 15% and 20%), while Bulgaria, Greece and Portugal registered the highest increases of waste generation excluding major mineral waste per GDP unit. The fluctuation between Member States reflects the waste intensity of the economy and provides a measure of “eco-efficiency”. According to the targets, EU did not have a positive growth, which is a good thing, but it decreased only by 1.49% from 2016 to 2018.

The waste generation excluding major mineral wastes per domestic material consumption tracks the efficiency of EU material consumption by comparing the tons of waste generated to domestic material consumption. In 2016, Estonia reached a 33.3% level, followed by Netherlands with 25.6%, and Belgium with 25.4%. In 2018, these three countries remained with the highest percentages, even if Estonia’s evolution decreased by 3.6%. Among the 27 EU member states, Romania had a good “material efficiency”, as the indicator was less than 5%. At EU level, this indicator decreased by 0.3% during 2016-2019, pointing out a low performance.

The highest percentage of recycling rate of municipal waste in 2015 was reached by Germany (66.7%), Austria (56.9%) and Slovenia (54.1%), and the lowest percentage was reached by Malta (10.9%), Romania (13.2%) and Slovakia (14.9%). Until 2019, Germany, Austria and Slovenia remain the countries with the higher rates of this indicator (over 57%). For Malta and Romania, the rates were lower than 11.5%. Slovakia improved its efficiency in recycling municipal waste, reaching 38% in 2019. Overall, at EU level, this indicator had an increase of 2.8% during 2015-2019, until 47.7%. Moreover, the EU aims at recycling up to 65% until 2030, which means that it should increase by 5.65% per year to reach the 2030 target.

Considering the available data for 2016 on the recycling rate of all waste excluding major mineral waste, Slovenia had the highest rate (80%), followed by Belgium and Netherlands with more than 72%. The lowest level was registered in Estonia (10%), Romania (30%) and Cyprus (31%).

Regarding the recycling rate of packaging waste by type of packaging indicator, in 2016, Belgium had a rate of 81.5%, while Czechia, Denmark, Netherlands and Sweden had a rate above 71%. In 2018, Cyprus increased its rate with 10.40% (from 59.8% to 70.2%), followed by Finland with an increase of 9.3%. However, there were also countries that registered decreases, such as Denmark, with 6.2%. At EU level, the evolution registered a small decrease, of 0.29%. The EU Members should achieve an increase of 70% by 2030, therefore it will be very challenging and difficult to accomplish it by 2030 if the rhythm is maintained.

Regarding the rate of e-waste, Bulgaria has registered the highest rate of recycling in 2015, of 96.5%, compared to all member states, but in 2018, its rate was 66.7%, decreasing with 29.8% in time. Another decrease was registered in Slovenia (29.55%). Also, there were countries which increased their rates, such as Croatia with 25.1%, and Denmark with 24.5%. At EU level, this indicator increased by 3.2%, from 35.7% in 2015 to 38.9% in 2018. Considering the overall recycling rate, by 2030 EU could reach the increase of only 9.6%.

The recycling rate of bio-waste at EU level had an increase of 16% in the studied period, being led by countries like Czechia, who registered a major increase (330%), and Slovenia, Lithuania, Greece and Croatia, who registered increases of over 114%. Yet, Cyprus and Estonia registered decreases of 57.14% and 30.76%. This indicator reached the best performance so far from the analyzed indicators.

The data from 2016 and 2018 indicate an important evolution of recovery rate of construction and demolition waste indicator. For example, Bulgaria registered a decrease of 66%, Romania 11% and Finland 13%. There were no exponential increases, except in Sweden, where the recovery rate was up by 29%. The target for 2020 aims at recovering 70% of this type of waste. Yet, the overall EU increase is of only 1% from 2016 to 2018. Therefore, it may be considered a target hard to achieve until 2030, if the current trend is kept as it is.

The analysis of the indicators on recycled materials

The “contribution of recycled materials to raw materials demand-end of life recycling input rate” is used to measure how much recycling does contribute to creating new materials (with reference to materials such as aggregates-crushed, aluminum, beryllium, bismuth, cobalt, copper, natural rubber,

nickel etc.) On one hand, the highest percentage of recycling rates were for nickel, yttrium, zinc and molybdenum with over 30%. On the other hand, the lowest percentage of recycling rates were in the case of beryllium, cobalt, dysprosium, gallium, lithium and natural rubber by 0%.

According to our analysis, circular material used rate in EU registered an increase of 0.7%. Countries such as Greece, Malta and Belgium had the highest increases, between 2.3% and 5.6%. Yet, Bulgaria, Latvia and Poland registered decreases between 0.7% and 1.8%.

The “trade in recycled raw materials” indicator measures the quantities of selected categories and by-products that are shipped between the EU Members and across the EU borders. Malta increased this indicator by 955% between 2015 and 2019, Estonia by 440.98% and Greece by 22.24%. Cyprus and Poland registered decreases of 55%. At EU level, there is a general decrease of 3.86% in the analyzed period, which means that in the next few years, EU has to increase its rate, in order to achieve a significant change.

The analysis of the competitiveness and innovation indicators

The highest increases for the private investments in circular economy between 2015 and 2018 were registered in the case of: Hungary by 97.61%, and Cyprus, Croatia and Romania between 41 and 47%. The EU had an overall increasing share of 13.84%. Until 2030, following the same trend, the EU could reach a growth of 152.24%.

Innovation is the key player of patents related to recycling and secondary raw materials. This could make a transition towards a circular economy, by creating new technologies, processes, services and business models. Countries such as Hungary, Belgium, Spain and Denmark registered the highest increases in patents related to recycling and secondary raw materials, between 163% and 46%.

Conclusion

The indicators proposed by the European Commission have to be significantly adjusted (positively or negatively) for achieving the aimed objectives. There are a lot of Member States which have to act immediately, because the differences on the evolutions are high, and the generated gaps are difficult to overcome. The most developed countries, like Italy, France, Belgium, Germany or Netherlands already took action in this direction and the results are starting to show on some indicators, such as recycling rates. Countries like Romania, Bulgaria, Cyprus, have very low rates on recycling, but also the consumption indicators are lower than central-western countries. These differences may come from the lack of legislative frameworks, but also due to the fact that the member states that did not reach the targets have joined later the European Union compared to central and western countries. So, countries which developed through production, trade and high-level services are the largest waste generators, but also, they are able to reuse and recycle raw materials, managing to capitalize on waste, save money and contribute to sustainability. These countries will have the most important contribution in reaching the targets by 2030.

Considering the evolution of the circular economy indicators that were previously analyzed based on Eurostat (2021), we suggest that the EU should consider developing more assessment indicators and other tools for understanding the development of circular economy, similar to what Paulik (2018) emphasized. Further, it should take more concrete actions in stimulating the achievement of the objectives by 2030. At the same time, this model should be aligned at international level, because only a shared and common international effort could generate a significant result, especially when all sustainability aspects are considered.

Acknowledgement

This paper is part of the research project “Towards Sustainable Food and Drink Choices among European Young Adults: Drivers, Barriers and Strategic Implications” (SUSCHOICE) (ID 66). SUSCHOICE is a transnational project and part of the ERA-Net SUSFOOD2 with funding provided by national sources (MIUR-Italy, RCN-Norway, FORMAS-Sweden, PM-BLE-Germany and UEFISCDI-Romania) and co-funding by the European Union's Horizon 2020 research and innovation programme.

This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CCDI-UEFISCDI, project number 42/2018 COFUND-ERANET-SUSFOOD2-SUSCHOICE, within PNCDI III.

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Churn Prediction of Bank Customers

Andreea Ioana Chiriac¹

¹*The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: chiriacandreea15@stud.ase.ro

Please cite this paper as:

Chiriac, A., 2021. Churn Prediction of Bank Customers. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 232-237

DOI: 10.24818/BASIQ/2021/07/030

Abstract

The term “churn” occurs in the situation of subscription products and symbolizes that customers are cancelling a service. Churn also applies to services and products that clients are reaching out with over a significant period of time. The main objective of this paper is to highlight the importance of churn prediction because in the last years, has been registered a large number of discretionary online services for customers and that means churn is a consistent and a perpetual problem that needs to be addressed. Churn prevention allows companies to elaborate loyalty programs and retention campaigns to keep their customers. Usually, the service companies concentrate on purchasing, but it is important in order to achieve success to minimize churn. If churn is not approached in a continued and proactive way, the service will not accomplish its full potential. In this research paper the main aim is to establish the determining factors of bank customers who decided to leave the bank or not. I use a binary logistic regression because it is essential to identify what leads a client towards the decision to leave the company. Binary logistic regression estimates the probability of an event occurring, in this case the probability that bank customers will leave the bank or not. The software used in order to express my findings about this topic is IBM SPSS Statistics.

Keywords

Churn, statistics, binary logistic regression, bank customers, data analysis.

DOI: 10.24818/BASIQ/2021/07/030

Introduction

What is Churn? We called “churn” when a client cancels a subscription or decides to give up using a service. Usually, the service companies concentrate on purchasing, but it is important in order to achieve success to minimize churn. If churn is not approached in a continued and proactive way, the service will not accomplish its full potential. The word “churn” came from the term “churn rate”, which means the ratio of customers moving out in a particular interval of time. This action conducts to the client or user population changing in the long run. Initially, the word meant “to move about vigorously” (like in churning butter), but from a business point of view, churn can be used as a verb (“the customer is churning”) and also can be used as a noun (“the customer is a churn”). On the other hand, the customers that are not churning from a service can be also considered in a positive sense. When this is happening, it is named customer retention.

Customer retention means maintaining customers using a service and also extending and renewing their subscription. So, customer retention is the opposite of churn. Decreasing churn is analog to increasing customer retention. When an objective is declared as retaining more clients for a longer period of time, then additionally saving clients that are at risk of churning, there should also be a priority on keeping the customers involved. Usually, there is the chance of upselling more advanced versions of the services for more money to the most involved clients. The important goals for services with continuous customer interactions are: boost engagement, saving churns and upsells. The difference between these is a matter of attention and not a difference in the intention.

Even though there are a lot of products and services with regular and frequent customers, there is one set of techniques for using data in order to fight churn and also increase retention, engagement and upsell. If there is a company that creates a subscription product, then it is recommended: a product or a service is provided and uses on a recurrent basis, customers need to interact with the product/service, clients may have subscriptions in order to receive a product or a service that cost money. Subscriptions can be ended or canceled, which is recognized as churn. If there are no subscriptions, a client churns when the product is not used anymore. The prices, timing and payments for customers and subscriptions (if any) are stored in a database, usually a transactional one. Also, when clients use a product or a service, it is stored in a data warehouse.

Essentially, directors have been expanding their view and reflection from believing that customers are gained and dedicated for a long period of time to the impression that suppliers re-win their clients' businesses daily. In the long term, this intends prioritizing and planning investments to secure long lasting customers retention and achievement, rather than just hoping that it will take place.

There are five primary strategies used by the companies in order to reduce churn: targeting purchasing, product improvement, customer relationship, engagement campaigns and reducing the prices or changing the subscription terms. All of these procedures are efficient if they are data driven.

One of the best method to be aware of customer churn is not to assume about it in terms of maintaining. Instead, it is better to consider churn as a learning moment and also as an occasion to find out how to prevent it. So, this type of unfavorable phenomenon can lead to a increased level of proactive involvement for the remaining clients and also the future ones. Occasionally, there is a "blind churn" and that means that there are clients that left the company even if this was totally unexpected. In this case, the company/provider need to discover the root cause. Sometimes, this type of churn appears in the situation where the left customers choose a competitor.

There are a lot of arguments behind leaving a company. Some of the frequent causes that determine customer churn are weak customer service, not getting value in the products and services, the deficit of communication and the lack of client loyalty. The initial step in order to maintain the customer is to check client churn over time. If the churn rate is usually increased, then it is recommended to dedicate some resources in order to enhance customer retention.

Churn rate formula is defined in equation 1:

$$\text{Churn rate} = \frac{\text{Number of Churned Customers}}{\text{Start Customers}} \quad (1)$$

Retention rate formula is defined in equation 2:

$$\text{Retention Rate} = \frac{\text{Number of Retained Customers}}{\text{Start Customers}} \quad (2)$$

Also, there is the following relationship between the rates:

$$100 \% = \text{Churn Rate} + \text{Retention Rate} \quad (3)$$

In order to ensure that the client retention rate is improved, the top priority should be understanding the customers' needs. This can be done by reaching and surveying the clients that already churned. Another solution is contacting the existing customers and asking them about their requirements. For example, a data analytics approach would be to have a look into the data, in order to check how the clients services call logs are handled, how long their wait time was and also if their problems and concerns were solved. Performing this type of analysis on these data points can expose the issues that a company is facing in retaining their existing clients.

Review of the scientific literature

It is well-known that retaining clients with an increased churn risk is one of the hardest challenges (Miguéis, et al., 2012) because nowadays there are a large number of service and products providers, and customers have a lot of options to churn. Usually, clients tend to compare their providers with others and this leads to churning (Balle, et al., 2013). According to P. Kotler in 1994, the price of convincing a client not to churn to the opponent is 16 times less than the price of finding and

determining contact with a new client. Also, the cost of convincing new clients is 5 to 6 times more than for maintaining the existing ones.

According to studies, it is approximated that a service supplier can increase their returns by between 25% and 85% by decreasing the customer churn rate by 5% (Reichheld and Sasser, 1990).

Churn affects businesses everywhere around the world and churn rates fluctuate often. Mobile phone companies in Europe have churn rates between 20% and 38%. Wireless business could improve their earnings by almost 10% if they took steps in order to reduce churn.

Research methodology

The database that I used in my research paper contains information about Churn Prediction of bank customers and was extracted from kaggle.ro. The dataset consists of approximately 10 000 records.

In order to establish the determining factors of bank customers who decided to leave the bank or not, I used a binary logistic regression because it is essential to identify what leads a client towards the decision to leave the company. Churn prevention provides companies to elaborate loyalty programs and retention campaigns to keep their customers. The dataset was imported in IBM SPSS Statistics and all the variables were coded accordingly.

The independent variables that were in used in my analysis are: Credit Score, Tenure, Balance, Number of Products and Estimated Salary and the binary dichotomous dependent variable is Exited. Credit Score can have an effect on customer churn, which means that a customer with an increased credit score is less likely to leave the bank. The variable “Tenure” relate to number of years that the bank customer has been a client. Typically, older clients are less likely to leave the bank. Another very good indicator of customer churn is balance because people with a higher balance in their accounts are less likely to leave the bank compared with those with lower balances. The variable “Number of Products” is related to the number of products that customer has bought through the bank. Like balance, estimated salary is also a good indicator because people with lower salaries are more likely to leave the bank compared with those with higher salaries. The binary variables “Exited” describes if a customer left the bank or not and was coded with 0 and 1. (1-Yes, 0-No).

Results and discussion

As it is already known, it is more expensive to sign in a new client than keeping an existing one. Binary logistic regression estimates the probability of an event occurring, in this case the probability that bank customers will leave the bank or not.

Table no. 1. Classification Table

		Observed		Predicted	
		National Standards	Exited		Percentage correct
Step 0	Exited		No	Yes	
		No	7963	0	100.0
		Yes	2037	0	.0
	Overall Percentage				79.6

Source: Author own research results

According to the classification table (table no. 1), the model always assumes "no" because there are more customers who do not leave the bank compared to those who leave. (7963 compared with 2037). The overall percentage tells us that this approach to prediction is correct with 79.6%, which is a good approximation.

Table no. 2. Variables in Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-1.363	.025	3014.868	1	.000	.256

Source: Author own research results

The variables in the table of the equation show us the coefficient for the constant (). According to the table, the model with this constant has a statistically significant predictor of the result, because Sig = 0.000. The model has a high accuracy of almost 80%.

Table no. 3. Omnibus Test of Model Coefficients

		Chi-Square	df	Sig.
Step 1	Step	155.038	5	.000
	Block	155.038	5	.000
	Model	155.038	5	.000

Source: Author own research results

Omnibus tests of the model coefficients (table no. 3) are used to check if the new model (with explanatory variables included) is an improvement of the basic model. The Chi-Square test was used to see if there was a significant difference between the -2Log likelihood of the base model and the new model. In this case, Chi-Square=155.038 and Sig=000, which means that the null hypothesis is rejected. Because Chi-Square is significant, means that the new model is significantly better. The “Model” row always compares the new model with the original one. The Step and Block rows are important only if the explanatory variables are added to the model in a gradual or hierarchical manner. If the model was built in stages, then these rows would compare -2 Log likelihood of the newest model with the previous version to determine if each new set of explanatory variables determined improvements or not. In this case, I added all five explanatory variables in a single block and therefore there is only one step. This means that the Chi-square values are the same for step, block and model. Sig values are equal to 0.000 which indicates improved model accuracy when the explanatory variables are added.

However, the most important of all the results is the table Variables in the table of equations. This table needs to be studied very closely, as it is at the heart of the answer to our questions about the common association of Credit Score, Tenure, Balance, Number of Products and Estimated Salary.

Table no. 4. Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1	CreditScore	-.001	.000	7.697	1	.006	.999
	Tenure	-.011	.009	1.583	1	.208	.989
	Balance	.000	.000	118.870	1	.000	1.000
	NumOfProducts	-.058	.045	1.676	1	.195	.943
	EstimatedSalary	.000	.000	1.218	1	.270	1.000
	Constant	-1.190	.197	36.337	1	.000	.304

Source: Author own research results

have some aspects like: efficiently known by the business, certainly correlated with churn and retention, increasing engagement by segmenting the customers in a way that is favorable for addressed interventions and also useful in different functions of the business (e.g., marketing, support, product). In order to establish the determining factors of bank customers who decided to leave the bank or not, I used a binary logistic regression because it is essential to identify what leads a client towards the decision to leave the company. As it is already known, it is more expensive to sign in a new client than keeping an existing one. Binary logistic regression estimates the probability of an event occurring, in this case the probability that bank customers will leave the bank or not. There are more customers who do not leave the bank compared to those who leave. (7963 compared with 2037). The overall percentage tells us that this approach to prediction is correct with 79.6%. The model with this constant has a statistically significant predictor of the result, because Sig = 0.000. The model has a high accuracy of almost 80%.

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IoT – the Keypoint for the Future Economic Growth of the States

Meral Kagitci¹

¹⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: meral.kagitci@ase.ro

Please cite this paper as:

Kagitci, M., 2021. Iot – the Keypoint for the Future Economic Growth of the States. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 238-246 DOI: 10.24818/BASIQ/2021/07/031

Abstract

This study aims to make a comparison of economic growth within European countries entered in the EU together with Romania (Bulgaria), a group of three states (Poland, Slovenia, Slovakia) that entered EU before Romania's accession immediately before and Croatia, the state entered EU after Romania joined EU, by analyzing the impact of impact led by some innovation measures on population well being, proxied by the GDP per capita, based on a panel analysis. The results indicate that GDPc is sensitive to Information and communication technology goods exports (the higher the exports, the higher the GDP per capita). The same conclusion can be drowned for gross domestic expenditures on research and development while the exports of aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery are diminishing the GDP per capita.

Keywords

economic growth, innovation, technology, ICT, IoT.

DOI: 10.24818/BASIQ/2021/07/031

Introduction

It is hard to imagine a world challenging the opportunities offered by technology. Nowadays, the Internet seems to be a need for all individuals in all fields of their lives. Devices such as smart phones, sensors, mobile computers, and more other smart devices can be considered examples of things we are dealing with every day. Not only these, but also other IoT related technologies have an essential impact on the new Information and Communication Technology (ICT) and systems technologies. At the beginning, it was known as "Internet of Computers"; then it became "Internet of People"; and at present, due to the evolution of ICT, everybody calls it "Internet of Things".

The "Internet of Things" (IoT) is about the connection that may appear among certain objects and internet infrastructure through embedded computing devices, like radio frequency identification (RFID) chips and sensors. IoT products are divided into five main categories: wearable devices, smart homes, smart cities, environmental sensors and business applications. It is said that at the end of 2020, more than 50 billion devices will have been connected to the Internet.

Moreover, not only different devices, but also smart objects are created in order to give accessibility, so that people can connect to the Internet whenever they need or feel so. The Internet connection is related to everything that starts with "any", that is "anyone", "anytime", "anywhere", "anything". In a society, the ICT innovations and economy developments, a significant focus has shifted to the IoT related technologies where it is widely considered as one of the most important infrastructures of their promotion and one of the future promise strategies. The main goal is to enable the real world and cyber space to communicate and integrate.

Review of the scientific literature

An overview of IoT implications

The IoT is considered to be a cornerstone of the future Internet and is expected to allow computers, smart objects, systems, and services to be intelligently controlled and advanced. Indeed, it is a modern communication technology revolution that implies that everything will be assigned a unique identifier, from tires to hairbrush, so that it can be addressed, linked to other items and exchanged information. In the eye of the hurricane, the COVID-19 pandemic cycle can be seen and has forced companies to reconsider the way they function and operate. Many workers have been advised to operate from home and use facilities for video conferencing and online collaboration. The influence of the pandemic on the global economic crisis is leading CIOs to prioritize spending on "mission-critical" technologies and services over development or change initiatives. It is no longer a luxury to invest in connected technology, but a requirement and a must for survival and business continuity. While we were already witnessing businesses investing in proof of concepts and smaller connected technology deployments as a huge motivation to boost efficiencies and minimize downtime, mass adoption rates were never very remarkable. The pandemic leads to global company shutdowns, delays in the supply chain, social distancing and remote working processes (a new normal). We are experiencing a huge increase in the number of deployments, especially in the business and automotive sectors. The Internet of Things (IoT) market is expected to rise to 5.8 billion endpoints in these sectors in 2020, up from 21 percent in 2019, as one of the leading analyst firms predicted. As this technology provides companies and individuals with greater visibility into and influence over artifacts and environments that remain beyond the Internet's reach, the IoT market will further improve. And by doing this, IoT enables organizations and individuals to be more connected to and do more important, higher-level work in the world around them. Last-mile networking upgrades, cheaper sensors, low-power technology availability, and long-lasting batteries make IoT solutions more important and affordable compared to the situation of a decade ago. The IoT is affecting both the consumer and industrial sectors (retail, healthcare and services) such as travel, water, oil and gas, agriculture and manufacturing.

Similarly, an increase in the number of Internet users per capita in the provinces of China has also seen faster export growth, with more companies selling in foreign markets and a higher share of provincial production sold abroad. These examples attest to the ability of ICTs to assist countries in being part of global supply chains (OECD, 2018). Growing access to (and broader use of) broadband Internet and web-enabled devices will also connect more customers and businesses to online markets and business-to-business channels in low-income countries. Digital markets are increasing, encouraging GVC participation and concentration. On the rise are digital markets and online retailers. The interface between global manufacturers and customers is becoming increasingly relevant for platforms such as Alibaba, Amazon, eBay, Taobao, and Mercado Libre. Around the same time, manufacturers and conventional retailers, alongside their standard distribution networks, aim to achieve a stronger online presence. Consumers buying about \$2.86 trillion in products and services online worldwide are less likely to export or import them. In the United States, a typical modal manufacturing company has 45 staff, and larger businesses appear to be more profitable and pay higher salaries and are more likely to export and import.

A modal business, by comparison, has one employee, the owner, in most developed countries. Among businesses recruiting additional employees, the majority employ less than 10. Companies with less than 10 employees account for more than 99 percent of the total in India, Indonesia, and Nigeria. Developing countries appear to have less exporters and lower export revenue concentrations among their top exporters, indicating that these companies face greater distortions. Investment in reducing market barriers and mitigating friction can therefore be particularly beneficial for developing countries.

Digital Innovation and Agricultural Exchange Distributed Ledger Technologies (DLTs) are decentralized asset transaction recording systems in which transactions and their information are registered at multiple locations simultaneously. By enhancing product traceability and credibility, contract certainty, verification of geographic origin, and compliance with sanitary and phytosanitary requirements, DLTs could improve productivity and accountability in agricultural supply chains. The enforcement and monitoring of provisions of the World Trade.

Organization agreements applicable to agricultural trade could also be strengthened. In the meantime, food losses in food systems could be decreased by up to 30 million tons a year if block chains tracked information in half of the world's supply chains. DLTs would ensure that profits from trade accrue more directly to producers and consumers. Blockchain technology is still in its infancy, but its use is being quickly spread by pilots researching it. The Food Trust consortium, run by IBM, is one of the most successful initiatives. It uses blockchain technology to enhance food traceability and has brought together major corporations from around the world in the retail and food sectors, including Dole, Driscoll's, Golden State Foods, Kroger, and McCormick. Carrefour, a retail chain in France, uses blockchain technology as part of this consortium to provide customers with comprehensive details on purchased poultry, such as veterinary procedures, freshness and other metrics.^c Likewise, Barilla, an Italian producer of pasta and pesto sauce, uses blockchain technology to boost transparency and technology can be defined as a collection methods, processes and operations performed or applied on raw materials and data for the realization of a particular industrial or commercial product. The importance of technology for economic development is widely recognized, given the impact that technology can have on the success of companies' economic activity, as well as the impact it can have on: inflation; employment and wages.

Andergassen, Nardini and Ricottilli (2017) analyze the conditions under which if certain technologies spread through the economy can generate an increase in productivity. Investments made by innovators to support the search for new technological principles, as well as investments made by companies to develop ways and means to adapt them in areas of similar technological nature. Hong (2017) demonstrates the causal relationship between investment in research and development in the IoT industry and economic growth. When total investment in IoT was classified in the public and private sectors, private investment in IoT had a stronger relationship with economic growth compared to public investment in IoT.

Information and communication technologies have a wide range of effects on key global systems. The rapid use and expansion of these technologies have contributed to increasing productivity and reducing the intensity of energy consumption, stimulating economic growth.

Since the 1970s, there has been a general interest in how to reduce energy consumption and CO₂ emissions in economies by expanding information and communication technologies. Schumpeter argued that it is possible to reduce energy demand, while allowing the economy to grow by expanding information and communication technologies that could contribute to saving energy (Salahuddin and Alam, 2015).

Salahuddin and Alam (2015) suggest that internet use and growth have positive and significant long-term effects on electricity consumption, while these short-term effects are insignificant. The positive relationship between internet use and electricity consumption shows that energy efficiency gains can be achieved through the expansion of internet and communications technologies.

Also, as Qin, Xinqi, et al. (2019) observed, a significant improvement to various fields of life will be brought by the use of the mix of the blockchain, IoT and industrial IoT(IIoT), but we have to consider the privacy risks and security vulnerabilities led by the lack of core security technology.

An overview of economic growth

The construct of the economic method, as a main objective of economic policies, explained by Worldbank (2004), is that the quantitative shift at the GDP level, which results in the positive or negative variance in the economy of an extremely country, transforms over time into a top research topic in the specific field of literature.

The significance of assessing the economic process is better portrayed in the economic and social sense of AN in depicting the vast image of the AN economy; given the actual fact that many countries have achieved rapid growth rates, transforming into wealthier economies, they have raised questions as to why various countries have achieved very little or no growth in any respect.

Why would we like a prospectus for economic growth? Does this square measure the variables that influence growth? Therefore, a good variety of theories have arisen that examine the factors in setting up economic mechanism, several scientists, economists and honor high winners engaged in providing

the empirical explanations of those queries. During this era, a portion of the analysis, few theories regarding the economic process are defined by employment hand in hand.

Beginning with Solow's neoclassical theory (1957), the UN agency based its attention on the value of capital accumulation, stating that underdeveloped economies should have the advantage of recording higher growth rates than economies that have been formed, resulting in the disposal of convergence; Specialists are worried with whether a selected number of states or other unique areas do not comply with his neoclassical theory. Even so, in the past century and thus the times, the model was therefore in style and arguable that the discussions relating to economic process hypothesis still remember the neoclassical model of the Solow.

The theory of endogenous development, conducted by Romer (1986) and film writer (1988), holds that its internal efforts are owned by a high proportion of the credit for the expansion level of a rustic; that means the endogenous determinants, during which time the eye shifts to the level of education, human resources and the potential for innovation.

Sharipov (2016) also targeted endogenous and exogenous growth by separating in the specialized literature the determinants in different 2 groups, now betting on the supply of economic process impact: endogenous (quantifying the dynamics of a country's internal economic landscape) and exogenous (quantifying the dynamics of external economic landscape of a country).

The growth accounting methodology (Romer, 1990) focuses on what proportion of growth is often processed by an increase in several inputs, so it is often carried out on an independent basis for all economies with correct recorded information inflows and outflows, after splitting the complete real production growth into multiple items: "Capital input growth, input growth and overall output productivity growth" leads to the inference that the rise in output can not be explained by input growth, so economists estimate the shares as below.:

-the share to growth capital input as $(\alpha_k (\check{K}/k)$

-the share because of labor as (L/L)

-the share derived from growth in total issue productivity (TFP) as

$$(\hat{Y}/Y) - \alpha_k (\check{K}/k) - \alpha_L (L/L)^*.$$

The expansion theory disappeared as a middle of studies for almost 20 years after the innovative quality of exogenous growth models, from the sum of the Nineteen Fifties to Sixties, relinquishing an unanswered issue of raising economic process inside the 'Pandora's box' of recent technologies.

'Proximate' or economic factors, such as public spending, accumulation of resources, labor, job rates, exchange rates, private and public investment, etc., have similar but yet distinct impacts on the economic process, and it should be considered that these factors have a completely different effect on developing economies as compared to developed economies. Of course, it should recognize the presence of "ultimate" or non-economic influences; there are square measures of socio-political sections of growth and a few different conditions that have a robust effect on a country's economic development: government control, level of corruption, infrastructure, political and body structures, cultural and social factors, earth science and sociology (Acemoglu, 2009)

Dollar (1992) investigated that for the 1976-1985 amount, square measures the sources of growth in ninety-five nascent countries.

By applying a cross-sectional analysis of the political economy, he found that the positive and substantially correlative variable is the investment rate for a semi-permanent economic operation, while the exchange rate index is negative and substantially correlative.

Moreover, he showed that there's AN indirect relation between the amounts of rate of exchange instability and therefore the level of technological distribution at intervals advanced economies.

* Shares estimated by grown accountants starting with Romer's equation (1990, 1.34)

Since economic expert brought into discussion within the economy world the speculation of trade and the way people and economies square measure allowed to leap outside the assembly borders that, beneath independence regimes, would strictly certain them to underdeveloped standards of life (Myinth, 1977), varied papers targeted on this link between FDI and trade parts (exports, imports resilience, trade boundaries) versus growth.

A number of papers have shown that countries with open economies linked to trade expect GDP/capita to increase and rise faster than closed regimes (Romer, 1990), evidence jointly checked by Tekin (2012) to find correlational statistics between exports and development. Simuț and Meșter (2014), pioneering the study specializing in jap Europe and that they find an immediate linkage and convergence between exports, openness to trade and economic process, also mention a long and positive evidence between many sections of trade on the economic process. For a sample of 87 highly developed and lowly developed countries for the period 1965-1995, Barro (2003) investigated the determinants of development.

He adopted 3 different cross-sectional regression models for 1965-1975, 1975-1985 and 1985-1995 in his research, each spanning a span of 10 years. He found that variables such as expenditure, democracy, average years of education, square trade flexibility measure fully and significantly correlated with growth, while variables such as anticipation, public consumption, birth rate, square rate measure negatively and significantly correlated with the economic phase.

There are a number of arguable discussions on the effect of public spending on development. Benos (2009), Gregoriu and Gosh (2008) obtained completely different results even by mistreating the "generalized method of moments" with an analogous information technique. Gosh and Gregoriu (2008) showed that, for fifteen developing countries, this part of the public outlay includes a major trend and a positive effect on development. On the other hand, Benos (2009) pointed out that human resources and infrastructure had a better effect on the semi-permanent economic process in a study of 14 EU countries.

Studies of public expenditure, just like the one amongst Lamartina and Zaghini (2008), UN agency conducted AN analysis relating to the correlation between growth and public outlay by mistreatment the Wagner's law, approved the speculation when getting a positive results of physical property constant between the 2 variables, conjointly terminal the actual fact that on an extended run, the constant incorporates a price larger than zero for the countries with smaller GDP, this being explained through the countries' actions of specializing in development.

For few European countries (e.g. Bulgaria, Romania, European country, Slovakia, Hungary), Szarowska (2012) applied an analogous theory, Wagner's rule, to find out the relation between GDP and public outlay in the short and future, and jointly investigated whether public outlay is 'countercyclical.'

The result obtained denied the countercyclical effect of the variables selected.

Based on Wagner's Law too, Chinese S-Y (2010) researched however is that the relationship between real GDP (economic growth) and government expenditures with the assistance of creator relation check, for 182 states for a amount of fifty four years (1950-2004), this model resulting in a two-way relationship between the economic process and therefore the government size, however the underdeveloped countries were excluded from his results due to politics instability of these countries, terminal that government outlay for rising public institutional quality is important for low- financial gain states so as to beat financial condition and cause substantial economic process meantime, Abbott and Jones (2011) conducted a study for Latin America's developing economies and that they have obtained the alternative result, that public outlay is diurnal with GDP (Alesina et al. 2008).

The claims from the class of non-economic forces based on social variables such as sociology and earth science (Rodrik, 2003) that will affect economic efficiency. Considering the social factors mentioned higher than by Rodrik and Acemoglu, earth science and sociology, within the '80s scientists finished the affiliation between economic process and geographic position of states or regions and their population. a lot of exactly, they brought into discussion the high impact of growing returns, traffic, agglomeration, magnitude of developing cities, and site within the men performance of individual

areas, thus, being adopted the model of “the new economic geography” a arguable subject on the time that comes with clear proof of the influence of social factors named higher than, wherever models tend to flow solely between 2 regions (poor and made, urban or rural), planning to multiple varieties of equilibrium, radiating from the fact of state of affairs. The construct was applied to the social sciences of cities, to the disclosure of geographical regions, and thus to the genesis of international disparities. The highly constrictive models did not estimate 'true locations' or provide abstraction size, however (Martin 1999).

In the last decades, a really wise subject relating to economic process has arose into the enduring researches: however will we have a tendency to reach high growth standards while not harming the environment; the unbeatable vary of investments done by building forcefully enterprises and gap new work brunches related to technology and chemistry and plenty of a lot of, are extremely poignant the setting of the earth, resulting in a dangerous global climate change directly proportional with the high level of energy consumption and CO₂ emissions.

Therefore, this subject hasn't been neglected by the EU commission, so once the 2020 Agenda are build, different aspects of growth is noticed within the forecasted vision:

“– sensible growth – developing AN economy supported information and innovation.

– property growth – promoting a a lot of resource economical, greener and a lot of competitive economy.

– comprehensive growth – fostering a high-employment economy delivering economic, social and territorial cohesion.”

Nordhaus and Romer (2018) have won the economic honor for coming up with long-term property economic process approaches and goals. A quantitative analysis model was developed by Nordhaus (1980) to explain the relationship between climate and economy. His model consists of physics, chemistry and social science hypotheses and scientific findings, and various fields of science. The Nordhaus model continues to be prevalent in today's world, however each generates the economy and hence the climate conflict, so economies

Although the economic process debate may be a never ending subject, each in terms of theoretical and empirical study, there is a growing agreement between policymakers and economists on knowledge and education finance in the last decades, being the center of the theory of endogenous growth and additional, the condition for ever-high growth rates. (Doryń, 2017; Kacprzyk, 2017). Although the effect is relatively small, the positive effect of the IoT on productivity is still a step forward, considering that the IoT is still at an initial stage of growth. This outcome applied on the U.S and E.U., areas where, in recent years, the IoT has been supported. Forward estimates indicate that the IoT will account for a much greater share of the growth in labor productivity in about a decade. However, to achieve the full potential, more IoT investment is needed, and many challenges need to be addressed, such as security and measures to protect IoT-generated data, better infrastructure that will further develop the technology, collaboration between stakeholders to encourage effective policies and regulations. Nonetheless, all these challenges cannot outweigh the benefits that IoT will bring into the economy and states. (Malik et al., 2021)

However, the main issue with IoT is that it is human-dependent. What does that mean? The humans are limited in nature, especially time-limited and capacity wise, making them unable in capturing too much from the real world, as for example, collecting all the data about the worldwide GDP. That is why, the Interent is a representation of ideas not acutal things and the next generation of IoT will help us and the economy in becoming more efficient. (Huckle et al., 2016)

Data and Results

We investigate the impact exerted by some Innovation measures on population well being, proxied by the GDP per capita, based on a panel of six EU countries (Bulgaria, Croatia, Poland, Romania, Slovakia and Slovenia) during 19 years (from 2000 to 2019). The variables included in the model are presented in Table no. 1.

Table no. 1. Data description

Variable	Description
GDPc	Gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Source https://www.theglobaleconomy.com/download-data.php
Innov. Ind.	The Global Innovation Index includes two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index. The first sub-index is based on five pillars: Institutions, Human capital and research, Infrastructure, Market sophistication, and Business sophistication. The second sub-index is based on two pillars: Knowledge and technology outputs and Creative outputs. Each pillar is divided into sub-pillars and each sub-pillar is composed of individual indicators. Source https://www.theglobaleconomy.com/download-data.php
Info. Tech.	Information and communication technology goods exports include computers and peripheral equipment, communication equipment, consumer electronic equipment, electronic components, and other information and technology goods (miscellaneous). https://www.theglobaleconomy.com/download-data.php
Patent. Apl.	Patent applications are worldwide patent applications filed through the Patent Cooperation Treaty procedure or with a national patent office for exclusive rights for an invention--a product or process that provides a new way of doing something or offers a new technical solution to a problem. A patent provides protection for the invention to the owner of the patent for a limited period, generally 20 years. Source https://www.theglobaleconomy.com/download-data.php
Res. and Dev. Exp.	Gross domestic expenditures on research and development (R&D), expressed as a percent of GDP. They include both capital and current expenditures in the four main sectors: Business enterprise, Government, Higher education and Private non-profit. R&D covers basic research, applied research, and experimental development. Source https://www.theglobaleconomy.com/download-data.php
High. Tech. Exports	High-technology exports are products with high R&D intensity, such as aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery. Source https://www.theglobaleconomy.com/download-data.php

To overcome the issue of a spurious regression, we check the data for some potential unit roots. We apply the test proposed by Levin, Lin & Chu (LLC), which is summarized in Table 2.

Table no. 2. Panel unit root test – Levin, Lin & Chu (LLC)

Variable	LLC Test level	LLC Test first difference
GDPc	-2.8376 (0.0023)	-4.7493 (0.0000)
Innov. Ind.	-1.3676 (0.0857)	-7.9375 (0.0000)
Info. Tech.	-1.6648 (0.0480)	-3.3165 (0.0005)
Patent. Apl.	0.7721 (0.7800)	-5.0291 (0.0000)
Res. and Dev. Exp.	1.5565 (0.9402)	-2.6910 (0.0036)
High. Tech. Exports	-2.3726 (0.0088)	-8.6679 (0.0000)

Source: own calculation

As we can see below, not all the variables are level stationary, so we will estimate a panel Fixed Effects Model in first difference. The results are summarized in Table 3.

Table no. 3. FE model - GDPc as dependent variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Lagged Innov. Ind.	0.0332	0.0996	0.3330	0.7409
Lagged Info. Tech.	1.2974	0.4443	2.9200	0.0059
Lagged Patent. Apl.	-0.1072	0.0994	-1.0782	0.2878
Lagged Res. and Dev. Exp.	0.1319	0.0800	1.6490	0.0922
Lagged High. Tech. Exports	-0.1951	0.1119	-1.7437	0.0893

Source: own calculation

The results summarized in Table 3 indicate that GDPc is sensitive to Information and communication technology goods exports (the higher the exports, the higher the GDP per capita). The same conclusion can be drawn for gross domestic expenditures on research and development while the exports of aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery are diminishing the GDP per capita. The results indicate that, for an emerging country to develop it is crucial to invest in high tech technology, to produce it at lower costs compared to other countries but in the same time to avoid the extensive exports of high-technology products. The R-squared is around 26%, indicating that the GDPc dynamics is explained quite well only by the innovation measures.

Conclusions

In order to maintain a constant pattern of change in real GDP as a measure of the affluent, it is absolutely important, in our view, to concentrate more on investments, not on the spectrum of conventional investments, but on investments demanded by the world of the new economy, where innovation is the key driver of high, low-cost payoffs. As stated in the 2020 Agenda, where sustainable, smart and inclusive growth in all Member States has been the key goal of the past decade, this can only be accomplished by concentrating on all circles, i.e. government spending on jobs and education, and then growing competitiveness and private consumption and the quality of life. These objectives are continued by others from 2030 Agenda for Sustainable Development. Also, innovation is one of the main purposes for this passing decade where to have a sustainable, smart and inclusive growth in all the member states. Once again, the discovery of new optimal and creative solutions will be decided by shifting focus to investments where the costs are low but the payoffs high, in order to maintain a growth that less affects the climate.

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The Role of Education Toward Food Waste Minimization

Vera Amicarelli¹, Simona Poladian², Alina Cerasela Aluculesei², Christian Bux¹

¹*University of Bari Aldo Moro, Bari, Italy.*

²*Institute for World Economy, Romanian Academy, Bucharest, Romania.*

E-mail: vera.amicarelli@uniba.it; E-mail: smpoladian1@gmail.com

E-mail: alina.cerasela@iem.ro; E-mail: christian.bux@uniba.it

Please cite this paper as:

Amicarelli, V., Poladian, S., Aluculesei, A. and Bux, C., 2021. The Role of Education Toward Food Waste Minimization. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 247-253 DOI: 10.24818/BASIQ/2021/07/032

Abstract

Food waste represents a social, economic and environmental issue, and has been accounted among the 17 Sustainable Development Goals in terms of responsible food production and consumption. However, although authorities and academia have been interested in the issue, several efforts must be enhanced to educate people on sustainable food consumption behaviors. The present paper, according to a brief systematic and configurative literature review conducted on Web of Science Core Collection (WoS) from February 2011 to February 2021, tries to answer the following research question: How education could be enhanced to increase food waste awareness/perception among young generations? First, it has emerged that young generations are completely aware of food waste phenomenon, are largely interested in environmental issues but still generate huge amounts of food waste. Therefore, considering that young people seem to have a high reactivity in relation to environmental concerns, it is fundamental to steer this attitude toward more sustainable behavior patterns through food education. In addition, people between 18-35 years old represent the “healthy carriers” of inspiration, hope and culture on sustainable development. However, several efforts to make education interactive, comprehensive, engaging and inclusive are essential. Results highlight the opportunity of creating innovative education systems, interactive application, technical sheets adapted to different ages, in order to illustrate the precise meaning of food waste in terms of social, economic and environmental consequences. Finally, the authors stress the importance difference between education about sustainable development and education for sustainable development, which has to be intended as a purpose.

Keywords

Food waste; Consumption behavior; Education; Sustainability

DOI: 10.24818/BASIQ/2021/07/032

Introduction

Food waste takes part in all phases of the supply chain, from the farm's first processes to the final consumer stage (Evans and Nagele, 2018). It has economic and environmental costs estimated at around 1.7 trillion USD (European Court of Auditors, 2016), which is equivalent to 1.3 billion tons of food. The annual quantity of wasted food represents about 1/3 of all the food produced for human consumption, with the main categories of food losses and waste represented by cereals and dairy products. Further, beside its measurable costs, food waste also means losses of essential resources like raw materials, energy, water (Boys and Rickard, 2019) and labour (FDA, 2020). Only across the European Union (EU), it is estimated that around 88 million tons are thrown every year, equal to 173 kg of food waste per person (Ilakovac, et al., 2020). As a consequence, food waste has become a priority on the National Agenda of the United Nations, being accounted among the United Nation Sustainable Development Goals (SDGs) in terms of responsible food production and consumption. It is stated to “halve, by 2030, per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses” (United States Department of Agriculture,

2019). In this context, all stakeholders (e.g., farmers, companies, governments, consumers) are determined to act and diminish their unsustainable behaviour toward sustainable development. In order to mitigate food waste quantities at individual and sectoral levels, several typologies of food waste prevention strategies have been adopted (Tretwein and Langen, 2021). The findings suggest that young people's responsible food waste behaviour is positively influenced by the knowledge of the issue (Adriana et al., 2021). One of the most used measures is the *awareness campaign* that can deliver the message to the individuals and motivate them to improve and/or change their behaviour (Soma and Maclaren, 2021). Technology also plays a significant role in changing citizens' unsustainable behaviors and supporting companies to reduce food waste quantities in all phases of the supply chain. However, the COVID-19 pandemic, modifying foods' availability (Rodgers, et al., 2021) and the consumers' behaviour, has led to a deceleration of the sustainability trends. To highlight the necessity of reducing food waste and reach previous trends, all stakeholders should engage more in the whole food supply chain. Actually, adapting responsible food marketing practices to different customer types can make a valuable contribution to reducing food waste (Aschemann-Witzel, et al., 2021), including the focus on sustainable packaging, which recorded a growing interest from the consumers (Mergent, 2020). However, increasing efforts should be done to educate young generations toward the food waste issue and enhance their awareness. Indeed, as stated by the European Commission (2020), the direct involvement of consumers is essential to pursue SDGs and address climate change, either intervening through education, youth engagement and social innovation.

Considering young generations as "healthy carriers" of inspiration and being more open to change, the present paper reviews selected studies dealing with food waste issue among the young generation, highlighting opportunities and challenges toward sustainable behaviors and education enhancement.

Research methodology

The authors have conducted a brief systematic and configurative literature review on food waste education among the young generation within international empirical studies. In line with the approach proposed by Özbük and Coşkun (2020) and Rana et al., (2021), the present review has been performed in an explicit, transparent, and reproducible way achieving the double purpose of methodological rigor and usefulness of the review itself. First, the authors illustrate the main definitions considered within the study. Subsequently, general assumptions and review criteria are provided.

Definitions: food waste awareness, attitude and behavior

Food consumption behavior plays a key role toward food waste reduction (Gabriel, et al., 2021). However, it is important to highlight the impact of cultural background, social context and education on food waste awareness, as well as the role of personal experience, cognition and social influences in the field of food waste attitude. Over time, only positive changes in awareness and attitude could help people to change behavior and act, maintain and avoid relapse. Figure no.1 illustrates the main variables influencing food waste behavior at final consumption (remembering that more than 50% of food waste occurs at this stage), considering the importance of current awareness, attitudes and behavioral patterns among households. A plethora of studies have been dedicated to the influence of food waste awareness/perception toward more sustainable food consumption behaviors. As instance, Principato, et al. (2015) and Fanelli and Di Nocera (2017) stated the importance of educational and awareness campaigns in the field of food waste reduction, demonstrating how positive changes in perception, in the mid-to-long term, are more likely to affect waste behaviors. However, along with perception – considered as "the ability to see, hear or become aware of something through the senses" (Oxford Languages, 2021) – also habits and emotions should be taken into account as main variables involved in food waste at households. Being emotions as non-cognitive determinants of behavior (Klöckner, 2013; Russell, et al., 2017) while habits as stable patterns (Verplanken and Holland, 2002), it is essential to highlight and act on repeated negative behaviors, underestimated errors, reiterated and unsustainable attitudes to waste starting from problem awareness and social norms (van Geffen et al., 2019). It is generally considered that conventional communication campaigns on food waste are essential, but the majority tend to remain at a "provision of information" stage (Tan et al., 2008). To enhance these strategies, a few but significant steps are required: (a) increasing awareness through education; (b) changing attitudes through experience and cognition; and then, (c) changing and maintaining behavior over time. As stated

by reference literature (Giordano, et al., 2018), changes in attitude are not likely to lead directly to changes in behaviors, while it is crucial to arise the *urgency* or the *desire to act* at personal level through more specific information, calling for commitment and trying to instill concrete needs in the target audience.

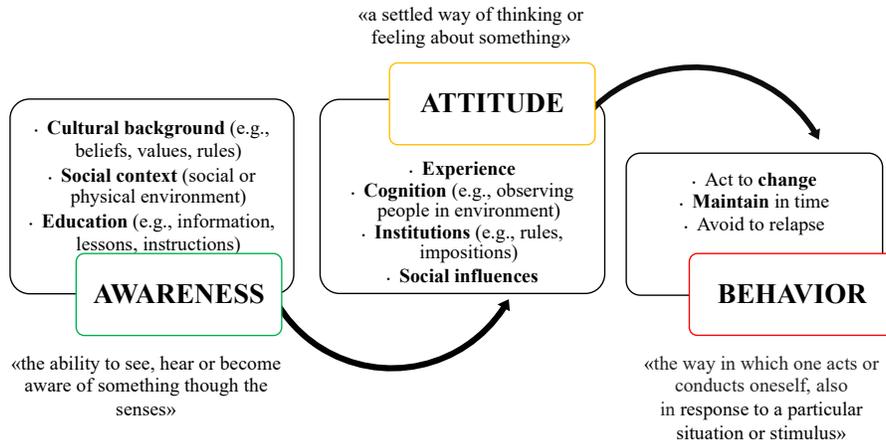


Figure no. 1. Variables influencing the awareness-attitude-behavior process

Source: Personal elaboration by authors. Definitions: Oxford Languages (2021)

General assumptions and review criteria

The main assumptions at the basis of the present research are: (a) food waste reduction represents a key-issue in achieving the SDGs and the European Green Deal targets; (b) major efforts should be done to change food consumption and food waste behavior at households' level; (c) young generations have a significant responsibility in minimizing food waste, because they can be considered as "healthy carriers" toward sustainable development and the most open to change. Therefore, how education could be enhanced to increase food waste awareness/perception among young generations? Conventional awareness raising strategies (e.g., moral approach, information provision) are not enough, but novel approaches should be explored to translate theory into practice, closing the awareness-action gap. The analysis starts investigating the awareness, attitude and behavior among young generations, considering "young" those people between (approximately) 18-26 years old (Arroyo, et al., 2013; Bonnie, et al., 2015), conducting a brief systematic and configurative review on Web of Science Core Collection (WoS), from February 2011 to February 2021. Suitable and adequate research strings such as "food waste" AND "canteens", "child", "cluster", "education", "school", "university", "young generations" and "young people" have been selected. Papers have been collected among the following research areas: (i) "environmental sciences technology"; (ii) "food science technology"; (iii) "business economics"; (iv) "educational research"; and (v) "behavioral sciences". Then, all resulting papers have been analyzed in title, abstract and keywords in order to create a list of articles on the topic. All words are related to the semantic field of youth. Subsequently, an accurate screening has been done in order to include in the database only papers perfectly in line with the scope of the analysis. The authors selected only articles from peer-reviewed journals, but also included some proceedings of international conferences as well as contributions based on existing knowledge, personal recommendations and serendipity.

Results and discussions

According to the previous research strings, a plethora of studies have been published on food waste topic from February 2011 to February 2021. Indeed, the following numbers of studies emerged from the literature review: "food waste" AND "young generations" (17), "young people" (20), "canteens" (66), "school" (121), "cluster" (126), "education" (206), "child" (220) and "university" 297. However, in this preliminary research only ten articles have been selected, including those specifically dealing with young people and young generations (i.e., pupils, school students, university students, teachers)

and excluding those dealing with households in general. The majority of studies has been conducted in recent years, especially in 2020 (n = 4) and 2018 (n = 2). At first sight, it is interesting to underline the heterogeneity of the approaches applied to investigate food waste issue among young generations. Several authors have been essentially analyzing the phenomenon at households, while others have conducted direct investigations at school or university canteens (Derqui, et al., 2018; Kowalewska and Kollajtis-Dolowy, 2018). However, interesting are the studies conducted on teachers, intending those people directly involved in education and awareness programs (Derqui, et al., 2020; Redman and Redman, 2014). Moreover, the analyses have been conducted all over the world, from Asia (Liu, et al., 2016) to Europe (Favuzzi, et al., 2020). Table 1 illustrates the selected studies (chronological order) and the sample size of the investigation.

Several trends in food waste education could be underlined in the light of selected papers. As stated by Wakefield and Axon (2020), it is crucial to consider age as a positive variable toward food waste minimization, considering older consumers as lower food waste producers compared to younger ones. Indeed, old people are more likely to discard less food in the light of life-experiences such as the austerity or the food rationing of previous times of crisis. Further, the presence of young children is likely to increase the amount of food waste per household. Therefore, the authors propose a sort of “shock tactic”, highlighting the importance of an empirical education instead of a theoretical one.

Table no. 1. Selected studies on food waste awareness, attitude and behavior

	Authors	Sample	Main features
1	Leal Filho et al., (2021)	52 university	“cultural change”
2	Feijoo and Moreira (2020)	77 university students	“environmental footprints”
3	Wakefield and Axon (2020)	100 respondents from 18 to 34	“shock tactic”
4	Favuzzi et al., (2020)	257-323 children	“meals judgement”
5	Derqui et al., (2020)	420 school headteachers	“sustainable schools”
6	Derqui et al., (2018)	Over 10,000 pupil's trays	“60-100 g per pupil per day”
7	Kowalewska and Kollajtis-Dolowy (2018)	555 students from 11 schools	“23 g per pupil per day”
8	Liu et al., (2016)	923 school students	“130 g per student per day”
9	Abe and Akamatsu (2015)	2659 Japanese students	“nutritional education”
10	Redman and Redman (2014)	364 teachers	“supervisor active role”

Source: Personal elaboration by the authors on Web of Science Core Collection

At primary school, as stated by Favuzzi, et al. (2020), one of the main variables influencing food waste is related to “meals judgement”, with particular reference to meals size, palatability and appearance. Further, the authors have considered the setting where food is served as a crucial variable influencing food waste. Therefore, they stressed the ambitious goal of training and educating either pupils, teachers or parents to consume food conscientiously. In the field of school students, Derqui, et al. (2020) highlighted the importance of proceeding on two parallel tracks: on the one hand, that of social sustainability; on the other, that of environmental sustainability, engaging people toward food waste minimization by an improvement of communication, an advanced training or the introduction of flexible portions. The aim is to create “sustainable schools” with specific sustainable educational programs. In terms of quantities, it depends on students’ nationality and relative educational background regarding food waste issue. Derqui, et al. (2018), in Barcelona schools, assessed food waste quantity in roughly 60-100 g per day per pupil, considering as the main driver the schools’ educational perspective. Kowalewska and Kollajtis-Dolowy (2018) estimated food waste in Polish schools at roughly 23 g per day. The main category of wasted food is represented by potatoes, bread, fruit and vegetables. However, the highest rates were found in China (Beijing), with 130 g per student per meal of thrown away meals

(Liu, et al., 2016), where the main category of wasted food was composed of staple food and vegetables. The main recommendations to decrease food waste in Beijing schools included awareness campaigns at the food serving place and using on-site cooking sites to keep the food appealing and freshness. Similar findings were found in Japan (Abe and Akamatsu, 2015). Japanese elementary school children are more likely to leave meals uneaten if the feed does not look delicious or the time to eat is not enough. In this context, nutritional education is essential to raise children's awareness about the high implications of food waste. To positively impact the children's behaviour, educators should involve more, as supervisors' active implication during the meals and as change creators (Redman and Redman, 2014). At university level, Leal Filho, et al., (2021) has highlighted the urgency of "awareness-raising", specifying that more information should be raised among students. Indeed, it is stated that university students must contribute to a "cultural change" which could encourage "cherish food and be responsible eaters". Under an empirical perspective, Feijo and Moreira (2020) have suggested the introduction of the calculation of "environmental footprints", throughout the entire food life cycle, to increase food waste awareness among university students. The authors consider the combination of financial awareness with environmental impacts as an essential tool for decision making, enhancing the role of eco-efficiency as a crucial variable toward sustainable food purchase and consumption. Further, the research introduces a significant construct: "young people are more open to media influence and fashion trends", indirectly meaning that young people are malleable and easily influenced by external variables.

Conclusions

Education is considered as one of the main roots of life quality, improving young generations' economic status and life settings toward sustainable models declined under the three pillars of sustainability (economic, social and environmental). As conception of education evolves and its value fluctuates in relation to extend backgrounds by including the environmental issues, the education metrics now seek to quantify not only *what* people know or can do, but *who* people are and who they can turn out to be. Challenges and solutions toward sustainability are deliberated upon in a constant cycle of reflection and action that is inclusive of all relevant actors. Understanding consumer behavior toward food waste in their natural context and finding the relationships between awareness, knowledge, values and perceptions, current practices and tools, and willingness to its reduction for different groups defined by socio-economic and cultural background is a prerequisite for empowering food waste education. The conception of other educational programs for schools aims to develop a global understanding of human capital valuation. In addition we underline the importance of promoting education for sustainable development as yearly recommended by the United Nations Commission on Sustainable Development. The authors, in line with Rosalyn McKeown (2002), suggest the introduction of educational toolkits containing exercises to explain the concept of sustainable development, considering the important difference between education *about* sustainable development and education *for* sustainable development, where *for* or has to be intended as a purpose. Indeed, education represents a tool to achieve sustainability. Developing a global ethic for improving the education for diminishing food waste is a necessity nowadays as part of education for sustainable development. It is important to understand the need of food waste diminishing as global issues that must be solved as local issues in connection with local culture, education system and consumer behavior.

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The Impact of Blockchain Technologies for the Agriculture Development and Sustainability

Adriana Grigorescu¹ and Amalia-Elena Ion²

¹⁾²⁾ National University of Political Studies and Public Administration – SNSPA, Bucharest, Romania.

E-mail: adriana.grigorescu@snsa.ro; E-mail: amalia.ion@live.com

Please cite this paper as:

Grigorescu, A. and Ion, A.E., 2021. The Impact of Blockchain Technologies for the Agriculture Development and Sustainability. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. 7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 254-260
DOI: 10.24818/BASIQ/2021/07/033

Abstract

Global warming has changed our environment and our society at a high speed. Luckily for us, scientists and researchers have worked around the clock on technologies that could ease the effects of the principal sectors of the economy – agriculture and manufacturing. Although, in the last two to three decades, services have been on a continuous evolutionary pattern, and, more or less, have attracted the spotlight, the fundamentalism of the first two sectors of the economy continues to daunt on our society, and, particularly, on the management and technologies behind it. The current paper addresses the necessity of breaking the existing business model in agriculture, and describes the architecture behind a new model that pertains to the innovative data-sharing capabilities of the blockchain for the ultimate purpose of agricultural development and sustainability. The study was designed around a content analysis on previous research, and added on the alignment to the new potential business model for smart agriculture using blockchain technologies.

Keywords

Blockchain technologies, e-agriculture, knowledge economy, machine learning, food safety, agriculture insurance.

DOI: 10.24818/BASIQ/2021/07/033

Introduction

Agriculture represents the first sector of the global economy, and the first catalyst of the human species evolution, now, part of a globalized food supply. The time came for the global civilization to acknowledge the cumulative negative impact of different anthropic factors on the environment and the society at large. Global warming has been one of the most debated subjects, especially since it has destabilized the entire global agricultural system. With a growing world population, food shortages are not an option. The technological wave has presented multiple solutions, with positive impact on the agricultural sector too. The current paper starts with a content analysis of the most recent studies in the field, in order to underline the main commitments that have been made within the industry in relation to the application of blockchain technologies (Nofer, et al., 2017; Zheng, et al., 2018; Wüst and Gervais, 2018; Abadi and Brunnermeier, 2018), and to project on the business model (Grigorescu, et al., 2020) furthering the management approach relevant for the 21st century agribusiness.

Review of Scientific Literature

Agribusiness (Zylbersztajn, 2017) is a concept known as the combined collection of manufactured and distributed agricultural supplies, various production operations within the sector, and the logistics involved with the agricultural commodities. Its underlying meaning refers to the widely acknowledged

perspective of an interdependent and interconnected agriculture sector formed around various economic agents, that create value-added in the economy, with the acceptance of an intrinsic downfall through time and consistent strategic consequences (Jordan, et al., 2015). The 1960s marked the moment when the small farmer faced the large corporate farm, showcasing, at a global level, the true dimensions of the economic system, and its implications for the agriculture sector. From this point on, agriculture and all its implied activities and organizations had to be interpreted through the lens of globalization, digital transformation, asymmetric information, property rights, public policy, opportunism, strategic management. Nevertheless, it was clear that, although, certain borders were crossed into a different dimension, the world continued to rely on motions specific to the past (James, 2005). Today, the dominant view is that technology has a huge potential for relevance, knowledge, expansion, and enriched mechanisms (Foresman, 2007; Rodriguez, et al., 2015), providing a new opportunity to the helix of economic agents, institutional and governance agents, as well as scholars to make the most out of the global chains, networks and coordinated standards for the overall growth and evolution of the agricultural sector, and for its output in the world economy.

Nowadays, technology is the safest solution to any specific problem, and most of the economic sectors are heavily relying on the support and applications of different types of technologies. At the boundary between digitalization and digital transformation lies the blockchain technologies and applications (Risius and Spohrer, 2017). A blockchain technology refers to a decentralized structure that records the origin of digital assets in real-time, and the whole process is transparent. This new technology is considered to reduce risks and/or fraud, and has potential for business scalability. When looking over all those aspects, not only the services sector will become highly reliant on the blockchain technology and its applications, but also the other two economic sectors – manufacturing and agriculture (Yadav and Singh, 2019).

Agriculture started a reactionary process, and, today, it evolves further toward chains, networks, and technology. Blockchain technologies have the capacity to trace all the information transitioning the food supply chain in a secure and cost-controlled manner. Furthermore, it enhances the opportunities of innovation-driven prospects, including smart farming and smart agriculture insurance (Ge, et al., 2017).

Research methodology

The current research is based around a content analysis of the latest studies performed in the field of agriculture, and blockchain technologies and applications, by unitizing their context regarding specifics of the blockchain technologies attributed or tested in the agriculture sector. The units of analysis are further coded in order to give a particular situational interpretation to each of the former. The sampling of the scientific articles was made manually, by selecting 20 papers that have been written in the last year (2020-2021), in the order of their search relevance on Google Scholar via the keyword *blockchain technologies in agriculture*. The units of analysis and their attributed code are divided across categories reflecting different elements of the blockchain technologies and of smart agriculture practices. Eventually, all the results are interpreted based on the potential business model for the new dawn of agricultural sector.

Results of content analysis

The preliminary part of the research has been constructed around the selection of the scientific papers that would further be analyzed for their content related to the topic of blockchain technologies and application in the agriculture sector. Table no. 1 contains the paper' identification DOI number, the coding and recording units. The content analysis showcased different types of blockchain technology applications, mostly in simulated environments, given the fact that the learning curve for the implementation of such technologies and strategies, as well as the cost inputs still represent a sensible dimension.

Table no. 1. Selected scientific papers and content analysis

Research paper (DOI)	Code	Recording units
10.1016/j.com-pag.2020.105251	A1-A12	user profile; environmental data sensors; control parameters/IoT data; legacy farm system; time-series data; optimal conditions strategies; optimized settings/Smart contract; transaction history/Device monitoring; network-level commands/digital certificates/cryptographical pair; public-private key/agriculture data/KPIs/water level optimal operation/complex application/authentication strategies/scalability, accountability and security
10.3390/app10124113	B1-B4	Low level stakeholder tech knowledge; large geographical area; deployment obstacles/no guarantee data accuracy; monitoring difficulties/conceptual designs/transparency and trust; enormous energy and financial cost
10.3389/fbloc.2020.00007	C1-C8	Index insurance; automated, timely payments; machinery data; risk reduction/transparency/smart farm model/benefits to large farms/recording traceability/motivation for precise information/costly/infrastructure time-consuming
10.1016/j.ijinfo-mgt.2019.05.023	D1-D5	Nascent stage/positive impact/decentralized, shared DB/technical and regulatory challenges/ease the certification norms
10.1016/j.jcle-pro.2020.122503	E1-E3	High convenience/modernization/e-agriculture
10.1016/j.jcle-pro.2020.122071	F1-F2	Intelligent device nodes; GPS monitoring/fork issues
10.1109/ACCESS.2020.2973178	G1-G8	Precision agriculture/trading system/pressure calculations/open-access solution; unauthorized access/impersonation attacks/password breach/IDS for security/shield against environmental factors
10.1016/j.com-pag.2020.105476	H1-H5	Transparency; scalability/reduction of loses and costs; traceability/trade rates; cryptocurrency/global trade/high energy consumption; blockchain forking
10.1109/ACCESS.2020.2986257	I1-I4	Traceability, accountability/credibility/cryptocurrency/challenges for practical implementation
10.4018/IJAEC.2020100102	J1-J5	Smart agriculture; digital identity/crisis control/AI/IoT devices/efficiency of SCM
10.1016/j.jcle-pro.2020.124496	K1	Blockchain-enabled relay-aided wireless network for sustainable e-agriculture
10.14569/IJACSA.2020.0110457	L1-L5	P2P network; cyber law/farm clustering/simulation; network stability/cost reduction/sense environmental characteristics
10.1016/j.rescon-rec.2020.104877	M1-M3	No regulation/high energy/country context influence
10.1109/OJCS.2021.3053032	N1-N2	Consumer pressure; transparency of food data/contract selection independent; bidding processes
10.3389/fbloc.2021.613346	O1-O3	Content control/slow adoption/necessity for regulation and policy updates
10.3390/s20102990	P1-P6	Deep learning/notification functions/smart transportation/security endpoints/automation/revolutionary innovation
10.1002/ett.4059	Q1-Q4	Precision irrigation; accurate assessment on requirements/open communication/spoofing, sensor, critical attacks/optimal resource usage
10.1080/09064710.2020.1840618	R1-R2	Millions of transactions per day/trusted negotiation
10.1007/s10586-020-03092-4	S1-S2	Repelling system; motion sensors; ultrasonic sound device generator/reliable data transmission; low-cost features
10.1108/jstpm-03-2020-0065	T1-T4	Integrity verification/efficiency and visibility/business disruption/platform mobile app for financial aid

Source: Authors own synthesis.

The last step in the content analysis (Table 2) is the frequency analysis. The research proposed two main category groups which underline either the advantages and opportunities blockchain technologies can determine in agriculture, or the threats, limitations or weak points that blockchain technologies might impose on the agriculture sector and all its connected dimensions.

Table no. 2. Frequency Analysis

Category	Recording units	Frequency	T.
Transparency	A1,A5,A7,B4,C1,C2,D2,F1,G3,H1,H3,H4,I2,J2,J3,L2,N1,O1,Q2,R1,T2	21	111
Traceability	A1,A2,A3,A4,A7,A12,C1,C5,D2,F1,G1,H2,H4,I1,I2,J1,J2,J3,L1,N2,P2,P3,R1	23	
Security	A1,A2,A5,A6,A11,A12,F1,G2,G7,H2,H4,I2,J2,L1,L3,N2,O1,P2,P4,R1,R2,S1,T1	23	
Efficiency	A2,A3,A8,A9,A12,C1,C3,D2,D3,E1,E2,E3,F1,G1,G3,H1,H3,I3,J2,J3,J4,J5,K1,L4,L5,P2,P5,P6,Q1,Q4,S2,T4	32	
Confidentiality	A6,A11,A12,D3,G2,H3,I3,N2,R2	9	
Immortality	A3,D3,J3	3	
Transparency	B2,C4,C6,F2,G4,M1,M3,O3,T3	9	52
Traceability	B1,C4,M1,M3,T3	5	
Security	B1,B2,D1,D4,D5,G4,G5,G6,H5,M1,M3,O3,Q3,T3	14	
Efficiency	A10,B1,B2,B3,B4,C7,C8,D4,G8,H5,I4,M2,O2,P1	14	
Confidentiality	B1,B2,D5,F2,G4,G6,M1,M3,O3,T3	10	
Immortality	-	0	

Source: Author’s own synthesis.

Each category group was further divided into the six characteristics of blockchain technologies – transparency, traceability, security, efficiency, confidentiality, and immortality of data. The results of the content analysis showcased that the majority of the research was focused on the advantages and opportunities of the blockchain technology and applications for the agriculture sector of the economy. The other category group has amounted 52 mentions. From this initial observation, it can be underlined that the focus of the majority of scientific articles on the topic of implementation and usability of blockchain technologies in agriculture is directed towards the positive aspects of such a shift in strategic direction. This is indeed valuable for the entire scientific world, although it is of paramount importance to be able to assess the possible and probable threats of a potential shift towards e-agriculture with the help of blockchain technologies.

Among the most accountable characteristics of the blockchain technology are the transparency and traceability of all transactions, also known as the major elements visible on the cryptocurrency market (44 mentions of the two characteristics). The main characteristic approached from the perspective of blockchain technologies implementation in agriculture has been the efficiency that blockchain would determine in this sector. Moreover, the limitations or threats of an adoption of blockchain technologies in agriculture are constructed around the security and efficiency of the model. Apparently, just like any other ICT and IoT system, the blockchain technology might be liable to cyber-attacks, compromising the whole mechanism especially around the information nodes. The content analysis has successfully identified the topics that could be further developed, as well as those that might pose difficulties to a smooth implementation of blockchain technologies in agriculture and to the transitioning towards e-agriculture.

Discussion: New potential business model as resulted from the content analysis

The implementation of the blockchain technologies into the agribusiness is, at this moment, not a straightforward option, as such an outburst of technology, IoT, skilled human capital, machine learning, AI applications, etc., does not seem easy to grasp, and to financially cover, especially in the agriculture sector, where the medium global margin does not top 7%. Nevertheless, the risks normally imposed by undergoing traditional agriculture activities at large scale can be very easily diminished with the usage of blockchain technologies. As expected, the research cast a light on the prospects of going towards the future and adopting blockchain technologies in e-agriculture, as well as on the downfalls of a timely implementation without first forecasting the possible and probable outcomes.

The results of the study showed that, between 2020 and early 2021, scholars have proposed and developed different scientific articles related to the topic of blockchain technologies in agriculture, and to the extent a particular application of blockchain technologies could enforce on the development of agribusiness across the world. The articles have focused on countries that are known for their mainly

agricultural economy, such as India, as it is clear that agriculture in itself is intensively clustered in emergent economies, particularly performed under the roof of SMEs. The latter are economic agents heavily reliant on their volumes of production and their revenues, as their profit margin and reinvestment strategies are insignificant or nonexistent. A blockchain application development is priced between USD 5000 and USD 200000, depending on its complexity and project requirements. Therefore, it is wise to first look into how this price range can actually impact the agribusiness, and if the market potentially is ready for such a leap of faith.

Consequently, the disparity in this case is the fact that research is focused on positive aspects of blockchain technology application in agriculture, while the limitations of the model seem to be two times less discussed. It is important to look further for options of socioeconomic growth and development. Nevertheless, the means must be strategic. On cryptocurrency markets, where the trade is focused on intangible assets, blockchain technologies are the best solution. A market trading tangible goods changes the premises. Agricultural goods are prone to a wide range of risks. The main threats in the global arena are imposed by climate change, disequilibrium of natural habitats, and growth of world's population, deforestation, intensive fishery activity, and social disruptions. The inequalities across the globe are far more overwhelming as they might appear, and choosing the right solution seems a bit far stretched in any perspective.

From an opportunistic perspective, the research returned on the information that blockchain technologies in agriculture would determine a sharp increase in the efficiency of the whole system. At the border of 18th century traditional agriculture stands tall a new business model that might as well have been alien. Imagine a plateau of greenhouses harboring data sensors for precision irrigation, temperature control, light control, with machine learning and AI applications continuously monitoring the accelerated growth and development of the plants, and next to it a building of servers and computer powered units to store, track and forward all that information, in order to instantly obtain digital certificates for the quality standards of food, to link the farm to the food supply chain through trust certificates, to monitor and save all the transactions, to bid and negotiate smart contracts, and to develop and maintain communication and global trade relationships in a controlled, traceable, transparent, efficient and secure platform, all that topped by the best possible crop yield. The scale of such an operation can be, of course, downgraded to suffice the necessities of different sized farms and e-agribusinesses. Nevertheless, it is still something that might take a while until is no longer part of the niched knowledge economy, and becomes a standard business model across the globe.

The next characteristics that make blockchain technologies attractive for the agribusiness are transparency and traceability, and refer to the fact that on the blockchain platform any business is identifiable through a user profile, a history of all interactions and transactions, and several performance indicators of each user available. This ensures the drop of fraud and of inequalities during bidding between small and medium sized farms and large farms. Moreover, it represents a mean that allows for easy access to all sorts of data on each particular user, including financial aspects such as index insurance, timely payments, etc. At the same time, the blockchain technologies offer the possibility to unlock global trade to all the users regardless of their geographical position.

From the perspective of limitations to the blockchain technology application, security is one of the most discussed topics in the analyzed scientific articles. Although this technology brings cryptographic keys for authentication and digital signatures, privacy control, a decentralized, secure, shared database, IDS to identify security incidents, etc., there are still concerns regarding blockchain fork issues, impersonation attacks, password breaches, compromised session keys, and many others, in particular due to the lack of regulation, trust among stakeholders and uncertainty with regard to blockchain technologies.

Conclusions

Blockchain technology is the system behind cryptocurrencies, and mostly comprises of elements and processes that are realized and represented by advanced software, high-tech hardware, and the IoT. In its majority, the blockchain application revolves around knowledge, and expertise in the sector of ICT. This dimension, obviously, is not the go to framework for strategies in agriculture. Moreover, we stumble upon the question of whether from a knowledge perspective the e-agriculture is a plausible

business model at global level. The blockchain technology is something extremely new, not entirely known and understood. Agriculture, since its early forms, relied heavily on the input and labour of human capital, and the general usage of blockchain technologies in agriculture relies on training the human capital. There are numerous platforms applying the technologies of blockchain infrastructure to the agricultural sector. Nevertheless, the simple existence of those platforms does not imply the transitioning towards e-agriculture. Although the costs of entering the market are zero, the knowledge on the new business model is paramount, and the financial capability to invest is necessary to become competitive. In the end, it is only a matter of time until this will represent the norm, although we cannot consider that this new business model will be globally adopted in the near future.

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Changes of the Employees' Flow in Transport and Hospitality in COVID-19 Times – a Measure of Resilience

Cristina Lincaru¹, Adriana Grigorescu² and Speranța Pîrciog³

¹⁾³⁾ National Scientific Research Institute for Labor and Social Protection – INCSMPS, Bucharest, Romania.

²⁾ National University of Political Studies and Public Administration & Correspondent Member of the Romanian Scientists Academy, Bucharest, Romania.

E-mail: cristina.lincaru@yahoo.de; E-mail: adriana.grigorescu@snsps.ro

E-mail: pirciog@incsmeps.ro

Please cite this paper as:

Lincaru, C., Grigorescu, A. and Pîrciog, S., 2021. Changes of the Employees' Flow in Transport and Hospitality in COVID-19 Times – a Measure of Resilience. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 261-267 DOI: 10.24818/BASIQ/2021/07/034

Abstract

Our paper proved the efficiency of an instrument that can be applied to quickly evaluate the labour market response to COVID 19 measures. The prevention measures, imposed with the objective to protect the lives and the wellbeing of the workers, act as interventions on labour market with direct effect toward increasing its rigidity. The worker flows' (the sum of hiring and dismissal) decrease indicate a lower rate of new job creation based on innovation adoption, and the increasing the dismissal flows. Both situations indicate a low sustainability for employment.

We explore the workers' mobility across EU27 and 13 NACE Rev 2 economic sectors by analyzing the rates of: hiring, dismissal, employment growth, total workers reallocation and excess workers reallocation. We apply the model (Lincaru, et al., 2011; Lincaru, et al., 2012) following (OECD, 2010, 2009) methodology consistent with (Davis and Haltiwanger, 1999), using micro aggregated data of Eurostat during 2018-2020 period.

Transport and hospitality economic sectors are among the most affected ones. Post COVID, these sectors are expected to shrink, slowing down the increasing productivity growth and innovation adoption, decrease the quality of employment, diminish the speed of skill allocation, and block the youth entrance. The hospitality industry (I) has the highest gross worker flow among the EU27 sectors, fact that confirms its competitive position. Hospitality is a driver sector for transport demand. Its increasing risk to lose workers, coupled with labour deficit, raises important challenges for the European economy competitiveness. The persistence of the Covid pandemic has direct impact on the labour market, with consequences such as severe decrease of hiring and austere increase of dismissal. The existence of a threshold would determine higher resilience of the sectors in discussion.

Keywords

Worker flows, hiring, dismissal, resilience, worker reallocation, transport, hospitality.

DOI: 10.24818/BASIQ/2021/07/034

Introduction

The paper suggests the usage of hirings as inputs on the labour market, and dismissals as exit from work events, through the measuring of the interactions between firms and workers. The reference for transition is the employment status and not the job. To have a picture of the activities' constriction determined by the COVID 19 pandemic, we calculated the 2018, 2019, and 2020 annual rates for the employee flows: hiring, dismissal, total reallocation, and excess reallocation. Some sectors were

affected by the lockdown restriction as a measure of health protection. The health crisis hit the world economies with long-term effects, and various intensity levels per sector. The transport and hospitality sectors were the hardest affected, and we considered that the variation of the employees' flows could illustrate the resilience characteristics.

Diodato and Weterings (2015) found on Dutch data that the high-speed recovery, irrespective of the type of shock, is observable in the economies of the service-oriented regions and centrally located regions. Furthermore, the dimension of the worker flows is essential for the unemployment policy debate. On the other hand, Elsby, et al. (2011) found that the nature of the job lost is the main point of the appropriate response. The resilience is under question in the analyzed sectors, since the pandemic persistence and intensity is longer than expected. On-line working and teleworking was a solution to overcome the restrictions and to sustain the business (Grigorescu and Mocanu, 2020). Moreover, the social protection and the governmental measures has to be considered in the extreme situations (Iordan, et al., 2014; Mina, 2021).

Review of the scientific literature

Davis and Haltiwanger (1999) compared the registered status at two moments in time (t and $t-1$). They considered:

- Hirements = the number of employees in the firm at time t , but no longer employed at time $t-1$.
- Dismissals = the number of employees in the firm at $t-1$, but not at t .
- Gross job reallocation (gross job turnover) = the absolute value of the net change in employment between two moments in time. (Davis and Haltiwanger, 1992, 1999; Davis et al., 1996; and OECD, 1996).

Following this terminology, at the individual firm's level, job creation is equal to the net employment change if the latter is positive, or, otherwise, zero. Conversely, job destruction is similar to the net change's absolute value if the latter is a negative sign, or zero otherwise. Job reallocation, job creation, and job destruction are gross job flows, that differentiate themselves from the more familiar net employment growth measures. Net and gross job flows coincide at the level of a single firm, but that is no longer the case when considering groups of firms.

Hamermesh, et al. (1994) identified a “*concomitant heterogeneity in flows of workers into and out of the firm, and through and between jobs, among firms whose employment is changing at identical rates*”. Hamermesh (1989) examined the costs firms face in adjusting labour demand to exogenous shocks. Bekker et al. (2008) defined the external numerical flexibility, i.e. the ease of “hiring and firing” which manifests itself in workers' mobility between employers (external job turnover).

Kramarz and Michaud (2010) point out that theoretical models (Bentolila and Bertola, 1990; Bertola, 1990; Garibaldi, 1998, etc.) prove that “stringent legislation reduces hiring and firing, but also affects the structure of unemployment”.

We explore some empirical questions, using micro aggregated Eurostat data for EU27, as „a prerequisite for assessing the role of policies in shaping worker flows” (OECD, 2009) in the COVID 19 pandemic, during 2018-2020 period:

Q1. What are the hiring and firing rates in absolute levels compared to other sectors for the H (Transportation and storage) and I (Accommodation and food service activities)?

Q2. How large is the reallocation of workers in H and I sectors compared to other sectors?

Research methodology

We apply the model (Lincaru, et al., 2011; Lincaru, et al., 2012) following (OECD, 2010, 2009) methodology consistent with (Davis and Haltiwanger, 1999). The annual hiring flows counts the Eurostat's quarterly employment, and is used as a proxy for employment by job tenure.

The worker flows approach to consider the job flows essentially reflect the reallocation driven by labour demand. Those are the result of a mix of factors playing on the labor market (demand, supply), which

depend on both firm and worker characteristics (OECD, 2009). The model considered events as input/output time intervals. Consequently, hiring and separations are transition effects from any status to/out employment between two moments in time, $t-1$ and t .

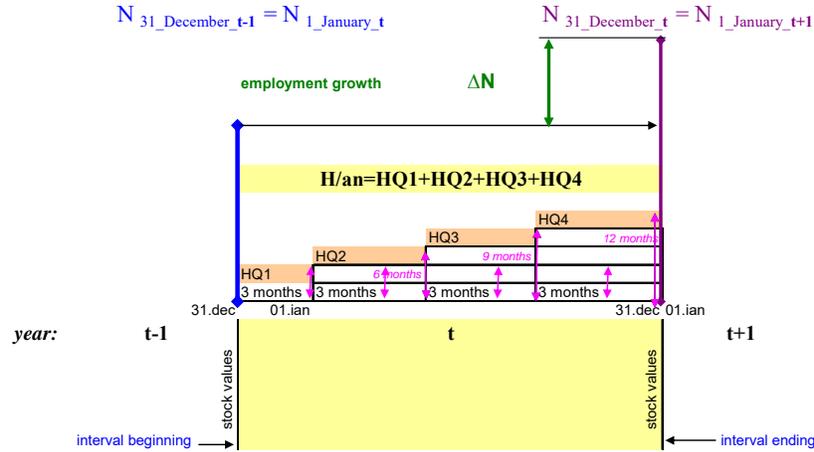


Figure no. 1. Flow indicators and stock indicators used in the worker flow measurement - logical scheme based on EUROSTAT metadata

Source: Lincaru, et al., 2011

As it is presented in Figure 1, the hiring as a flow indicator ($H_{[t-1:t]}$) is calculated as:

$$H_{[t-1:t]} = H_{Q1} + H_{Q2} + H_{Q3} + H_{Q4} \quad (1)$$

Workers' total reallocation represents the sum of workers' number with events of hiring ($H_{[t-1:t]}$) and firing ($S_{[t-1:t]}$) during a one-year interval:

$$TRN_{[t-1:t]} = H_{[t-1:t]} + S_{[t-1:t]} \quad (2)$$

Furthermore, the workers' excess reallocation represents the workers' reallocation between firms from the same industry" (OECD 2009, pg.122) and the absolute modification of the net employment indicates the reallocation measure between different groups of firms / various sectors, during a one-year interval;

$$ERN_{[t-1:t]} = TRN_{[t-1:t]} - |\Delta N_{[t-1:t]}| \quad (3)$$

where:

$$\Delta N_{[t-1:t]} = H_{[t-1:t]} - S_{[t-1:t]} = N_t - N_{t-1} \quad (4)$$

$\Delta N_{[t-1:t]}$ = Annual employment changes;

Based on the mentioned definition, were calculated the following indicators: the $rH_{[t-1:t]}$ = annual rate of workers' hiring, the $rS_{[t-1:t]}$ = annual rate of workers' firing, and $rTRN_{[t-1:t]}$ = annual rate of workers total reallocation.

Data and indicators

The data used to for the model comprises of:

- The quarterly number of employed persons in a national area, Eurostat source: "Employment by sex, age, time since job started and economic activity (from 2008 onwards, NACE Rev. 2) - 1 000 [lfsq_egdn2] intern – DURATION: Total, SEX: Total AGE: From 15 to 64 years";
- And the quarterly number of employed persons for less than 3 months since the job started, Eurostat source: "Employment by sex, age, time since job started and economic activity (from 2008 onwards, NACE Rev. 2) - 1 000 [lfsq_egdn2], DURATION: Less than 3 months, Total, SEX: Total AGE: From 15 to 64 years".

The economic sectors highlighted in this study are H - Transportation and storage, and I - Accommodation and food service activities of the 13 sectors considered (A-R). To compare the effect of the COVID-19 pandemic, the considered years were 2018, 2019, and 2020.

Results and discussion

- **Hiring rate decreases regardless of the sector, and evident in almost all countries:**

Since COVID-19 started **Hiring rates showcased decreases for all sectors at EU27 level in 2020/2019, with -2.2pp compared to 2019/2018 with -0.3 pp.** There was a 7 times hiring rate decrease registered after the health crisis spread at global level. Both I and H sectors decreased more than the EU27 average. I sector was the second affected, with a registered decrease of -7.2pp in 2020/2019, compared to -0.3 in 2019/2018, and H the fifth affected, with a registered decrease of -3,1pp in 2020/2019 compared to -1.7 in 2019/2018.

The **H sector** presented a homogenous hiring rate decreasing profile within the 12 countries included in the study. Sweden registered a -7,5pp decrease, above the EU27 average. UK managed the Pandemic shock in a balance, with a 0% change of hiring rates, while the Czech Republic was the only country reported with +0.1% hiring rate.

The **I sector** confirms the same tendency of hiring rate decreasing profile, for 13 countries from the 15 included in the study, with an average of 3.1 for EU27. Finland, Sweden, Spain, the Netherlands, Cyprus, Italy, and UK have had a decrease above the EU27 average, from -16.3 pp to -7.5pp, while Austria and Germany faced the pandemic shock in a balance, with a +0.5% change of hiring rates. Hungary was the only country to report a significant +2.8% hiring rate.

Table no. 1. Hiring rates' change from 2020/2019 and 2019/2018

SECT	rH18	rH19	rH20	drH 2019
J – Information and communication	61.3	56.9	41.6	-15.3
I – Accommodation and food service activities	38.5	36.8	29.5	-7.2
R – Arts, entertainment and recreation	26.6	26.4	21.4	
N – Administrative and support service activities	24.9	23.7	19.5	-4.2
H – Transportation and storage	17.5	17.2	14.1	-3.1
F – Construction	20.0	19.1	16.8	-2.3
EU27	17.5	17.2	15.0	-2.2
M – Professional, scientific and technical activities	14.7	15.3	13.4	-2.0
K – Financial and insurance activities	19.3	20.2	18.3	-1.9
C – Manufacturing	14.1	12.9	11.1	-1.8
P – Education	14.5	14.5	13.2	-1.4
Q – Human health and social work activities	16.1	16.0	15.0	-1.0
A – Agriculture, forestry and fishing	16.6	17.2	16.5	-0.7
O – Public administration and defence; compulsory social security	9.6	10.0	9.5	-0.6
Max	61.3	56.9	41.6	-15.3
Min	9.6	10.0	9.5	-0.6
StDev	13.74	12.50	8.63	-3.88

Source: Data calculated by authors.

- **Firing rates present the general tendency to increase in 2/3 of sectors and countries:**

Firing rates increased in 2020 compared to 2019, in 7/12 sectors at EU27 level, the average increase accounting for 0.1 pp. Compared to 2019/2018 when the rate decreased with 0.7pp, it is obvious that before the pandemic the enterprises were keeping their employees; hence, the health crisis was the major determinant for the explosion of the dismissal phenomenon. The most affected sector was F, with the maximum increase of 5.6pp, compared with J, the less affected sector. Both I and H sectors increased more than the EU27 average. I is the second affected sector as a result of lockdown and restrictions, while H registered the forth increase, mainly as a consequence of travelling restrictions.

The **H sector** presented an increase of the firing rates of 2.5pp, within the 12 countries included in the study. Czech Republic and Belgium recorded the highest rates of 14.6pp, 11.8pp respectively, only a few times more than the average, while Spain, with 5.6 pp, had firing rates two times over the EU27 average. The Netherlands, Italy and Germany faced the Pandemic shock in a balance, with a 0% change of hiring rates. Remarkable is the positive tendency in UK, Sweden, France and Poland, all registering negative rates of dismissal.

The **I sector** was the second affected, and, from the profile of 15 analyzed countries, Cyprus, Austria, Finland and Hungary are having the highest rates, with levels of a few times more than the average. Spain, Italy and Germany faced the pandemic shock in a balance, and, surprisingly, Sweden and France firing rates consistently decreased (-7.5pp and -9pp).

Table no. 2. Firing rates change from 2020/2019 and 2019/2018

SECT	rS18	rS19	rS20	drS 2019
F – Construction	18.3	17.6	23.2	5.6
I – Accommodation and food service activities	36.4	36.1	40.0	4.0
N – Administrative and support service activities	23.2	22.4	26.0	3.7
H – Transportation and storage	16.2	15.7	18.2	2.5
Q – Human health and social work activities	14.8	14.0	15.4	1.4
R – Arts, entertainment and recreation	25.6	23.2	24.1	0.9
M – Professional, scientific and technical activities	12.8	12.5	13.0	0.5
P – Education	12.6	12.8	13	0.2
EU27	16.5	16.3	16.4	0.1
A – Agriculture, forestry and fishing	19.6	19.1	18.6	-0.5
C – Manufacturing	13.2	12.8	12.0	-0.8
O – Public administration and defence; compulsory social security	8.9	10.2	5.8	-4.5
K – Financial and insurance activities	19.8	20.8	15.5	-5.3
J – Information and communication	56.8	52.7	36.4	-16.3
Max	56.8	52.7	40.0	-12.7
Min	8.9	10.2	5.8	-4.5
StDev	12.78	11.73	9.77	-1.97

Source: Data calculated by authors.

- **Annual rate of workers' total reallocation** is a measure of external numerical flexibility. (Bekker et al., 2008)

Total reallocation rates mirror the summarized effect of hiring and firing in 2020 compared to 2019, as well as the pandemic impact. At EU27 level, the sectors registered a decrease of -2pp. J registered the maximum decrease of -31.6pp, while F recorded the maximum increase of 3.3pp. H sector maintained a higher numerical external flexibility compared to I, as it slightly decreased, with -0.5pp, above the EU27 average, while I decreased with -3.3pp.

The **H sector** a decrease of -0.5pp of the total reallocation rates, within the studied countries. The general tendency is the numerical external flexibility decrease, with the exception of Czech Republic and Belgium, which are the cases of over flexibility, **source of unsustainable employment growth**. Austria and Germany faced the pandemic crisis in a balanced scenario for total reallocation rates, with a -0.6pp, -0.5pp respectively, close to the EU average. Sweden, Poland, and France have registered high decrease rates, over ten times than the EU27 average.

The **I sector** confirms the tendency of decreasing for total reallocation rates. The Netherlands, Spain, UK, France, and Sweden showcased a decreasing rate of -11pp to -20.2 pp, a few times over the EU27 sector average of -3.3%. Germany and Czech Republic registered a balance, with a rate of 0.4pp, and 0.5pp change of total reallocation rates. On the other side, Austria and Hungary showcased an increase in the total reallocation rates of over 15pp, process mainly driven by firing events, a reflection of unsustainable employment growth.

Table no. 3. Total reallocation rates change from 2020/2019 and 2019/2018

SECT	rTR 18	rTR 19	rTR 20	dTR 2019
F – Construction	38.3	36.7	40.0	3.3
Q – Human health and social work activities	30.9	30.0	30.4	0.4
H – Transportation and storage	33.7	32.8	32.3	-0.5
N – Administrative and support service activities	48.2	46.1	45.5	-0.6
P – Education	27.1	27.3	26.1	-1.2
A – Agriculture, forestry and fishing	36.2	36.3	35.1	-1.2
M – Professional, scientific and technical activities	27.5	27.9	26.4	-1.5
EU27	34.0	33.5	31.4	-2.0
C – Manufacturing	27.3	25.7	23.0	-2.7
I – Accommodation and food service activities	74.9	72.9	69.6	-3.3
R – Arts, entertainment and recreation	52.3	49.5	45.4	-4.1
O – Public administration and defence; compulsory social security	18.5	20.3	15.2	-5.0
K – Financial and insurance activities	39.1	41.0	33.8	-7.2
J – Information and communication	118.1	109.6	78.0	-31.6
Max	118.1	109.6	78.0	-31.6
Min	18.5	20.3	15.2	-5.0
StDev	26.49	24.19	17.89	-6.31

Source: Data calculated by authors.

Based on the definition of employment, we have to make some observations:

- * the degree of generality is the highest. It covers the labour market in extended concept of employed person, and not only in reference to salaried person;
- * the worker flows are strongly dependent on the main criteria that shapes the frontier of the job, as well as the borders of the firm (including the observation unit). Under the global competition, pressure is increasing the dependence on profit, focused on short-term objectives and diminishing the risk tolerance.

Conclusions

The first conclusion to be drawn based on the hiring and dismissal annual rates for 2020 to 2019 and 2019 to 2018 is that the pandemic crisis, through the restriction imposed by the health security, significantly affected the employment and dismissal. Among the 15 economic sectors studied, there are consistent differences, as sector J – Information and communication, taking the ‘star’ status, of a flourishing sector in 2020.

The H – Transportation and storage, and I - Accommodation and food service activities, sectors expressing the hospitality economic area, are among the most vulnerable. Considering the situation before 2020, those sectors were the most attractive and job creative sectors. Post Covid-19 crisis, these sectors shrank, slowing down the increasing productivity growth and innovation adoption, decreased the quality of employment, diminished the speed of skill allocation, and blocked the youth entrance on the labour market. Hospitality sectors (I) still have the highest gross worker flow among the EU27 sectors, fact that confirms its competitiveness and potential. This sector is a driver for transport (H) demand, while, in 2020, taking the form of a braking system due to the travel restrictions. Its increasing risk to lose workers, coupled with labour deficit, raises important challenges for the European economy competitiveness, and the recovering of the tourism industries (Škare et al., 2021, Aguiar-Quintana et al., 2021). A proper support from the government of the more affected countries could speed up the recovery of the hospitality sector in conjunction with policies of youth employment (Grigorescu, 2006).

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Virtual Libraries during the COVID-19 Pandemic

Daniela Baiasu¹ and Răzvan-Ion Chitescu²

¹⁾²⁾ *National University of Political Studies and Public Administration, Bucharest, Romania.*

E-mail: daniela_baiasu@yahoo.com; E-mail: razvanric@yahoo.com

Please cite this paper as:

Baiasu, D., Chitescu, R.I., 2021. Virtual Libraries during the COVID-19 Pandemic. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 268-274 DOI: 10.24818/BASIQ/2021/07/035

Abstract

Since March 2020, following the declaration of the COVID-19 pandemic, civilization has had to adapt to a new lifestyle. Restrictions imposed by the authorities have led to a digital approach, including in the field of education. With the advent of the Internet, traditional libraries have begun to lose ground to the online environment, so the new situation has hastened the process of digitizing them, for the most part. This meant, on the one hand, the abolition of many jobs, and on the other hand, access to a large amount of information, from several resources, with a single click and in a short time. On this occasion, social networks played an important role, with public library services in many countries being active on social networks. Using this method, the institutions were involved in making important information available in the online environment. Through this article, we wanted to show the impact of the COVID-19 pandemic on libraries, as well as the reaction of the population to a new system of obtaining information and on the measures taken in the full pandemic process.

By applying a closed-ended questionnaire, we were able to highlight the impact of the pandemic on the functioning of virtual libraries, the benefits of online study, and a forecast of their future use.

The note of originality of this study is given by the news brought by the pandemic in the online environment and the dynamics of internet use in the cultural field.

Digitizing the libraries offers many advantages to information seekers, from accessing data from anywhere and anytime to diversifying the information found. We believe that access to knowledge through virtual libraries can lead to the consolidation of inclusive knowledge societies only when everyone will be able to benefit equally from the content.

Keywords

COVID-19, libraries, digital, e-libraries, online, information management.

DOI: 10.24818/BASIQ/2021/07/035

Introduction

Since March 2020, following the declaration of the COVID-19 pandemic, civilization has had to adapt to a new lifestyle. Restrictions imposed by the authorities have led to a digital life approach. All fields of activity were affected, which led to measures such as changing the field of activity, and in some cases even to the abolition of certain companies. "An important part of emergency planning is to address public safety and personnel before, during, and immediately after emergencies. All libraries need to develop a comprehensive contingency plan, with clear, consistent and concise policies and procedures for staff" (Fischer, et al, 2019).

The measures imposed by the authorities also affected libraries, most of which had to be banned from physical access. This was done by suspending certain services such as outstanding notifications, any borrowed physical item not being returned at the time, which eliminated the need for a systematic quarantine of returned materials. According to a report by the National Authorities on Public Libraries in Europe (Anon, 2020), libraries have begun to close in many European countries: France (17 March

2020), the Czech Republic (April 16), Denmark (March 13), Finland (March 18), Germany (March 12-17), Greece (March 13), Ireland (March 12), Lithuania (March 16-30), Norway (March 13), The Netherlands, Poland, Portugal (March 9), Scotland (18), Slovenia (March 13), Spain (March 10), Switzerland (March 17) and Romania (March 15).

Traditional libraries have begun to lose ground to the online environment since its inception, and the new situation has accelerated the process of digitizing them, becoming vital for e-books, magazines, and high-quality educational content. As a lot of information that appeared in the online environment is fake news, libraries, always known as reliable sources of information, face this problem. Given that libraries are undergoing worldwide digitization processes and providing digital media to their users, it is very likely that they will be modified and offered by libraries around the world. One possible solution would be to develop automated mechanisms that can verify the credibility of digital content broadcast in libraries without manual validation (Mertoğlu, et al, 2020).

According to Mabe and Ashley (2017) in emergencies, librarians and libraries can meet the emergency, several roles, such as:

- safe refuge - libraries are, during emergencies, a safe place for most people due to their well-built buildings and locations;
- providing normal services by employees;
- functioning as an information center: with the location, resources, and centralized position in the community, libraries will provide mass communications during an emergency and will communicate with the public important research or measures;
- is a resource for evacuees - in case of emergencies, libraries will often be a centralized location, where community members can go for protection;
- gathering and storing oral histories of events - libraries and librarians can also collect information about events that take place to make them available to future generations. The information gathered can help manage such situations in the future.

Although online services and digital content take precedence, some libraries have offered reduced or alternative services for borrowing physical library materials until services previously available are resumed. Most of the employees work from home, but there is still a small part that has to work in libraries. Special measures have been created for such employees (as in all areas where physical presence at work was required), such as: providing anti-bacterial gel, introducing shifts to allow physical distancing. Also, the situations in which employees were placed on unpaid and unlimited leave throughout the pandemic period should not be neglected (Muhammad, et al., 2021). Unfortunately, the number of the latter is very large in many areas of activity.

On this occasion, social networks had an important place, public library services in many countries being active on social networks. Through this method, institutions are involved in making important information available in the online environment. (Grigorescu, 2006)

In the “Manifesto for Digital Libraries”, UNESCO and the International Federation of Library Associations and Institutions (2018) emphasized that “the mission of the digital library is to provide direct access to information resources [...] in a structured and authoritative way and to thus linking information technology, education and culture to contemporary library services”. In the same context, UNESCO provided free access to the World Digital Library, which can be accessed at <https://www.wdl.org/en/>.

Advantages and disadvantages of a virtual library

As **advantages** can include:

- *immediate access to resources* - information is available at any time, being very useful especially for people who have an extended work schedule. Also, the time to search for information can be much faster. By entering a keyword, a lot of information can be found in an extremely short time (time may vary depending on the Internet connection);
- *fast and real-time* updating of information;

- *non-existence of physical limits* - information can be accessed by several people at the same time, even remotely. An internet connection can help anyone access information that is physically thousands of miles away;
- *variation of learning styles* - the wide variety of formats of materials adapted to the needs of applicants provides a wide range of resources to meet information needs and can be customized according to needs;
- *access for people with disabilities* - the virtual library is an alternative for people who have difficulty accessing information in a regular library. For example, the provision of audio and video materials can be very helpful for people with visual and hearing impairments;
- *information storage* - in the online environment the amount of information stored can be much higher than that available in physical libraries;
- *information retrieval* - information storage can help to reuse it at any time and in a fast time;
- *developing information skills and accumulating multiple knowledge* - a user can develop certain IT skills to a small extent, by using different search tools, as well as how to use an online database. Also, access to written, audio, video materials can help any user in assimilating new knowledge, such as language (Kobayashi, 2020).
- *multiple connections* - a digital library can provide a link to any other libraries or other information sites in all areas.

The category of **disadvantages** includes:

- *restrictions imposed by copyright law* - compared to traditional libraries, if a study has copyright they must be requested;
- *addiction to the internet connection* - although we live in an internet age, there is a not inconsiderable number of people who do not have access to the internet, which means that they cannot have access to information, the only way being the traditional one.
- *the need for experts in the construction and maintenance of the site* - like any content that has an Internet connection, is subject to certain risks such as cyber-attacks, poor internet connection. That is why it is necessary to hire IT professionals to prevent any inconvenience and to maintain both the software and the hardware.

According to Gunn (2002), virtual libraries can provide a powerful learning environment, with the support of qualified information professionals and careful design.

As a result of the restrictions imposed, the educational institutes changed the physical courses with the online ones, the students were forced to use electronic materials and to adapt to the e-learning model; and researchers rely primarily on electronic journals. Digital libraries and publishers have increasingly provided free content and organized custom collections. The human capital should remain the top priority of the administration and its development and access to information (Lopez Ruiz, 2014; Lincaru, 2018)

In Romania, universities have, to a large extent, eLearning platforms based on the most popular Moodle-LMS platform or on the most popular collaborative educational platforms designed by Microsoft and Google, which contain modules of correspondence groups, virtual classes, video conferences, presentation and testing (Edelhauser, 2020).

Research methodology

The need to develop a better understanding of the impact of digitalization, including the creation of digital collections and resources, on stock exchanges and society, in general, was also addressed by Hughes (2012). Thus, there is a great opportunity for cultural heritage organizations: to demonstrate that the digitization of collections has a positive impact on society, health, well-being, and its progress. Web libraries have become more competent and confident in terms of resource management and digitization. The library plays a vital role in the acquisition, storage, analysis, interpretation, and dissemination of information among library users (Asif, et al., 2020).

Schools are increasingly using digital tools, from those for managing the learning process to open online courses (e.g. MIT, Open-CourseWare, edX, Coursera), which is accentuated during the pandemic. As any emergency has a great social impact on people, libraries can outweigh their responsibilities and provide emotional and psychological support to the community towards social distancing, such as videos, online social gatherings, live video workshops. Digital library services need to explore how they provide digital services and how they respond to COVID-19 (Temiz, et al., 2020). More and more libraries have offered their digital services by organizing virtual exhibitions, increasing access to library resources, for example by increasing the number of electronic books and journals, CD-DVDs, etc. Among the services provided, we find educational materials, internet archives, free access to manuscripts, rare books, maps, photographs, and other important cultural documents from all countries (e.g. World Digital Library).

The research aimed to identify the implications of COVID-19 on libraries, as well as the reaction of the population to the measures taken by the authorities. The study was conducted in February, based on online questionnaires, on a sample of 230 respondents from urban areas, internet users, aged between 19 and 58 years. 28% of respondents are men and 72% women, respectively. Of the users of online cultural services, 23% said they often use this type of service, 49% use it only when they need to create certain projects and 28% analyzed the possibility of using online libraries more often.

Results and discussions

As the online environment has a very large number of users, from all age categories, we wanted to find out the frequency of accessing online libraries by age category. Thus, respondents aged between 19 and 30 often use the service, those in category 31-45 use it only when they need it, and those in category 46-58 rarely access such sites, preferring to use the Internet for other sites (e.g. social networks, news sites, multimedia).

We also wanted to find out the purpose for which online library materials are accessed. Most of the respondents stated that they use it for studies (73%), the rest stating that to get information (27%)

As mentioned earlier, the role of social media increased considerably during the pandemic. 56% were informed about the necessary materials on the pages of social media libraries, 39% consulted the materials mainly on official websites, and 5% used both options (fig. 1).

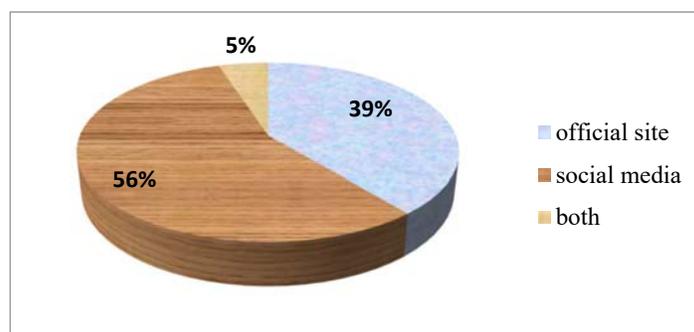


Figure no. 1. Accessing information from official sites or from social media

Source: authors

Regarding the quality of services and access to materials, we requested the opinion of the respondents regarding:

- the quality of the internet connection - 27% stated that they were very satisfied, 32% satisfied, 7% neutral, 16% dissatisfied and 18% very dissatisfied with the service of internet operators, and 93% did not have such problems (fig. 2);

- difficulties in using online library sites - 11% found the sites very difficult to use, 23% found them difficult to use, 38% found them easy to use, and 28% said the pages were very easy to use;
- the number of materials available online - 9% considers that there are many, 22% enough, 30% enough, 25% insufficient, and 14% considered that there is a total lack of materials.

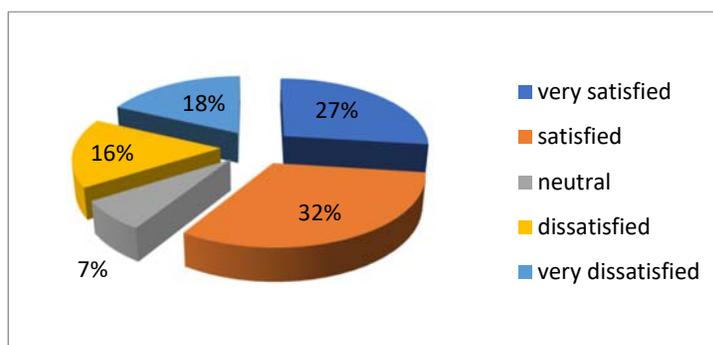


Figure no. 2. Quality of internet connection

Source: authors

To see what benefits were appreciated by respondents, we asked a multiple-choice question. Thus, all respondents (230) considered, regarding the benefits of using online libraries, that it is a great advantage that they can have access from anywhere, 172 consider that the risk of illness is low. 105 of the respondents consider it important that they no longer depend on a specific program to be able to access information, 208 are satisfied that they have access to a large amount of information in a short time, 143 that the information is updated quickly and in time real. 216 respondents appreciated the non-existence of physical limits, 149 the variation of learning styles, and 230 the fast connections to other sites (fig. 3). Regarding the measures taken by the authorities to support libraries during this period, 94% of respondents stated that they were not informed of the type of measures taken and 6% stated that insufficient measures had been taken (e.g. additional funding, reorientation of employees, use of buildings even at minimum capacity).

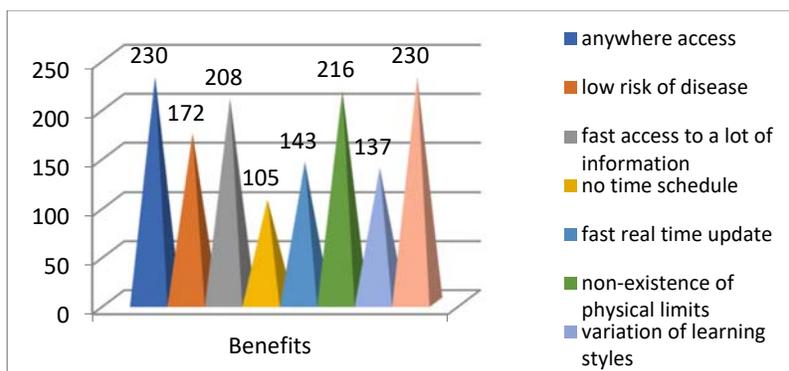


Figure no. 3. Benefits of using online libraries

Source: authors

We have considered that library managers can keep their services online even after the measures have been relaxed. Thus, we wanted to find out how many of the respondents will use these services in the future. 82% are thinking of using this type of service (for an indefinite period) and 18% want this service to be available but do not think they will use it as often. However, the majority of respondents (64%) want to use both traditional and online libraries, 25% prefer to use the library service exclusively online, and 11% said they prefer the traditional library (Fig. 4).

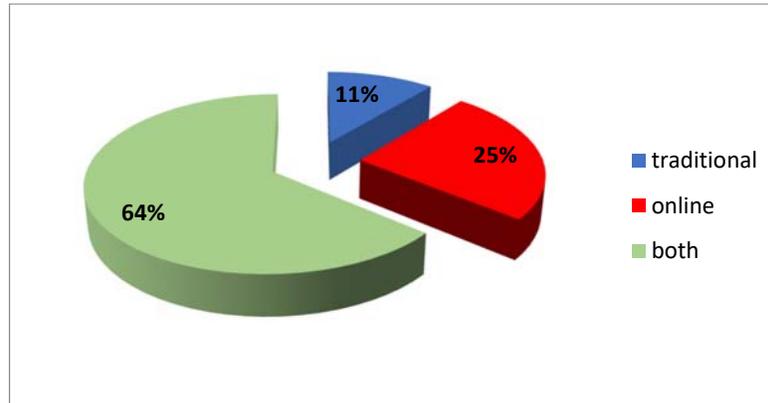


Figure no. 4. Future use of libraries

Source: authors

Conclusions

As the world of libraries has begun to change since the advent of the Internet, the need for information has spoken. Digitized libraries offer many advantages to information seekers, from accessing data from anywhere and anytime to diversifying the information found. The COVID-19 crisis has acted as a turning point, highlighting the many benefits of digital libraries that have demonstrated their potential. Thus, we can say that human development is promoted.

We believe that access to knowledge through virtual libraries can lead to the consolidation of inclusive knowledge societies only when everyone will be able to benefit equally from the content.

For libraries to create a more equitable higher education experience, they need stable sources of funding, either from the authorities or from institutions that can support existing services, while identifying new and relevant ways to meet the needs of the communities they serve. This help is important in unstable times, such as now, and by offering help to libraries, the winners will be all the people who want and need their services.

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Human Development and Its Impact on Entrepreneurship

Khanh Hung Doan¹

¹⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: doankhanhhung.hat@gmail.com

Please cite this paper as:

Doan, K.H., 2021. Human Development and Its Impact on Entrepreneurship. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 275-283
DOI: 10.24818/BASIQ/2021/07/036

Abstract

Entrepreneurship has an important role in the economic and social development of each country. Entrepreneurship creates prosperity, employment, and economic growth. Therefore, building a suitable business environment and promoting entrepreneurship is an important task of the government of each country. Among the factors affecting entrepreneurship, the human factor plays the most important role. In this article, the relationship between human development and entrepreneurship is confirmed through quantitative methods. The results of measuring the impact of human development on the entrepreneurship of countries in the world are also presented. Furthermore, the specific goal of this paper is to present two related indexes - the global entrepreneurship index and the human development index. The study also analyzes the relationship between entrepreneurship and human development through the assessment and comparison of these two important indexes. The study is based on data including 134 observed samples from the Global Entrepreneurship Report of the Global Entrepreneurship Monitor in 2019 and Human Development Report of United Nations Development Program in 2019. Besides, the implementation of analytical methods such as the graph method, regression method has proven to have a close relationship between the two indices. The results show that promoting human development contributes to entrepreneurship. Therefore, countries need to have policies that contribute to improving human development, which in turn can contribute to support and strongly promote the entrepreneurship of these countries. The results presented contribute to motivating studies that assess the impact of human development on entrepreneurship. The paper concludes with a discussion of the results and implications of the study at the end.

Keywords

Global entrepreneurship index, entrepreneurship, human development index

DOI: 10.24818/BASIQ/2021/07/036

Introduction

Nowadays, along with the economic development of countries, more and more enterprises are established and strongly developed. However, besides the advantages for development, there are also many risks and challenges of the economy, society, and business environment affecting enterprises (Priede-Bergamini, et al., 2019; Păunescu and Molnar, 2020). This requires enterprises to have strategies to change or respond to the increasing requirements as well as the changing external environment. From there, it can contribute to helping businesses survive and grow. The main factor for the growth of an enterprise is entrepreneurs (Mas-Tur and Soriano, 2014; Tu, et al., 2014). Today, entrepreneurs are hailed as a force contributing to economic growth around the world. Entrepreneurship is the main driving force for business development as well as socio-economic development.

Some researchers point out that the entrepreneurship characteristics of entrepreneurs are not only dependent on external social environments such as infrastructure, information technology, etc. (Ozaralli and Rivenburgh, 2016; Păunescu and Molnar, 2020) but are also influenced by the entrepreneur's internal factors (Păunescu, et al., 2018). These factors affect the individual

characteristics of the entrepreneur. Therefore, it is necessary to consider the influence of the human factor on entrepreneurship. Countries need to consider the impact of human development on entrepreneurship in a specific way, thereby choosing the right human development models, contributing to improving the characteristics of entrepreneurs. In addition, countries can accelerate economic growth as well as contribute to the survival and development of entrepreneurship and enterprises.

This paper provides a summary of relationships and the impact of human development on entrepreneurship. In addition, the identification of key trends and gaps between human development and entrepreneurship is also presented. After that, the research continues to generally assess the impact of human development on entrepreneurship based on an analysis of this relationship on surveyed countries around the world.

The research is conducted based on data collected from the Global Entrepreneurship Monitor (GEM) in 2019 as well as data collected from the Human Development Report of the United Nations Development Program (UNDP) in 2019. Finally, there are some conclusions and suggestions to improve research on the impact of human development on entrepreneurship. The paper is organized as follows: the first part refers to a brief literature review of the studies, the second part explains the methodology used by the authors in this paper and the third part includes the research results, while the last part concludes and discusses the research results of the paper.

Literature Review

The relationship between human development and entrepreneurship

Some studies show that there is an indispensable relationship among characteristics of the entrepreneur, entrepreneurial competency, business efficiency, and business success (Hastuti, 2020; Machmud and Hidayat, 2020). The research of Al Mamun and Fazal (2018) has determined that the entrepreneurial competency and characteristics of the entrepreneur are related to the business efficiency of enterprises. Entrepreneurs must pay special attention to improving their capabilities to boost their business efficiency and capacity. Besides, characteristics of the entrepreneur such as achievement need, extroversion, innovation, or risk-taking play a role in explaining the business success of an entrepreneur (Rauch and Frese, 2007). Also, the research on entrepreneurship shows that the personality traits of entrepreneurs influence entrepreneurship through entrepreneurial competency and business growth goals (Baum and Locke, 2004).

One of the factors that promote entrepreneurship is human development. Human development in different localities will impact differently on entrepreneurship. Some studies have concluded that most high-growth entrepreneurs tend to be concentrated around urban areas (Ács and Armington, 2006) or large research institutions (Audretsch and Lehmann, 2005). In addition, some factors of quality of life (such as education, healthcare, climate, entertainment, etc.) are also important in decisions about locations for business (Pittman, 2006). Furthermore, Croce (2019) discovered the differences in entrepreneurship among regions with different levels of urbanization, such as entrepreneurship in urban, remote, and rural areas.

Currently, there are many literature studies on the relationship between entrepreneurship and human development. Most studies confirm that human development and entrepreneurship are closely related (Georgiou, 2009; Gries and Naudé, 2011; UNDP, 2014; Ballesta, et al., 2020). Entrepreneurship has a positive impact on human development (Amorós and Cristi, 2010). In addition, Georgiou (2009) argued that entrepreneurship contributes to improving the human development index. Therefore, it can be said that entrepreneurship is positively related to the human development index.

Ballesta, et al. (2020) in their research has shown evidence that there is a relationship between entrepreneurship and human development. This evidence is given about the impact of entrepreneurship by the necessity for human development. Based on the results of econometric analysis by the regression method, Ballesta, et al. (2020) assumed that entrepreneurship has a strong impact on society and that this impact goes far beyond the impact of business on economic growth, including human development.

Gries and Naudé (2011) also formalized the role of entrepreneurship in human development. Gries and Naudé (2011) argued that the value of entrepreneurship will be reflected in whether people have the choice to become an entrepreneur or not. In particular, entrepreneurship is both a resource and a process, so that it contributes to the expansion of human abilities and other means, such as providing the ability to work, earn income and accumulate wealth. But being an entrepreneur can also be a valuable human activity (Gries and Naudé, 2011).

However, many studies have only researched the impact of entrepreneurship on human development, but few studies have researched the opposite effect of human development on entrepreneurship. Experts are debating how to predict and promote a person's entrepreneurial success (Hisrich, et al., 2007; Shane, 2008). Why do some individuals become successful entrepreneurs while others fail in business? Obschonka, et al. (2011) suggested that the development of entrepreneurship in general and entrepreneurial success, in particular, are related to related factors in the teen years and the interaction with personality in the growth stages of human development. Human development contributes to changes in people's perceptions, skills, and income, thereby promoting entrepreneurship (Obschonka, et al., 2011).

The research by Gries and Naude (2011) has argued that entrepreneurship develops only in environments conducive to the ability to take advantage of available opportunities. Gries and Naude (2011) also stated that the low level of human development at the national level may inhibit individuals from pursuing business opportunities. Besides, the proportion of the population that can be considered engaged in business activities is higher in developed countries than in less developed regions or countries (Ács and Amorós, 2008). Amorós and Cristi (2010) have experimentally demonstrated that entrepreneurship is related to human development and income inequality of these countries. In addition, the study of Obschonka, et al. (2011) investigated the success of the entrepreneur by testing a modeled path from the life cycle approach of human development. Obschonka, et al. (2011) found a person's business success tied to the entrepreneurial skills present when starting their own business. These skills in turn appear to be linked with both early development and phased personality characteristics (Obschonka, et al., 2011).

Furthermore, Maniyalath and Narendran (2016) examined the social determinants including Human Development Index (HDI) that predict entrepreneurship or not. The results show that the Human Development Index is one of the most independent and powerful predictors for female entrepreneurship and it is better than the national income factor (Maniyalath and Narendran, 2016). Furthermore, the analysis results in this study show that many of the socio-economic determinants such as national income per capita, HDI, GII, and the religious composition of the country, are related to female entrepreneurship. Therefore, Maniyalath and Narendran (2016) concluded that studies on the proportion of female entrepreneurship should take into account and adjust to human development index.

Human Development Index

Human Development Index (HDI) is an index that aggregates statistics of life expectancy, education (literacy rate, enrollment rate at different levels, and net attendance rate), income per capita, and some other factors in countries around the world (Stanton, 2007). A country has a higher HDI with higher life expectancy, higher education levels, and higher gross national income per capita (Stanton, 2007). HDI helps provide an overview of the development of a nation, with a focus on the individual characteristics of people. This index was developed by Pakistani economist Mahbub ul Haq and Indian economist Amartya Sen in 1990 (Stanton, 2007).

Human Development Index has been used by the United Nations Development Program to measure the development of a country through its Annual Reports of Human Development (Stanton, 2007). The Human Development Report has been published by the United Nations Development Program (UNDP) since 1990 in the form of independent discussions. These reports have an analytical and empirical basis for development issues, trends, and policy (Stanton, 2007).

Besides, HDI is a general measure of human development. The HDI takes values from 0 to 1 where 1 is the highest attainable level. It measures the average achievement of a country according to the following three criteria:

- Health: A long and healthy life, measured by average life expectancy.
- Knowledge: Measured by the average number of years of schooling and the expected number of years of schooling.
- Income: Living standard measured in GNI per capita.

Since 2010, there has been a change in the calculation of the Human Development Index (UNDP, 2010, 2013). The indicators of the above criteria are calculated using new formulas aimed to limit the inequality in assessment. In these reports, UNDP (2014) asserts that economic development is not necessarily ahead of human development. Instead, a country can enhance its citizens by promoting education, health, nutrition, and job skills, which in turn can lead to increased employment and development of people speaking in general (Ranis, et al., 2000).

Global Entrepreneurship Index

The Global Entrepreneurship Index is “*a composite indicator for the health of the entrepreneurship ecosystem in a given country*”. This index presents a quality assessment of entrepreneurship as well as the support for the startup ecosystem of each country. Besides, this index will determine the level of the country's entrepreneurship: “*the overall GEI score, scores for Individuals and Institutions, and the pillar level*” (Ács, et al., 2019). The Global Entrepreneurship Index is provided by Global Entrepreneurship Monitor (GEM). The GEM program explores and evaluates the role of entrepreneurship in national economic growth, and this program has developed a worldwide survey of entrepreneurship. Since the GEM project's inception in 1999, GEM has recently investigated entrepreneurship in more than 130 countries. The main purpose of the GEM project is to measure entrepreneurship in each country. All GEM data is published and collected from the website www.gemconsortium.org, as well as the research report of entrepreneurship by GEM. This database is widely used in entrepreneurship research by many different researchers (Filculescu, 2016; Harms and Groen, 2017) because this data allows for evaluation comparison between different countries of the world as well as in-depth analysis of factors affecting the entrepreneurship of each country. This helps to experimentally solve the characteristics of entrepreneurship activity at the national level.

The Global Entrepreneurship Index evaluates the growth entrepreneurship comprehensively through the following pillars: opportunity perception, startup skills, risk acceptance, networking, cultural support, opportunity perception, technology absorption, human capital, competition, product innovation, process innovation, high growth, internationalization, risk capital (Ács, et al., 2019).

The research results on entrepreneurship of the Global Entrepreneurship Report help leaders and researchers have an overview as well as the detail about the entrepreneurship of not only each country but also around the world. From there, researchers, leaders, and policymakers can propose solutions and policies to promote entrepreneurship in their own countries.

Research methodology

Research Goal

The research goal is to validate the hypothesis that human development influences in a positive way to the entrepreneurship, through evaluating and comparing two important criteria, the Global Entrepreneurship Index and the Human Development Index by using statistical analysis methods.

Data Collection

The entrepreneurship data in this study are collected based on GEM data in 2019. The total number of observed samples in the GEM data in 2019 is 137 observed samples corresponding to 137 different countries and regions. In addition, human development data is also collected based on data from Human development reports in 2019 of the United Nations Development Program (UNDP). The total number of countries and regions from the Human Development Report in 2019 included 189 countries and regions, corresponding to 189 observed samples collected.

Due to the difference in the number of observed samples between the two reports, we analyze and use the observed samples appearing in both reports. The total number of observed samples collected for

this study is 134 observed samples. The author will use 134 observed samples to analyze this study. The descriptive statistical results of the observed samples of entrepreneurship and human development collected from GEM and UNDP are presented in Table 1. The mean value of GEI is 33.8, which is rated at a medium level. Besides, the average value of the Human Development Index is 0.7495, which is rated at a high level.

Table no. 1. Descriptive Statistics

	Mean	Std. Deviation	N
GEI	33.811	19.2891	134
HDI	0.74951	0.148170	134

Source: Author's own research results.

Data analysis

In this paper, the graph analysis and regression analysis method is used to analyze the impact of human development on entrepreneurship. Regression is an analytical method to consider the effect of the independent variable on the dependent variable when the value of the independent variable changes. In particular, the purpose of the study is to examine how human development affects entrepreneurship. If the Sig. value of the F-test is statistically significant (Sig. <0.05), meaning that the regression model is valid. Besides, if Sig. value of the T-test corresponding to the independent variable (HDI) is statistically significant (Sig. <0.05), the independent variable HDI has an impact on the dependent variable GEI. The steps of data processing, descriptive statistics, graph analysis, and regression analysis are performed using SPSS 23.0 software.

Results

The impact of human development on entrepreneurship

Firstly, the study uses graph methods to determine the type of connection between the two factors: entrepreneurship and human development. Through Figure 1, from the layout of the observation points on the graph, it can be observed that there exists a relationship between entrepreneurship and human development. The relationship between the two factors is a positive one. As the value of HDI increases, there is an increase in the value of GEI. Initially, the growth of GEI is quite low. If the value of HDI increases after 0.8 there is a strong increase in GEI, which is shown in Figure 1 correlogram.

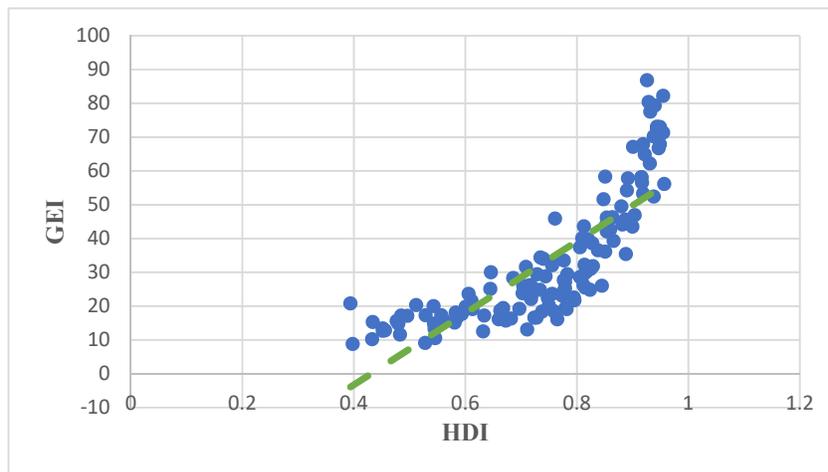


Figure no. 1. Correlogram between GEI and HDI in 2019

Source: Author's own research results.

To analyze the statistical connection between the two variables HDI and GEI, the study uses Pearson Correlation coefficient. The statistical results are presented in Table 2. The result shows that HDI and GEI are closely and directly correlation (Pearson Correlation = 0.815). Furthermore, Pearson Correlation coefficient is also statistically significant with a significant level of 0.05 (Sig. = 0.000 <0.05).

Table no. 2. Correlations

		GEI	HDI
Pearson Correlation	GEI	1.000	0.815
	HDI	0.815	1.000
Sig. (1-tailed)	GEI	0.000	0.000
	HDI	0.000	0.000
N	GEI	134	134
	HDI	134	134

Source: Author's own research results.

To analyze the impact of Human Development Index (HDI) on Global Entrepreneurship Index (GEI), the research conducts a regression analysis based on the following model:

$$GEI = \beta_0 + \beta_1 \cdot HDI + \varepsilon \quad (1)$$

The analysis results (in Table 4) show that model (1) is valid with the significant level of 0.05 because of the Sig. value of the F-test is statistically significant (Sig. = 0.000 <0.05). Moreover, the results (in Table 3) also show that the variation of the HDI explains 81.5% from the variation of GEI (the value $R^2 = 0.815$). In addition, the results of the Durbin-Watson test show that the model does not have the autocorrelation phenomenon.

Table no. 3. Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin - Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	0.815 _a	0.664	0.661	11.2253	0.664	260.717	1	132	0.000	0.812

a. Predictors: (Constant), HDI

b. Dependent Variable: GEI

Source: Author's own research results.

Table no. 4. ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
1	32852.201	1	32852.201	260.717	0.000 ^b
	16632.972	132	126.007		
Total	49485.173	133			

a. Dependent Variable: GEI

b. Predictors: (Constant), HDI

Source: Author's own research results.

The results of the regression analysis based on the econometric model are estimated as shown in Table 5. In which, the results of regression values of independent variables and the dependent variable are shown as follows:

$$GEI = - 45.690 + 106.071 \times CPI \quad (2)$$

In addition, the results show that the coefficient of the variable HDI is statistically significant with a significant level of 0.05 (Sig. = 0.000 <0.05). The analysis results also show that when the dependent variable HDI increasing by one unit will cause a grown of 106 units for GEI.

Table no. 5. Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		
	B	Std. Error	Beta			Lower Bound	Upper Bound	
1	(Constant)	-45.690	5.018		-9.105	0.000	-55.616	-35.763
	HDI	106.071	6.569	0.815	16.147	0.000	93.076	119.065

a. Dependent Variable: GEI

Source: Author's own research results.

Abbreviations and acronyms

HDI – Human Development Index

GEI – Global Entrepreneurship Index

Conclusions

Human development is always an important goal of any nation and society. This is the ultimate goal for the development of a nation. From that human development, it can promote the development of other aspects, such as other national and social problems, including entrepreneurship. When a person wants to be an entrepreneur, they need skills, knowledge, vision, etc. It is necessary to enter into entrepreneurial activities or startup businesses. Human development contributes to promoting and creating a foundation to provide knowledge and skills necessary for people as well as for entrepreneurs. Therefore, enhancing human development will contribute to increasing and creating more opportunities for national entrepreneurial activities.

Research has confirmed this hypothesis. The results show that there exists a strong connection between the two indexes (human development index and global entrepreneurship index) through statistical analysis and mathematical analysis methods. Besides, human development has a positive impact on the entrepreneurship of the country. This influence is quite powerful. When Human Development Index increases by one unit, Global Entrepreneurship Index will increase by 106 units. In addition, the results of the graph method on the relationship between entrepreneurship and human development also show that for countries with low and moderate human development (HDI < 0.8), the impact level of human development on entrepreneurship is not high. However, for countries with a high level of human development (HDI > 0.8), human development will have a high impact on entrepreneurship. It makes sense for national policymakers to develop entrepreneurship and human development policies that match the realities of their own country.

Besides, this study also has certain limitations related to the nature and characteristics of the data used for analysis in this paper. The samples are based on global structured surveys and analyses conducted by GEM and UNDP. However, the number of samples used in the paper is limited, not covering all of the countries in the world. Furthermore, based on the available data, the study is also unable to analyze more details of the effects of human development on entrepreneurship.

Acknowledgement

This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.

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The Impact of Implementing New Technologies in International Trade and Logistics

Mihaela Gabriela Belu¹, Ramona Iulia Dieaconescu², Dorel Mihai Paraschiv³ and Ioan Popa⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: belumihaela@gmail.com; E-mail: ramona.tartavulea@rei.ase.ro

E-mail: dorel.paraschiv@ase.ro; E-mail: ioan.popa.rei@gmail.com

Please cite this paper as:

Belu, M.G., Dieaconescu, R.I., Paraschiv, D.M. and Popa, I., 2021. The Impact of Implementing New Technologies in International Trade and Logistics. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 284-293 DOI: 10.24818/BASIQ/2021/07/037

Abstract

The paper aims to identify new technologies (big data, blockchain, Internet of Things, 3D printing, 5G technology etc.) and their impact on the specific activities related to international sales contracts: international logistics and international payments. In this context, it should be noted that Revolution 4.0 offers participants in international trade new opportunities for easier management of the transactional mechanism.

The study is based on theoretical and empirical research aimed at investigating the impact of new technologies on international trade flows and the development of international businesses. The findings confirm that these new technologies are rapidly developing and spreading and they have a positive effect on promoting international trade relations and on the environment. The results of our survey on the implementation of new technologies in the Romanian business environment show that employees are familiar with most of them, but the percentage of actual utilisation in companies is rather small.

Keywords

international trade, logistics, blockchain, supply chain management, international payments and finance

DOI: 10.24818/BASIQ/2021/07/037

Introduction

The implementation of new technologies is promoting technical progress and allowing the configuration of more efficient logistic solutions and innovative payments, having an impact on costs and transparency of the global supply chain. The digitization of business processes began in 1960 with the first efforts to promote electronic data exchange. These processes have become more complex over time, new applications have emerged and new technologies have been implemented that have improved the flow, speed, reliability and security of information transfers. Data management and exchange between participants in the global supply chain are essential sources of innovation and allow a better understanding of customer needs. Digital interoperability is a key aspect for information exchange between participants in international supply chains (Pan, et al., 2021).

Technological progress leads to the redesign of current business models and according to Raj and Seamans (2019), “the nature of business activity has shifted dramatically over the past decade”. The scale of these changes requires a profound change in the global supply chain, in terms of cybersecurity and the incorporation of resilience objectives into all supply chain processes. In the field of foreign

trade, the business model is evolving, the emphasis is on the continuous management of information, on the collaboration of the participants involved in the transactional mechanism, but also on the quality of services.

One of our objectives is to highlight the importance of applying new technologies in international trade activities. It is necessary for the actors involved in international commercial transactions (exporters, importers, international trade auxiliaries, commercial banks, etc.) to understand the advantages offered by these new technologies (simplification of the transaction mechanism, transparency, cost reduction) and to implement them in activities related to international commercial contracting, logistics activities and international payments (IHS Markit, 2018).

Review of the scientific literature

New technologies and the 4.0 Industrial Revolution

The 4.0 Industrial Revolution is the term used to describe the main trends and technologies in manufacturing, automation and data exchange with huge impact in process improvement, increase of efficiency and optimization of resources use. These technologies are driving forces for the development of international trade, making it much easier for businesses across the globe to connect with each other and with their customers. Flexibility and rapid response became the main strengths in the eyes of global customers.

In Table 1 we identified the main technologies and synthesized the most important characteristics of each one, in order to understand their potential impact in international business.

Table no. 1. New technologies – main characteristics and benefits

Technology	Main characteristics
E-commerce platforms	- use a set of technologies that support big volumes of e-commerce transactions. The main types of e-commerce platforms are based on web sites, Electronic Data Interchange, e-procurement systems and Business-to-Business hubs (Albrecht, 2007).
Digital documentation	- conversion of physical documents into digital ones. The storage of data in digital format brings many positive effects like streamlining activities, reducing storage space, faster access to information and less negative environmental effects induced by extensive paper use.
Internet of Things (IoT)	- allows the interconnection, via the Internet, of smart devices that share specific information and data with each other and with other digital remote platforms for real-time decision-making by users or other smart devices through machine communication. The global base of installed IoT devices is expected to experience an exponential growth by 2025: estimates are around 73 billion devices (IHS Markit, 2018). In the field of logistics, IoT offers a huge opportunity to make services more efficient and cost-effective by: (a) obtaining real-time data, which allows for flexible asset management and added value for the customer; (b) shipment monitoring; (c) optimizing routes; (d) improving the delivery of goods. This technology also allows data collection in order to optimize storage capacity, planned maintenance of fixed assets and adaptation of logistics configuration in line with dynamic market variations.
Industrial Internet of Things (IIoT)	- specific IoT application for the industrial environment, used to obtain the data needed to improve product traceability and make real-time production decisions. In both cases, the reliability and security of the data are fundamental. Processing large volumes of data obtained from different sources helps to improve decision-making and process automation by setting appropriate parameters.
5G technology	- is the latest standard for broadband cellular networks which can provide internet access speeds 10 to 100 times faster compared to previous existing technology, improves cloud-based services and favors the widespread use of IoT.
Cloud computing	- allows users access to technology infrastructure (hardware) through external providers that offer shared and unlimited access to data servers, storage, applications and services over the Internet, based on a pay-as-you-go model. This model has undeniable advantages in terms of infrastructure costs and scalability, although it requires uninterrupted high-speed internet access and strict security controls to protect critical applications and data (McKinsey, 2018).
Big data	- consists of large volumes various of data that can be considered complementary to IoT technology. This data is managed and converted into information that are useful for strategic planning and decision-making processes. Big data has four basic characteristics (the 4 V): (1) volume: the amount of information stored (gigabytes, terabytes, petabytes, exabytes); (2) speed: the speed at which data streams are created and captured; (3) variety refers to the diversity of data, their

	mode of representation; (4) the veracity, ie the accuracy and precision of the data. Big data can be generated by sensors and the collection, modelling and interpretation of sensor data plays a critical role in the process of understanding and capitalization of this valuable resource (Perera et al., 2013).
3D printing	- creates objects by overlapping (printing) successive layers of material based on a 3D model or drawing. 3D printing in an industrial setting involves the printing of polymer parts locally, which could bring significant changes in some value chains. For example, in car production, it could change the operating model by shortening the value chain, making it easier to make parts and finished products in the same factories, saving time and transportation costs, while also providing greater flexibility in production as a response to changes in customer demand or preferences.
Robotics and automation	- automation refers to the use of systems and machines in manufacturing that can replace several tasks that were previously done manual. This is not a new concept, but the latest trends imply that the systems and machines are computer-controlled, which brings even more efficiency and replaces human labor to a much larger extent than it was possible before. Robotics refers to machines that are capable of carrying out complex tasks in an automatic manner. Industrial robots may be automatically controlled and reprogrammable (Raj and Seamans, 2019).
Artificial intelligence	- a machine learning system that allows reproduction of human skills and is generally used for tasks that require repetitive movements, replacing human labor with that of machines that operate independently. Artificial intelligence also facilitates the identification of models and triggers specific actions based on the interpretation of a large volume of data from different sources. In logistics, artificial intelligence is mainly used to forecast demand, which allows flexible and rapid adjustment of stocks and optimization of product distribution in order to reduce costs and delivery times.
Augmented Reality	- a technology that uses visualization devices to combine reality in an environment with 3D information and vital computer information that are superimposed on a screen to improve decision making processes. In logistics, it is mainly used in warehouse management to improve the selection, quality control and packaging processes of products, which are routine tasks, time consuming and financial resources. The use of AR could substantially reduce logistics costs and eliminate errors (for example, packaging errors that delay deliveries or lead to product returns), improving delivery times and the quality of customer service.
Blockchain technology	- is based on networks that allow non-trusting members to interact in a decentralized way, without the need of a central authority or a trusted intermediary, making reconciliation between transacting parties faster; a characteristic of blockchain networks is the use of cryptography; blockchain can be viewed as a log whose records are batched into timestamped blocks (Christidis and Devetsikiotis, 2016).

Application of new technologies in activities specific to international trade

In the current context - the industrial revolution 4.0. and the specific conditions under which international commercial transactions take place, the implementation of new technologies is a solution for parties involved in international trade: international trade companies, international logistics companies, customs authorities, commercial banks, government institutions and agencies.

New technologies and innovation in logistics

The process of innovation in logistics started a long time ago: in a first phase (logistics 1.0) the mechanization of road, rail and maritime transport took place; in the second stage, in the 60s, the automation of products handling activities took place, by introducing containerized transport (logistics 2.0); the third phase (logistics 3.0) had as main results the introduction of electronic customs clearance, the Transportation Management System (TMS) and the Warehouse Management Systems (WMS); in the last stage, currently, the automation of logistics activities takes place (logistics 4.0) by implementing new technologies, big data, IoT, blockchain, robotics, artificial intelligence and augmented reality.

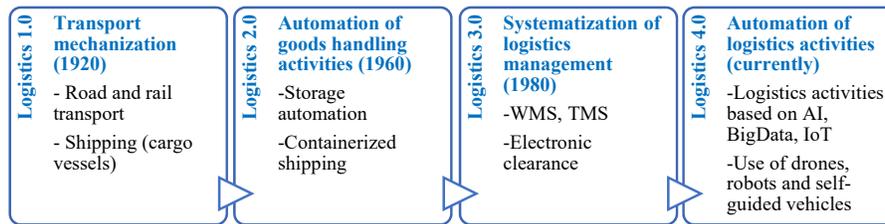


Figure no. 1. Innovation in logistics

Source: adaptation after Turan, et. al., 2021

The application of blockchain technology in logistic activities specific to export-import operations could lead to the following results (Hackius and Petersen, 2017): transparency - you can easily track the path of products from producer/seller to final consumer and all the processes that the products have gone through are visible, from the manufacturing phase to packaging and delivery (Williams and Gerber, 2015); easy management of the documents necessary for the transaction, both in the stage of delivery of goods and collection of the value of goods and in the phase of taking possession of purchased goods; supply chain optimization and cost reduction; document management and transport tracking storage of large amounts of data in a decentralized way, information is processed quickly and is accessible in a timely manner (Dobrovnik, et al., 2018); improving security, as the information stored in blocks is unalterable and immutable, which means that it is almost impossible for someone to partially modify it, because the necessary calculations are performed by several computers in a decentralized way. Several researches have been conducted for proposing solutions to improve security in IoT networks using blockchain technology (Raj, et al., 2021).

In customs clearance processes, those activities required in the case of extra-Community trade, the advantages of blockchain are the following: physical control of goods is much easier, the number of physical documents is reduced and allows end-to-end tracking. Customs fraud is significantly reduced, thanks to blockchain technology, because it is not possible to change the information entered in the documents (Dobrovnik et al., 2018).

Implementing new technologies in payments and international financing

In international trade, the parties - the exporter and the importer - are in the situation of opposition of interests, specific to the parties in a sales contract: the seller prefers to deliver after being paid, the buyer prefers to pay after receiving the goods. The international dimension of the transaction - it takes place in the global space, the parties are part of different cultures, conflict of laws may arise, etc. - emphasizes the trader's dilemma: to be the first to fulfill his commitment, trusting that his partner will fulfill, in turn, the contractual obligation, or not to trust and ask his partner to perform the delivery/payment, transferring to him the risk of trust. Therefore, either the parties rely on trust, and then the transaction can take place directly (with the risk of failure of the trusting party), or the parties prefer not to assume this risk and resort to a mechanism to guarantee the execution of the counterpart service (Popa and Belu, 2018). Starting from the merchant's dilemma, the parties of an international sales contract can opt for simpler but riskier payment options, or they can opt for payment methods that offer greater security, but which involve a more complex management and rather high costs. The most used traditional method of payment in international trade is the documentary letter of credit, followed by payment in open account terms. In the classic version, the procedure of payment/financing by documentary letter of credit is a complex one, which involves a large number of participants, a lot of documents and high costs. The adoption of blockchain technology in the case of payment by documentary letter of credit would simplify the payment process, document management and reduce the costs related to this payment method (Shuchih et al., 2019). The development of a framework that integrates blockchain and IoT technologies can provide data security for decentralized payment (Yu, et al., 2018).

Financing is essential for international trade. According to a study, approximately 80% of export-import transactions are financed through traditional techniques (e.g documentary credit) (WTO, 2016). These financing techniques usually involve high costs and complicated procedures due to the required documents and the large number of participants involved in the process of an export-import operation.

The application of blockchain technology in the international financing process results in the simplification of financing procedures and obtaining financing in a shorter time.

Impact of new technologies in international trade

New technologies are increasingly used in the global value chains, in the phase of raw materials acquisition, in the production process, but also in the marketing of products on the global market. In international logistics activities, both inbound logistics and outbound logistics, blockchain technology is used; companies in the field (eg Maersk, Kuehne+Nagel) together with IBM have launched solutions designed to simplify and secure all logistics activities. Thanks to this technology, transport costs are reduced, all delivery information is integrated on a single secure platform, which is accessible to the parties involved in the supply chain (carriers, shippers, exporters, importers etc.).

In the process of financing, respectively payment in international trade, blockchain-based applications have been developed. For example: in 2016, Barclays and Wave funded an export-import operation using blockchain technology; Digital Trade Chain Consortium, renamed We.trade; Batavia is a trade finance platform, founded by a consortium of Bank of Montreal, CaixaBank, Commerzbank, Erste Group, IBM and UBS (Belu M., 2019). Blockchain offers a secure manner of exchanging goods and services, makes value chains more agile and lowers the cost of trade in general (Ahram, 2017).

Paperless trading is promoted by framework agreements between countries to facilitate cross-border trade (Hong, 2017). The role of the document circuit is to make the connection between the two phases - logistic and financial - of the export-import operation: the delivery of the goods is attested by documents and the payment of the goods is made against documents (Popa, 2008). As shown in the literature (Barelier et al., 2020), success in international trade is largely determined by an efficient management of commercial and financial documents.

The use of blockchain allows digitization of documents specific to international trade transactions. There are initiatives in this regard: (1) Smart Bill of Lading provides solutions for digitizing the transport document; (2) CargoX platform allows companies to store and make available original transport documents using the Ethereum network - the largest blockchain platform for smart contracts (Hu et al., 2021).

Implementing both blockchain and IOT technologies can facilitate the „sharing of services and resources leading to the creation of a marketplace of services between devices and allow the automation in of several time-consuming workflows, in a cryptographically verifiable manner” (Christidis and Devetsikiotis, 2016); blockchain-based IoT ecosystems provide modularity, data parsimony and availability (Lockl et al., 2020). There is an increasing number of applications for smart contracts, but there are still security related issues that need to be addressed by code analysis and testing by software engineers (Vacca et al., 2021)

To see to what extent companies with international trade have adopted new technologies, we first consulted a study conducted by the World Economic Forum, based on the responses of 340 companies involved in the field (World Economic Forum, 2020). The most transformative technologies implemented in the international trade activity were identified (see Figure 2), namely: Internet of Things, digital payments, e-commerce platforms, cloud computing - voted by over 50% of respondents and 5G, artificial intelligence, digital documentation, smart border systems, blockchain, robotics and automation, open supply chain information system - voted by over 30% of respondents (World Economic Forum, 2020).

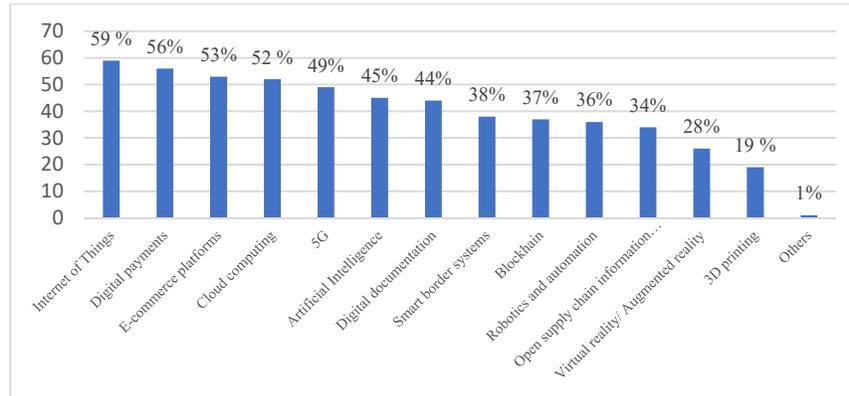


Figure no. 2. Most transformative technologies for trade

Source: World Economic Forum, 2020

Among the results expected by the respondents following the implementation of new technologies in the activity of international trade are: reduction of costs associated with international trade transactions and ease of conduct (65%), an increase in the volumes of trade for new products and services (55%), the possibility for smaller companies to be more involved in international trade (44%). Also, approximately half of the respondents consider that the implementation of new technologies will also have a positive impact on the environment (see Figure 3).

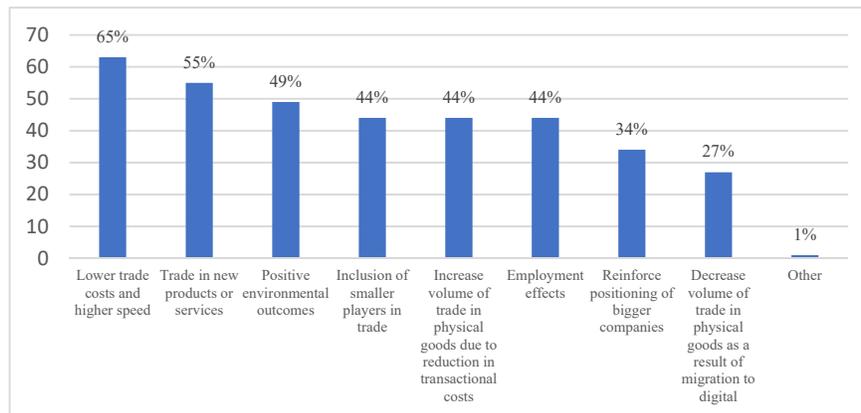


Figure no. 3. The Impact of TradeTech

Source: World Economic Forum, 2020

Research methodology

Our research methodology is based on two main approaches, theoretical and empirical, thus it consists of two stages. First we used a theoretical approach to gain indepth knowledge about the main trends in new technologies and how they are impacting the development of global trade and international business. We selected the most relevant articles in the scientific literature, sintetized the esential information about the new technologies (The Internet of Things, big data, cloud computing, 5G technology, 3D Printing, blockchain technology etc.) and then analyzed their impact on activities related to international trade. Subsequently, the main challenges faced by companies with foreign trade activity were presented, using the synthesis and method of logical research.

The second part of our research consisted of conducting an online survey. Our questionnaire is structured in two main parts: the first one consists of questions aimed at collecting basic data about the company where the respondent is employed (main sector of activity, headquarters location etc) and the

second one has key questions that aim to gather information about the degree of implementation of new technologies in those companies and the perceived impact from the employee’s point of view. Also, the last question addresses the options/recommendations that the employees have for future implementation of modern technologies in their company, in order to further develop their activity. Prior the start of the survey, we conducted a few interviews with some of the respondents in order to eliminate sources of misunderstanding with regards to the questions included in the questionnaire. Our respondents are employees from companies that operate in the Romanian market and also have international operations. The main scope of this survey is to see if the new technologies are familiar to Romanian employees, if they are implemented in companies from our country and what is the employee’s perspective on the future trends of new technologies implementation in their companies. The survey was conducted in March 2021, and the total number of respondents was 45. We employed convenience sampling and our sample is not representative from a statistical point of view, but we consider it offers a glimpse on the extent to which new technologies have entered the Romanian business environment.

Results of the study regarding the use of new technologies in the Romanian market

Using the study published by World Economic Forum (WEF, 2020) as a starting point, we conducted a survey, at a much smaller scale: 45 respondents from companies operating on the Romanian market. The profile of our respondents shows that approximately half of the companies have the main headquarter in Romania and the other half have the main headquarter abroad; the sectors of activity are very diverse: Logistics, FMCG, Energy sector, Agriculture trading, IT, Online retail, Telecommunications, Automotive, Business process outsourcing, Customer service, Fashion, Gas & Oil, Import – Sales, Pharmaceutical, Trade and services and others. Based on the answers given for our first question, we eliminated from our analysis the responses given by employees from companies which have only local operations and are not involved in international trade. So, we analyzed a total of 40 responses and we will further present our results. The employees that completed the survey were largely familiar with the new technologies, and knew about most of the ones included in our questions. The technologies which are most widely known to our respondents are: digital payments (90,2%), e-commerce platforms (80,5%), blockchain (75,6%), digital documentation (75,6%), artificial intelligence (75,6%), robotics and automation (75,6%). The technologies that are the least known are augmented reality (only 39% are familiar with what this means) and big data (48,8%). Our next question was directed at finding out which of these new technologies are currently implemented or under implementation in the companies which participated in the study (Figure 4).

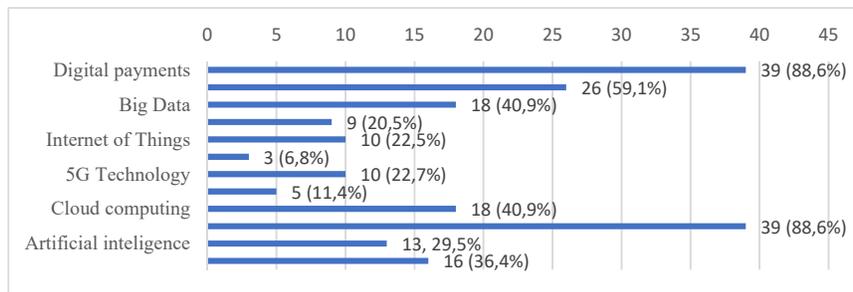


Figure no. 4. Current state of implementation of new technologies in companies from the Romanian market

As seen in Figure 4, there is a high degree of implementation of digital documentation and digital payments (88,6%), followed by e-commerce platforms (59,1%) and cloud computing (40,9%). The least accessible technologies among companies in Romania are 3D printing (only 6,8% are using it), augmented reality (11,4%) and blockchain (20,5%).

Respondents expect that implementing new technologies in the activity of their company will result in lower trade costs and higher speed (62,2%) and have an impact on employment (60%). Regarding the effects on the global environment in general, the perception is that the the new technologies will rather

reinforce positioning of bigger companies rather than help the inclusion of smaller players in international trade. Over half of our respondents (53,3%) consider that the implementation of new technologies will generate positive environmental outcomes. More details about the expected results of new technologies implementation are detailed in Figure 5.

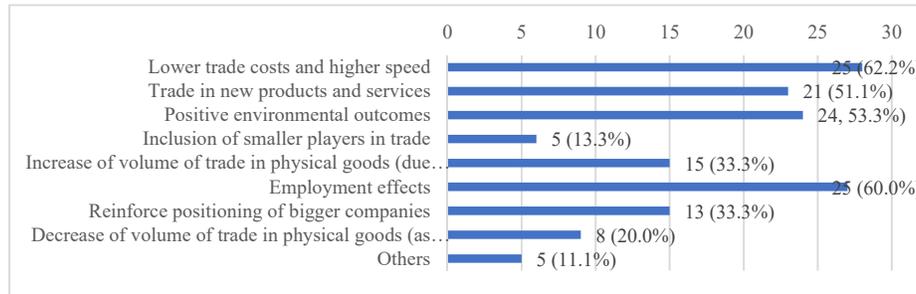


Figure no. 5. The impact of new technologies on companies and the global market

To find out which is the future perspective of these companies, our last question referred to identifying the best options for further development, in terms of new technologies implementation. Most respondents consider that robotics and automation (53,5%) is the most beneficial technology for the development of their company, followed by artificial intelligence (51,2%) and blockchain (48,8%).

Conclusions

Currently, in the practice of international trade we can talk about the implementation of solutions based on new technologies, meant to help the process of planning and managing activities at the level of the global value chain. New technologies, such as blockchain and artificial intelligence are promoters that can lead to innovative solutions in the fields of international logistics and international payments. If the parties involved in international trade - companies, government decision-makers, international organizations - adopt applications / solutions based on new technologies, this will lead to a change in the business model for international companies.

The results of our study present the modern trends in new technologies and the extent to which companies worldwide and especially in Romania, have adopted them in international trade activities. Though employees that completed our survey, are familiar with most of the new technologies (11 out of 12 technologies are known to over 50% of respondents), the current state of implementation is rather small scale in Romania (only 3 out of 12 technologies are implemented in over 50% of companies included in our study). According to our findings, the implementation of new technologies is expected to generate positive environmental effects, lower trade costs and higher speed for international trade activities and increase of volumes for new products and services.

Under current conditions, new technologies can be a solution for relaunching international trade. The reconfiguration of global logistics chains, a topical issue, must take into account the implementation of these technologies in both inbound logistics and outbound logistics, as well as in international payments.

For our future research we want to extend our survey by increasing the sample of respondents and adding new questions regarding the impact of new technologies implementation on the sustainability of businesses.

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Gastronomic Dobrudja, Between Identity and Identities

Laetitia Casangiu Siea¹

¹⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: laetitia.casangiu@gmail.com

Please cite this paper as:

Casangiu Siea, L., 2021. Gastronomic Dobrudja, Gastronomic Dobrudja, Between Identity and Identities. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 294-301 DOI: 10.24818/BASIQ/2021/07/038

Abstract:

This paper aims to identify the specific gastronomic dishes of Dobrudja, a historical region in the South-East of Romania. While the previous papers were based on an analysis considering the inhabitants' perspective or from testimonies of foreign travellers who visited this land surrounded by bodies of water, this paper is based on the information obtained by the distribution of a survey which was filled in both by respondents who are very familiar with this region and by respondents who have never lived in Dobrudja. Unfortunately, for the people who do not have a direct connection with Dobrudja, the gastronomic aspect is not adequately known, a more thorough promotion at local, national and international levels being necessary, starting from the elements which are considered representative, and which have been highlighted in this study. Then, the data, which was collected, processed and classified, may be used for registration purposes, at a European level as new traditional and local products such as PDO, PGI or TSG or at national level as "traditional products". Moreover, they may contribute to the development of local tourism by adding ethnical and gastronomical elements to the existing tourism opportunities.

Keywords

culinary, Dobrudja (Dobrogea), food, food identity, gastronomy, multicultural values, traditional food
DOI: 10.24818/BASIQ/2021/07/038

Introduction

"Tell me what you eat, and I shall tell you what you are" (Brillat, 1825) is the advice given by a famous aphorism of Brillat Savarin, which entered the common language and can therefore be considered as authentic today as it was two hundred years ago. Nutrition defines all human beings from both an identity and social perspective, it establishes their belonging to a certain group and differentiates them from the others, thus representing a primordial identity factor: "even if the human being can eat anything, or maybe due to this, they do not actually eat everything but they choose what to eat, according to certain criteria related to the economical and nutritional dimension of this gesture, not less than the symbolic values with which nutrition itself is endowed. By these means, food is configured as a decisive element of human identity and one of the most efficient instruments to communicate it" (Montanari, 2018, p. 12). Nutrition, first through the transformation of primary natural products with the use of fire, then by other more elaborated means of cooking and preservation, made the difference between primitive people and animals, or other entities: "Besides conviviality rules and rituals, food itself has had an essential role in establishing human identity. Food, especially meat, differentiated human beings from gods" (Flandrin and Montanari, 1997).

This connection is very complex, "It combines at least two different dimensions. The first runs from the biological to the cultural, from the nutritional function to the symbolic function. The second links

the individual to the collective, the psychological to the social”. (Fischler, 1988) Nutritional lifestyles also indicate the contrary: “one way to establish that a person is not a member of a certain cultural group through diet” (Kittler, Sucher, Nelms, 2012).

As “all nutritional cultures have their own identity which communicates its origins, processes of transformation, economic role propagated in the past and in present days and the social composition of the population” (Seminario internazionale di geografia medica, 2005, p.161), this study aims to highlight some of the identity gastronomic hallmarks of Dobrudja, a region in the South-Eastern part of Europe, consisting of the counties of Tulcea and Constanța. As a historical region, Dobrudja represents an atypical community model, comprising 18 different ethnicities, according to the data from the latest census of 2011. Therefore, the total population of 897,165 inhabitants (213,083 for Tulcea and 684,083 for Constanța) consists of: Romanians, Turks, Tatars, Russians, Ukrainians, Bulgarians, Roma, Greeks, Armenians, Italians, Macedonians, Hungarians, Serbs, Slovaks, Poles, Csango Hungarians, Jews, and Germans. There are also the Aromanians, who were not considered separate from the Romanian population by the census but who, due to their gastronomic habits and specific traditions, may be considered different for the purposes of this paper, thus reaching a total of 19 ethnicities who live together in a very peaceful manner, on the territory between the Danube and the Black Sea.

Research Methods

Simultaneously with reading specialised literature, we chose a survey as our research instrument, which we provided in two phases, between September - October 2020 and March 2021, through the Google Questionnaire platform, which was filled in by approximately 268 people, of which we selected 265 valid surveys, representing a substantial sample for this study.

Contents

Regarding the subject of considering the Dobrudjan nutritional system as “part of the Romanian nutritional system”, Ofelia Văduva, who in her work *Valori identitare în Dobrogea. Hrana care unește și desparte* analysed the common and different aspects of the nutrition of Dobrudjan ethnicities, states that “its elaboration has been performed throughout time, by conjugating the local resources with the inhabitants’ occupations and with a lifestyle characteristic to the multi-ethnic space” (Văduva, 2010, p.18). Reconstructing the evolution of this nutritional system is no easy task: “studying food in the past is becoming more difficult as you go back in time. Documents reveal too little on this aspect, considered unimportant for entire generations. At the same time, considering that each period has brought new elements (and we do not only consider raw materials, but the fact that each generation has brought their own experience and considered the inherited or innovating elements in a different manner)”. (Văduva, id.).

When defining the general framework of a nutritional system, we have to take into account ethnographic, anthropological, sociological and ethnological factors. If within the social structures characterized by a dominant ethnic presence it is simpler to identify and characterise major identity hallmarks, among which there are those related to nutrition, the situation is more complex when referring to multicultural areas, as in the case of Dobrudja. Here, besides the above-mentioned factors, there are social and cultural cohabitation phenomena: “in their cases we have to operate with intercultural and transcultural concepts which mirror the mutual interferences and borrowings, as the acculturation process and the syncretic operational principles shall also activate in case of nutrition, as well as in all other segments of human life” (Știucă, 2013). Thus, Dobrudja is a “sui genesis” model manifesting “a series of convergent points - food universalism” and “Balcanism” - but also many divergent aspects - specific elements dictated from a religious or occupational perspective or originating due to the conservatism of some ethnic groups (Știucă, 2013, nd.).

The nutritional behaviour of every individual has been evolving throughout time, it does not remain static, and an essential role is held by: the place where that individual lives, their social life, religion, cultural inheritance, activity and last but not least, their genetic characteristics (Nistoreanu, 2020).

However, food identities, and identities in general, “are not registered in the genes of a people or in the archaic history of its origins, but have been built along history, in the daily dynamics of dialogue between various people, experiences and cultures (Montanari, 2010).

By the survey provided we tried to find out which is the knowledge level of Dobrudjan gastronomy and its elements of identification. When distributing the online survey, we considered both Dobrudjan inhabitants and residents from other regions of the country. The general situation is as follows: 51,5% declared to have lived for a certain period in Dobrudja, while the rest of 48,9% submitted a negative answer; among those, 56 are currently living abroad.

The age of the respondents, who were mainly women (72,7%), appeared to be determinant in providing certain answers, which indicated a good knowledge of a certain economic and historical context: the majority (41,1%) are aged between 45 and 55 years old, followed by the category of 35-45 years (27,5%), and then of those aged between 25 and 35 years old (12,5%). The category of people aged between 55 and 65 years old comes afterwards, with 4,5% of answers, then the category 15-25 years with 2,6% and finally people over 75 years old with 0,4%. Those aged over 45 years old and living outside Dobruja, have a better knowledge of certain historical brands, such as “Murfatlar”, which frequently appears in the answers, not being familiar with any brands which appeared recently and have reached affirmation in the period after 1989 (year of the Romanian Revolution).

Moreover, the people who spent a period of their lives, or who still live, in one of the localities which are part of the two counties of Constanța and Tulcea and who, therefore, have a closer contact with the Dobrudjan reality, also possess a better knowledge of natural resources, food behaviour of the inhabitants and gastronomic-related traditions.

In this paper, we have selected some of the questions present in the survey and analysed the relative data, while the other fields of the survey shall represent the object of a broader research dedicated to the Dobrudjan gastronomic traditions.

Dobrudja, Identity Hallmarks

The aim of this study is not to give an encyclopaedic definition of the historical region of Dobrudja, which is situated in the South-Eastern part of Romania and comprises the counties of Constanța and Tulcea, but to centralise important elements which outline a local identity and to elaborate a narrative discourse in which we can introduce and present local food traditions and products. For the question “*What do you associate the word “Dobrudja” with?*” 87 respondents indicated “**the sea**”/“**Black Sea**”, which represents more than a water surface, having a strong nostalgic impact related to cultural and personal aspects of each individual’s life. In the close semantic proximity is the word “**seaside**”, which was indicated by 10 persons. These elements, associated with “sun” (10 answers), “**heat**” (3), “**sand**” (2) lead immediately to the idea of “**holidays**” (“a place from my holidays which I miss”).

A conceptual nucleus is placed in the area of the “**Danube Delta**”, mentioned by 30 respondents. Other 10 people associated the area of Dobrudja with the river “**Danube**” and fishing activities. However, this region is also linked to its **cities and towns** (“Tulcea”, “Constanța” and “Techirghiol”), “**mountains**” (10), “**steppe**” (7), “**lowland**”, “**prairie**”. The land is at times “**arid**” (2), “**typically steppe**” (2), with many rock formations, the effect of a climate characterised by “**drought**” (2) and “**wind**” (4).

The local multi-ethnic/multicultural presence is extremely relevant in the collective imagination and it was highlighted in 26 responses; we include here other words and expressions which define the same feature: “**diversity**” (4), “**ethnicities**” (4), “**traditions**” (5), “**Turks**”, “**Tartars**”, “**Lipovan Russians**”, “**Aromanians**”, “**the peaceful co-existence of multiple ethnicities**”, “**with peace between people**”, “**mix of peoples**”.

Dobrudja is a land loaded with history (3) a place which some people call “**home**”/“**residence**” (11), full of affective and nostalgic value: “*place of birth*”, “*city of my youth*”, “*grandmother*”. The old Scythia is also considered the cradle of Christianity in Romania, by the presence of numerous testimonies regarding the missionary activity of “Andrew the Apostle” on this lands.

All considerations are positive: “*the beauty of autumn*”, “*the beautiful Romanian seaside*”, “*the most beautiful women*”, “*overwhelming beauty*”, “*a beautiful region*”, “*joy*” (2).

Out of 265 answers, only 20 respondents characterised Dobrudja with elements related to the field of food and gastronomy. The situation is as follows: 4 people identified “**fish**”, (fish products, especially freshwater fish, but also sea fish, which characterizes many local dishes), 3 mentioned the “**plăcinta pie**” (a dessert enclosed in a layer of pastry with various fillings, the cheese *plăcinta* being specific to this region), 2 persons mentioned the “**baklava**”, and the “**şuberek**”, a Turkish meat pastry. Dobrudja is considered to be the “*granary of Romania*”, “*an area with rich gastronomy*”, with an “*Oriental and Mediterranean cuisine*”, “*having an Oriental aroma*”.

From the analysis of this data, it follows that food, and generally the Dobrudjan gastronomy, does not yet represent a distinctive element in the collective imaginary as powerful as the other ones (sea, seaside, Danube Delta, multiculturalism).

Dobrudjan Gastronomy

It can be said that cuisine is by excellence the place where we can chiefly consider exchanges and influences, more than origins. If a product can be the expression of a territory, its use in a recipe or a menu may almost always be the product of a hybridization (Capatti and Montanari, 2014). This definition is also applied in Dobrudja, where the historical co-existence between the 19 ethnicities has led to the exchange on multiple levels, including the gastronomic one.

From the perspective of raw materials, Dobrudja can be divided in two macro-areas: the one of fish and the one of meat, milk and vegetables dishes (Ştiucă, 2013). In the second area we can include fruit, which is representative for the Dobrudjan food.

“Since the exiled poet Ovid and until nowadays, the Dobrudjan cuisine has been standing on two feet: sheep and fish. Sheep belong to the land, fish to the fresh water of the Danube, or to the salty water of the Black Sea. Flipped by various influences, Tartar, Greek, Turkish, Lipovan Russian or others, these basic meats have brought into existence a variety of dishes which can attract any tourist (Nistor, 2004, p.86).

“Among the most important elements of Dobrudjan-characteristic food, fish stands out (together with other underwater creatures, such as crabs, seashells) as it has been long procured by practising the ancient occupation of fishing, in the villages near the Danube or by exchanging products with fish traders coming by carriages in all of the Dobrudjan villages at the beginning of the 20th century. The continuous practice of fishing throughout time has led to an increase in production and to the commercialization of fish, as throughout history it has been the highlight of the inhabitants’ diet, even in the villages situated far from the Danube, from adjacent lakes or from the Delta” (Văduva, 2010, p.69) The supremacy of fish is also evident from the answers of the survey, when the respondents were required to indicate three traditional Dobrudjan dishes: the word “fish” appears more than 200 times in all the dishes and specialities which were enumerated.

The most frequently specified in the “fish bortsch” (27), written also as “fish broth” (39) or, in its more noble variant, as “*starceak*” (22). “The fish bortsch in the Danube Delta is by far the most complex dish of this region” (Nistor, 2004), a soup where firstly the vegetables are boiled and, at the end, big pieces of fish are added. It is soured with bortsch (sour liquid made of wheat bran, rue or sugar beet fermented in water) or with vinegar. The *starceak*, originally cooked from pieces of Sturgeon, is also a soup, “a mixture of Ukrainian and Romanian cuisine, a slightly variegated - both continental and piscatorial at the same time - but light recipe” (Anton Roman, 2001, p.505). It can also be prepared from other types of white fish, and its taste can be adjusted with cream and vinegar at the end.

The following dish which is considered representative for Dobrudja is the “fish brine” (58): “Appeared on the shore of Danube, in a country especially rich in salt, the brine itself is the expression of poverty and rush: no pots, oils or fine creams” (Anton Roman, 2001, p.241). The recipe is simple: fish baked in salt on the stove, soaked in a simple, spicy sauce, with pepper and parsley.

“Fish Plachi” (26) is another dish which is characteristic for this area “The plachi can be both a festive dish and a day-to-day one. The distinction is made by the type of fish used. [...] It can be made with fish (carp, crucian carp, asp, rudd, and others), onions, tomatoes, peppers, courgette, and any other vegetables which are available (except for root crops). Chopped onion is fried in oil, vegetables are added and boiled until softened, then the tomatoes are added. Everything should be boiled, and finally a sprinkle of salt and the already fried fish added; a lid should cover the pot. In case of fresh fish, it can be boiled or fried separately, after which it is added in the stew. For festive meals, the Plachi does not have too much sauce and is pan-fried, as a day-to-day dish, it becomes a “long soup” prepared in the pot”. (Stroe, Iancu, 2012). Other types of fish follow as answers: “fried anchovy” (5), “mackerel” (5), “filled pickerel” (2), and “fried fish”.

As fish is not accessible all time of the year, people have tried multiple preserving methods. Among these, the following were cited in the survey: “zacusca fish stew” (12), a dish prepared in tomato sauce with vegetables and fish, preserved in the jar, “marinated fish” (4) or the dry and salty fish used for preparing “skordalia” (3).

Although the consumption of seafood from the Black Sea (rapa wheels, mussels, clams) has increased lately, especially in the restaurants on the seaside, it is still not perceived as a local product, this aspect emerging from the very reduced number of answers (only 2): “Romanians eat shellfish, especially as an exotic game, typical for an intellectual holiday on the seaside”. (Anton Roman, 2001, p.211).

“Fish eggs” or roe is a product mentioned by 5 respondents. We consider it to be likely that after the Tulcea pickerel roe salad will be recognized at a European level as PGI, the media will give more attention to this dish and it will become more popular. Besides this, “Deltaica” carp roe salad and “Deltaica” pickerel roe salad have already been registered as traditional products on a national level.

The category of meat dishes brings a product widespread in the entire Balkan area to the fore, which was originally prepared with slight variants in mixing the ingredients, in Greek and Turkish cuisines. This product is the “moussaka”, stated in 39 answers: “Minced lamb and mutton, beef or pork meat is used for Dobrudjan moussaka, which is mixed with eggplant, tomatoes, potatoes and various spices: as other dishes of the region, it is served with cold yoghurt” (Nistor, 2004, p.86).

Special attention needs to be given to a Romanian product widespread in many areas of the country, which is also specific to Dobrudja due to the great number of people of Muslim origin living in this territory. This special product is “pastrami”, made of beef, lamb or mutton meat, indicated by 10 respondents as a local specialty. According to the definition given by the Slow Food Foundation, “pastrami is lamb or mutton smoked meat, well-known and prepared in Romania. The word “pastrami” comes from the Romanian word “to keep”, which means “to preserve”. The term could also derive from the Latin word “pastor” which means “shepherd”. Pastrami was also introduced in the United States of America by the immigrant Romanians of Jewish origin at the beginning of the 19th century” (Slow Food Foundation). According to the travel diary of Evliya Celebi, a Turkish explorer who related about Dobrudja in the mid-18th century, pastrami was made on a Danubian island “where seventy-eighty thousand calves were sacrificed annually. This pastrami took the path to Anatolia, Arabia and Europe”. (Cioroiu, 1984, 209-210). Later on, in 1879, another treatise about the Romanian economy refers to this culinary specialty, which in our opinion deserves to be registered and protected at a European level: “At the beginning of spring, calf traders buy calves from fairs and from the countryside, take them to grazing until autumn comes and bring them to slaughterhouses (*zalhana*). The meat is dried for the purpose of manufacturing hardened meat preserves, which people consume under the name of pastrami” (Obedenare, 1876, p.144). Remaining in the area of meat products, the respondents indicated “sheep meat” (9), “lamb” (5) and “ram” (2).

Dobrudjan “*tochitura*” (36 answers) is a traditional Romanian dish, generally made of pork, with or without adding sausages and organs, fried, with sauce and garlic. It is characteristic for many Romanian areas, as the recipe is slightly different from one region to the other.

From the dowry of two local ethnicities, Turkish and Tartar, the şuberek “fried pie with meat filling” (Chiselev, 2019), found its place in the gastronomic panorama and is considered representative for local cuisine by 42 persons. The Turkish “ghiodem” (5), “dry sausage, pressed and very spicy, made of sheep, goat or beef” (Popoiu, Tudor, Anania, 2013) was registered as a traditional product at the

Minister of Agriculture and Rural Administration under the name of “Ghiudem tătăresc Moș Iosif” (Uncle Joseph Tartar Ghiudem). The Turkish “babic” (2), a “raw, dry and pressed salami, made of sheep or beef in equal proportions, highly spicy” (Popoiu, Tudor, Anania, id.), is another product taken over from the Muslim population.

Aromanian indigenous people have left a mark on the Dobrudjan cuisine with products obtained from milk (yoghurt, cheese), filled pies (with cheese, spinach or leek), and with a specialty which has lately become very famous, going from its initial chiefly domestic consumption, inside families, to the public space, leading to a cultural exchange with other local populations. It is the case of “*piperki*” (13), a stew made of peppers, onion, tomatoes and Telemea cheese.

In the field of sweets, the absolute protagonist is the “Dobrudjan pie” (73), a product pending trademark as PGI at a European level, “maybe the most famous Romanian pie” (Anton Roman, 2011, p.300), imported in the old Dacia by the Roman people, who in turn had taken it from Greeks, in the 2nd and 3rd centuries B.C (Nistor, 2004, p.12). Besides the more consecrated recipe, with a salty cheese filling, the pie can also be filled with cheese and dried grapes, “pumpkin” (3), apples.

“Dobrudjan cuisine, standing on two feet, sheep and fish, contains a small annex which should never be forgotten: Turkish sweets”. (Nistor, 2004). Radu Anton Roman considers the baklava as a queen of Oriental, Levantine and Mediterranean sweets and takes into account the fact that it actually belongs to the antique culture, from where it has reached the rest of the world: Arabs, Greeks, Armenians, Turks and Tartars” (Anton Roman, p.286). Out of all respondents, 55 indicated as representative for Dobrudja the “baklava”, and 6 the “sarayli”.

Other specialties indicated are the “Dobrudjan cookies” (4), “breaded apples” - apple slices passed into a paste of milk and flour, then fried- (4), “Dobrudjan *kerdele*” (3) - pies filled with cheese, cream, yoghurt and vegetables.

Unfortunately, 51 persons declared that they do not know any specific Dobrudjan dish, or left a blank space, while 62 persons declared the fact that they do not know any Dobrudjan desert or left a blank space, all these responders belonging to the part of the people who have never lived in Dobrudja.

Dobrudjan Wines

When it comes to Dobrudjan wines, without which any gastronomic discourse is considered incomplete, “Dobrudjan vineyards, favoured by extremely hot summers and by the calcareous and sandy soil of the region, have always had an advantage compared to the rest of the country. Murfatlar wines were mentioned by Ovid, the Roman poet, who noticed that, sometimes, Dobrudjan people used to harden wine by freezing it. Nowadays, Murfatlar produces more white than red varieties, but most of people associate the region with a scented Merlot” (Petrică, 2013).

From the Dobrudjan Annals, which were published on the occasion of the semi-centenary of Romanian independence, we find out that in order to encourage grape growing in Dobrudja, the State introduced two farms at the beginning of the 20th century: one at Isaccea (Tulcea) and the other one at Murfatlar (Constanța). The one at Isaccea had as its main purpose to “produce seeding material, and the one at Murfatlar to experiment and value the calcareous soils in the steppe region by producing superior table wines and to transform them into champagne. For this purpose, special installations were made, obtaining therefore the most satisfying results” (Filipescu, 1928,p.516). Among these, the wine nursery in Murfatlar had “the role to constitute the pivot of developing wine growing in Constanța County and in the entire Dobrudja” (Filipescu, 1928, p.519).

Today, the map of Dobrudjan wineries includes 21 places which are distributed in four great Vineyards: Sarica Niculițel, Istria-Babadag, Murfatlar and Ostrov (Vineyards Romania). Considering the historical resonance of its name, it is not actually a surprise that 155 respondents indicated “Murfatlar” as the main wine trademark. It is followed by “Niculițel” (56), “Rasova” (30), “Ostrov” (23), “Vișoara” (15), “Alira” (19), “Histria” (13), “Vlădoi” (8), “Bogdan” (4), “Clos des Colombes” (4), “Gabai” (4).

As was the case with other questions mentioned above, there are 52 responders who do not know any trademark of Dobrudjan wines.

Conclusions

This paper, which is part of a greater research, highlights some of the Dobrudjan identity hallmarks in the culinary field, on one hand reflecting “the cultural synthesis which was produced throughout time by merging the material accumulations and non-material ones” (Văduva, 2010, p.63), and on the other hand the preservation of specificities belonging to each ethnicity. Unfortunately, for the people who do not have a direct connection with Dobrudja, the gastronomic aspect is not adequately known, a more thorough promotion at local, national and international levels being necessary, starting from the elements which are considered representative, and which have been highlighted in this study. At the same time, local tourism may be varied and intensified by integrating it with the hallmarks of the gastronomic field. The results of this research may also constitute the basis for selecting some traditional food products which could be registered as PDO, PGI or TSG.

Acknowledgements:

This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.

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Education and Poverty in Romania. Mutual Determinations and Social Sustainability

Silviu Adrian Iana¹, Raluca Călin², Valentin Claudiu Constantin³ and Veronica Țăran-Baciu⁴

¹⁾²⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest. Romania.*

³⁾ *Romanian Academy, Bucharest. Romania.*

E-mail: adrianiana92@gmail.com; E-mail: calin.raluca88@yahoo.com;

E-mail: valentin.constantin@gmail.com; E-mail: tbaciuveronica@yahoo.com

Please cite this paper as:

Iana, S.A., Călin, R., Constantin, V.C. and Țăran-Baciu, V., 2021. Education and Poverty in Romania. Mutual Determinations and Social Sustainability. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 302-309 DOI: 10.24818/BASIQ/2021/07/039

Abstract

Both, poverty and education (school performance), are two of the current topics in Romania, and a parallel analysis of them is a topic that would help understand each other's influences. One of the five main objectives of the Europe 2020 strategy is to reduce the number of people at risk of poverty or social exclusion by 20 million, until 2020. Although the situation of children in disadvantaged areas of Romania has improved in recent years, there are still significant discrepancies for different categories of students from rural areas, certain communities and from socio-economically dis-advantaged areas. The main problems facing the education system are the following: the attendance in rural areas, major differences in the quality of education in schools, absenteeism, and early dropout among children from disadvantaged communities. The purpose of this paper is to analyze the problem of poverty in Romania, the level of school performance and to identify the existence of mutual determinations of the two subjects in the 8 regions of Romania, school performance being treated from the perspective of the baccalaureate exam passing rate and the school dropout rate, the research method being on qualitative data.

Keywords

school performance, relative poverty rate, promotion rate, school dropout rate.

DOI: 10.24818/BASIQ/2021/07/039

Introduction

Today's young people, or in other words, the beneficiaries of educational services, are the ones who will play an active role in the development of tomorrow's society. Thus, social policies must be formulated to guarantee their inclusion in the education system in order to combat social events such as poverty and social exclusion.

In order to minimize or even eradicate social imbalances, the education system must be remodeled in a continuous manner in accordance with the needs and aspirations of students but also in relation to the constantly evolving requirements of the labor market. A quality education system supports a child's social, emotional, cognitive and communication skills. Education programs also support the development of knowledge and skills. Children who receive a quality primary education are more likely to develop these skills at a higher level than those who do not. They can then use these skills to earn more income or to further develop other core assets later in life.

Various definitions and indicators have been used to study educational inequalities and school results. A basic approach that would explain these discrepancies would be the analysis of predetermined factors or circumstances such as gender, area of residence, social status, ethnicity, but especially the level of poverty, a factor that will be analyzed in this article.

Children living in poverty tend to be exposed to more intense and lasting stress, which negatively affects attention, concentration, knowledge, IQ and social skills. Children living in poverty, also, tend to hear fewer reciprocal conversations, are engaged in conversations with less complex vocabulary and a smaller sentence structure and read less than their non-poverty colleagues. Children's brains develop best when they have low exposure to stress at home. Poverty can create a situation that triggers stress hormones. These hormones have a dampening effect on brain development, which can lead to an inability to pay attention, regulate emotions, or develop proper memory function.

Children from low-income families often do not receive the necessary stimulation and do not learn the social skills needed to prepare them for school. Typical problems are parental inconsistency (in terms of daily routine and parenting), frequent changes of primary caregivers, lack of supervision and lack of role models, and very often the parents of these children do not provide the necessary moral and emotional support.

This article tries to analyze the correlation between poverty and school performance, if there is a causal relationship between the two variables and in what other ways does poverty affect the development of children in Romania.

Review of the scientific literature

Poverty and education have influenced both individual and collective development since ancient times, at all stages of history. Both poverty and education are social factors, but each one, as well as the interaction between them, influence the economy, the degree of culture and civilization and also, society as a whole.

The specialized literature abounds in papers, studies and statistics ("big data") on the topic of the article, poverty and education, as well as the factors that influence the bilateral relationship between them. The analysis of the relationship between poverty and school performance is broad because it involves correlating data from several areas: social, economic, political, historical, the results obtained allowing a correct positioning of various perimeters by comparability of indicators, both globally and in Romania.

The link between poverty and school achievements has been mentioned since 1916 (Holley, 1916) and brought to the level of general thinking in education by the "Coleman Report" (Coleman, et al. 1966).

The exploration of the studied sources allowed us to structure them in three main categories:

1. statistical data, info-graphs, reports on the level of poverty at European and Romanian level prepared by Eurostat, National Institute of Statistics in Romania and the results of school assessments (tests)/dropout prepared by National Institute of Statistics in Romania;
2. studies that analyze the 2 factors and propose solutions both for improving the standard of living and increasing the degree of accessibility to education;
3. strategies and policies of international or Romanian bodies / organizations: European Commission, Eurostat, World Bank, World Health Organization, OECD - PISA tests, UNESCO, Ministry of National Education and Ministry of Labor in Romania, which establish the objectives and mechanisms for implementing the decisions taken that influences, both, the standard of living and the standard of education. Like Dobrotă and Vasilca (2015) observed in their paper, the sector of education had a low interest, like health and social assistance and this had to be changed through ex-ante conditionalities, thus, for the 2014-2020 programming period, the EU has set a target for reducing school dropouts below 10% and increasing the number of higher education graduates to at least 40% by 2020. Likewise, in another paper, Dobrotă, et al. (2019) concluded that the starting point for reducing the gaps between the EU Member States should be to support national education systems by increasing public funding allocated to education funding.

The phenomenon of "poverty" is an important topic, but controversial enough and often disputed even by specialists in the field. Poverty refers to a quantitative element (the level of income obtained compared to that of subsistence), but also to a qualitative aspect, being a quantity interpreted according to a certain level of income.

Poverty can be defined as a social state in which an individual, active in the labor market, does not have the opportunity to provide himself and his family with the minimum material means of subsistence. Poverty is a dynamic notion and must be seen in correlation with the level of development of each country, the basis of assessment being a certain minimum standard of living. This standard is relative, being very different by country or region.

Measures to reduce poverty are aimed at alleviating social inequalities through a fair wage and taxation system, an efficient education, adapted to technical progress and the real needs of the national economy. Social assistance, state allowances for needy families can solve the problem of poverty only if they are followed by other measures, such as qualification or retraining of the workforce, to adapt to the needs of the economy, but also to competition in the labor market.

The causes of poverty are multiple: among them, social inequality, political and economic structure, inefficient governance, but also poor vocational training, due to an outdated education system, not adapted to the real needs of the economy.

In November 2015, the United Nations Organization Rapporteur on Extreme Poverty, Philip Alston, stated that "many Romanian officials are in a state of denial regarding the high degree of poverty in the country, although 40% of the population is affected by this phenomenon, and 34.1% of children suffer from extreme material deprivation". Romania ranks 10th place in the world as a percentage of the population living in extreme poverty, the World Bank (2014) showing that approximately 6-7% of Romanians live on less than \$1.90 a day.

On the other hand, a social problem that is manifesting itself with an increasing intensity in Romania, from year to year, is the problem of school dropout, mainly due to the deepening of poverty (especially in rural areas, but not only). The dropout rate is higher in rural areas than in urban areas, because incomes are lower, parents decide to go and work abroad or show a lack of interest in the future of their children. Merce, et al. (2015) showed that school dropout occurs from secondary education to post-secondary and university levels.

Major deficiencies and domestic responsibilities no longer allow children to complete their compulsory education, so that over 37% of people over the age of 15 reach functional illiteracy: they do not understand what they read or do not know how to write correctly. In rural areas, 20% of children (Institute of Education Sciences, 2015) remain with eight classes, a third of them being exposed to the risk of poverty, having low chances of employment. According to Eurostat data, the dropout rate in Romania in 2014 exceeded 18%, compared to 11% - the average of the early school leaving in the European Union. In rural areas, the unemployment rate among young people aged 18-24 is 22%, and the employment rate of people aged 18 to 60 is about 46% (World Vision Romania, 2017). The investment in education has immediate results, but also in the long term, in the development of human capital, which inherently leads to social benefits such as improved health, lower crime rates and dependence on social benefits.

Regarding school results, in addition to the evaluation and analysis criteria provided by the education system of each country, through the prism of which one can objectively assess school success or failure, there is also a structure of subjective rules and criteria based on students 'and parents' perceptions of school success or failure. Therefore, given the lens of subjectivity, it can be identified situations in which the terms of failure or school success are defined by personal criteria, sometimes inconsistent with certain objective standards.

The school and the experiences lived in its context represent a primary source of regulating the performances, expectations, success or failure, as well in particular plan (school), as in general, having an important influence for the socio-professional trajectory of any person. The school is an organization whose main purpose is to teach and to achieve performance in the development of the student's personality.

Thus, from the analyzed sources we can observe a causal link between poverty and school results that act in both directions: on the one hand, poverty acts as a factor that prevents people from accessing education, and on the other hand, those who have access to education are considered to be at lower risk of poverty.

Research methodology

This paper analyzed the issue of school performance in relation to poverty, in the 8 regions of Romania, analyzing the relative poverty rate, the promotion rate of the baccalaureate exam and the school dropout rate. Thus, by analyzing the specialized literature and secondary data, this paper aimed to analyze the current situation and the correlation between poverty and school performance in Romania.

In order to reach the problem of absorbing education in disadvantaged environments in Romania, the educational system must be in a continuous transformation in order to meet and prevent school dropout. In support of students, an education system must pursue their cognitive, social, emotional and communication development. A balanced knowledge and skills base accumulated during school can propel certain students to become successful people in the workplace.

The living environment of students can influence their intellectual development, as those from poor backgrounds can be exposed to stress factors and by the nature of the example, models in their family can emulate fewer complex behaviors and phrases that can cause them to put less effort into school than other colleagues.

Despite the fact that in Romania, unlike other countries in the European Union, spending on the child education is significantly lower, we still have an extremely high early school leaving rate, especially in the case of children from rural areas, Roma ethnicity and those with disabilities. Poverty among children remains among the highest in the European Union compared to the EU average.

Specialized research has shown that the main dropouts at all levels of education, in both residential and urban areas, are high absenteeism, learning difficulties, low school performance and low motivation of students for school activities, and the main challenges presented by a student at high risk of dropping out of school are: family income up to subsistence level, low parental education, lack of minimum conditions for home study, lack of interest in the school situation of children or divided families.

In this article we modeled the following indicators, statistical data being obtained from the online application of the National Institute of Statistics - Tempo Online, except for the information on promotion rate of the baccalaureate exam, information we obtained from official statements (online) of the Ministry of Education:

1. Relative poverty rate (the share of poor people, according to the relative estimation method, in the total population. It is considered poor the people in households with a disposable income per adult equivalent (inclusive or exclusive the value of own resources consumption) lower than the level poverty threshold level. This indicator is currently determined by the threshold of 60% of the median disposable income per adult-equivalent. The indicator is sometimes referred to as the 'poverty risk rate') - the period analyzed is 2010-2018;
2. Promotion rate of the baccalaureate exam (percentage of candidates who actually passed the exam) - analyzed period is 2015-2020;
3. School dropout rate in primary and secondary / high school and vocational education (the difference between the number of students enrolled at the beginning of the school year and that recorded at the end of the same school year, expressed as a percentage of the number of students, enrolled at the beginning of the school year) - the analyzed period is 2010-2018;

It should be mentioned that, regarding the promotion rate of the baccalaureate exam, in the case of all regions, except the Bucharest-Ilfov region, we calculated an arithmetic average at the level of the entire region, and regarding the Bucharest-Ilfov region we calculated a weighted average, knowing the total number of graduates from Bucharest and Ilfov counties, as well as the promotion rate from each county. We made this distinction to get closer to reality in terms of this region, Bucharest being one of the counties with the highest promotion rates, with the most candidates to take the baccalaureate exam in

this region (approximately 85%), and Ilfov being one of the counties with the lowest promotion rates, with the fewest candidates to take the baccalaureate exam in this region (approximately 15%), and a result obtained from an arithmetic average was far from the reality of this region.

Thus, the results obtained, following the data processing, can be viewed in the figures below, no. 1, 2 and 3.

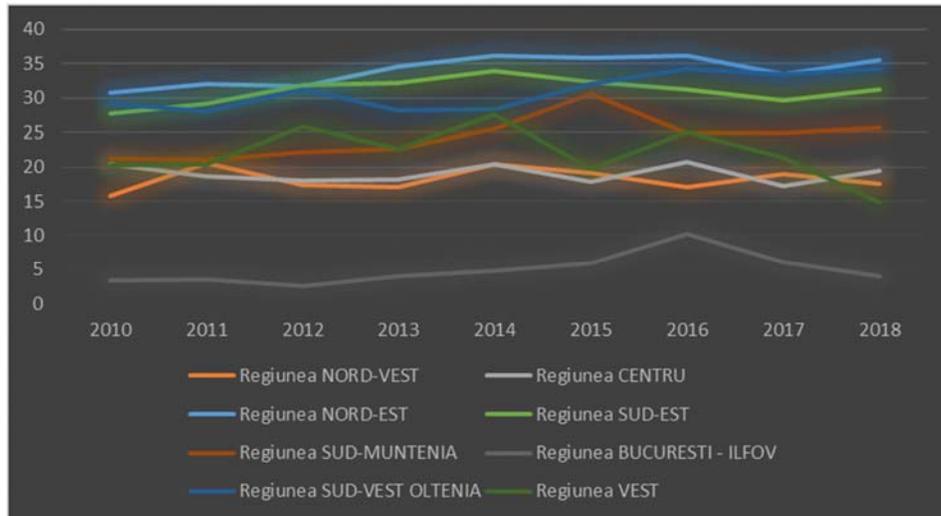


Figure no. 1. The relative poverty rate at the level of the 8 regions of Romania (%)

Source: processed by the authors with the help of statistical data obtained from the online application of the National Institute of Statistics: <http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table> [16].

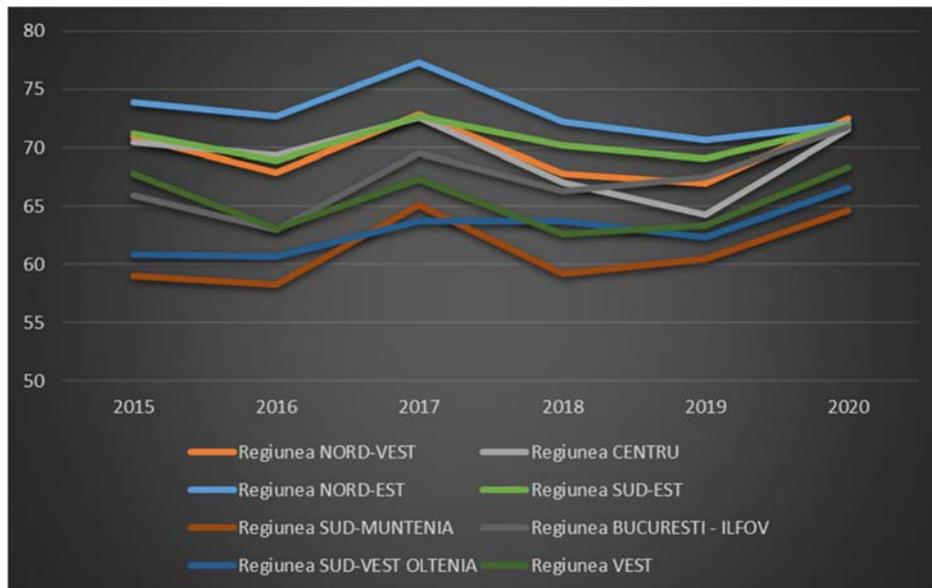


Figure no. 2. The promotion rate of the baccalaureate exam at the level of the 8 regions of Romania (%)

Source: processed by the authors based on the official statements (online) of the Ministry of Education.

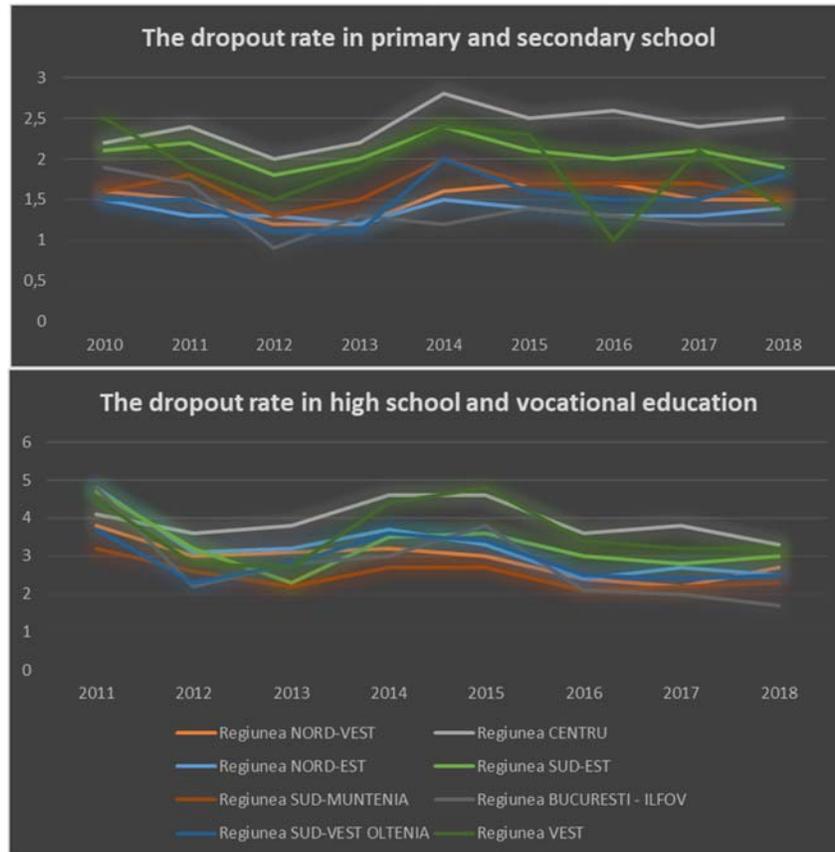


Figure no. 3. The school dropout rate in primary and secondary education / high school and vocational education at the level of the 8 regions of Romania (%)

Source: processed by the authors with the help of statistical data obtained from the online application of the National Institute of Statistics: <http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table>.

Results and discussion

The first indicator analyzed and highlighted in figure no. 1, namely the relative poverty rate, gives us an image of the situation regarding poverty in the 8 regions of Romania, in total, at the level of the whole country, this indicator varying between 21.6% and 25.4%, in the period 2010-2018, which is why Romania is among the first countries in the EU, in terms of the risk of poverty or social exclusion, with a rate well above the EU-27 average. It can be seen from this graph that the Bucharest-Ilfov region is the region with the lowest relative poverty rate, during the period 2010-2018 it recorded values between 2.6% and 10.2% (a relatively constant trend), much lower compared with the rest of the regions (also classified as a developed area since 2014, compared to the rest of the regions that are classified as less developed areas – developing areas), while the North-East region is the region with the highest relative poverty rate, during the period 2010-2018 it recorded values between 30.8% and 36.1% (a slightly upward trend). Immediately below the North-East region, as values, are the South-East regions (between 27.8% and 32.4% - a relatively constant trend) and South-West Oltenia (between 28.1% and 34.3% - a slightly ascending trend). Furthermore, 2 regions register values that are interspersing during the period 2010-2018 and it is not possible to determine which region is poorer than the other, namely the South-Muntenia region and the West region. The same can be said about the last 2 regions, Central and North-West, whose trend is almost constant, and the values recorded are almost identical.

The second indicator analyzed is the promotion rate of the baccalaureate exam, this being highlighted in figure no. 2. This indicator helps us to get an idea of the graduates of the baccalaureate exam from the total number of candidates, at the level of the 8 regions of Romania, in total, at the level of the entire country, this indicator varying between 65.47% and 70.13%, during 2015 - 2020 period. It can be seen from this graph that the North-East region is the region with the highest baccalaureate exam promotion rate, throughout the period 2015-2020, registering values between 70.63% and 77.32% (a relative constant trend), being the only region that registered values over 70% for the entire analyzed period, while the South-Muntenia region is the region with the lowest baccalaureate promotion rate, during the period 2015-2020 it registered values between 58.23% and 65.08% (a slightly upward trend), being the only region that recorded values below 65% for the entire analyzed period. Immediately below the North-East region, the South-East, North-West and Center regions registered values ranging between 64% and 73% (a relatively constant trend, in the case of all 3 regions). The Bucharest-Ilfov region is at the middle of the ranking of the 8 regions in terms of promoting the baccalaureate exam, the trend of this rate being an ascending one, starting from 62.96% (in 2016) and reaching 71.77 % (in 2020). Furthermore, 2 regions register values that are interspersed during the period 2015-2020 and it is not possible to determine which region has the highest baccalaureate promotion rate compared to the other, namely the West region and the South-West Oltenia region, their trend being slightly ascending.

The last indicator analyzed is the school dropout rate, both in terms of primary and secondary education, as well as high school and vocational education, these being high-lighted in figure no. 3. This indicator, in the 8 regions of Romania. at the level of the whole country, is having values between 1.4% and 2%, in the 2010-2018 period. It can be seen from this graph that the Center region is the region with the school dropout rate, both in terms of primary and secondary education, and high school and vocational education, the highest throughout the period 2010-2018, recording values between 2% and 2.8%, with a slightly increasing trend (primary and secondary education) and values between 3.3% and 4.6%, with a relatively constant trend (high school and vocational education), being the only region that recorded values over 2%, respectively 3%, for the entire analyzed period. The Bucharest-Ilfov region is the region with the lowest school dropout rate in terms of primary and secondary education (with a relatively constant trend), and the South-Muntenia region is the region with the lowest school dropout rate in terms of high school and vocational education (with a relatively constant trend). Also, important to mention, compared to the analyzes carried out so far, is the North-East region which has a low school dropout rate in terms of primary and secondary education, but in terms of high school and vocational education this rate is relatively high. The other regions, as can be seen, have a relatively constant trend during the period 2010-2018, in terms of school dropout rates, the only ones that stand out being the West and South-East regions that have sudden increases and decreases during this period, both in terms of primary and secondary education, as well as high school and vocational education.

From the analyzes performed, it can be stated that poverty influences school performance, and vice-versa, and this influence is a direct one. It was expected that the two elements would depend on each other, but an initial assumption would have been that in poorer regions, the promotion rate of the baccalaureate exam would be lower. Thus, from the previous analyzes, this was denied, the situation being exactly the opposite in terms of the promotion rate of the baccalaureate exam, in the regions where the relative poverty rate is higher, the promotion rate is also high, and in the areas where the relative poverty rate is lower, the promotion rate is also low (directly proportional relationship). Regarding the school dropout rate, it can be stated that in most regions with the highest relative poverty rate, the school dropout rate (both in terms of primary and secondary education, as well as in high school and vocational education) is low, and vice-versa, in most regions with a lower relative poverty rate, the school dropout rate (both in primary and secondary education, as well as in high school and vocational education) is high (inversely proportional relationship). The regions where this relationship is not as we exposed it are the South-East region, where both the relative poverty rate and school dropout rate are high, and the Bucharest-Ilfov and North-West regions, where both the relative poverty rate and school dropout rate are low (directly proportional relationship). One aspect to mention is related to the North-East region, considered to be the poorest in Romania, where more middle school students, compared to other regions, continue school to high school, but in terms of school dropout rate at the high school level, more students drop out of school than the rest of the regions, probably the main reason being to enter the workforce and support financially their parents/family.

Conclusions

In conclusion, from the analysis carried out in this article, it can be stated that the two elements (poverty and school performance) influence each other. Thus, a low standard of living can determine a low school performance, from the perspective of school dropout (Central and West regions), but also a high school performance, in terms of promoting the baccalaureate exam (North-East, South-East and West regions), the desire of these students being to overcome their condition and to perform in a field that would take them out of the world in which they lived until that moment. Also, poor school performance in some regions can influence and lead to a low standard of living, with no motivation among students, and the risk of poverty being negatively affected. In reverse, a high school performance can influence the standard of living in the region, in which case there is a motivation among students to participate in classes, the desire not to be excluded, implicitly the risk of poverty being affected in a positive way.

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Dynamic Behaviour in a Bertrand Model With Bounded Rationality

Ciprian Rusescu¹ and Mihai Daniel Roman²

¹⁾²⁾ *The Bucharest University of Economic Studies, Bucharest, Romania*

E-mail: rusescuciprian18@stud.ase.ro; E-mail: mihai.roman@ase.ro

Please cite this paper as:

Rusescu, C. and Roman, M.D., 2021. Dynamic Behaviour in a Bertrand Model With Bounded Rationality. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3–5 June 2021. Bucharest: ASE, pp. 310–316 DOI: 10.24818/BASIQ/2021/07/040

Abstract

Imperfect competition represents a well-known topic of modern economic analysis. It can be easily noticed in the current economic climate, when manifesting in relation with product price (Bertrand type), quantity (Cournot type) or quality. Whether we are talking about the price or output competition scenario, a common denominator would be the fact that in the first period of the oligopoly theory, the researchers were focused on the static approach of these models. Subsequently, however, an increasing interest in a dynamic approach was noted, with a more detailed analyses being considered to better align with the economic reality. The present paper intends to analyse a Bertrand dynamic duopoly, with players competing in price terms, while making use of a bounded rationality mechanism in order to establish charging levels. Based on a two nonlinear difference equational system, the mathematic modelling of such a game is focused on the equilibriums state investigation. This way, the current analyse triggers the conclusion that adjustment speed of bounded rational player, as well as the differentiation degree, strongly impact the stability of the Nash equilibrium. This dynamic approach and therefore the conclusions of this paper are intended to generate reader's interest from both mathematical and economic point of view.

Keywords: Bertrand model, oligopoly, stability, product differentiation, dynamic approach.

DOI: 10.24818/BASIQ/2021/07/040

Oligopoly represents a market scenario where several firms actions impact the aggregate offered output / the selling price of the same or different homogeneous products. More precisely, their mutual interdependences makes oligopolists consider the answer of his competitors at their own actions. In the previous economic literature, many models have been developed, with the special aim to simulate firms behavior in oligopoly / duopoly markets. Two of the most important such models are Cournot model and Bertrand model.

First time presented in Augustine Cournot's book, „*Recherches sur les Principes Mathematiques de la Theorie de la Richesse*” (1838), Cournot model describe a duopoly situation, where firms produce homogeneous products, deciding to adopt an output strategy. Although was initially written as a Cournot's theory review, Bertrand's price strategy approach (1883) has become the most used model in price competition scenarios. In both Cournot and Bertrand initial models, the players are enhanced with naive expectations under perfect information, each of them with perfect awareness of his rival's output/price. But in the real economy, it's impossible that all players be naive and information always distributed among them. Hence, the papers conceived in the latest decades, propose different kinds of players' expectations: naive, bounded rational and adaptive (Agiza and Alsadany, 2004).

Changing the direction and referring now at the game type, Augustine Cournot but also Joseph Louis Francois Bertrand studied duopolies where both firms had static expectations regarding his rival's action. The equilibria are globally stable, due to the linearity of the model (cost and demand functions) but also to the small number of firms in the market. Either by increasing the number of competitors, by

introducing nonlinearities, or both, a dynamical behaviour may become more interesting. The equilibrium become unstable, multiple equilibria may appear and complex dynamics can be obtained.

Review of the scientific literature

Particularly speaking about the Bertrand duopoly, the introduction of some degree of product differentiation (heterogeneous products) is absolutely necessary in order to avoid the so-called Bertrand paradox (homogenous product unique equilibrium - price matching marginal cost, both players offer half of the existing market output, whilst aggregate profit is zero). This particular scenario rarely appears in practice because the products are almost always differentiated in some way other than price (Dubiel-Teleszynski, 2010; Fanti, et al., 2013).

A wide range of studies based on Bertrand model can be found in the current oligopoly literature. Using general framework previously introduced by Dixit (1979), Singh and Vives (1984) highlight quantity competition as dominant strategy in a substitute products scenario, but also price competition dominance in a complementary product situation. A little bit later, Hackner (2000), Zanchettin (2006) and Tremblay (2011) are making use by a different approach, based on informational asymmetry (including demand's asymmetry) triggering optimality of Bertrand or Cournot-Bertrand models. Regardless the approach, demand and cost function linearity were the common denominator for plenty of studies (Ahmed, et al., 2006; Zhang, et al., 2009; Ma and Sun, 2015; Puu and Tramontana, 2019; Din and Sun, 2020).

Demand function non-linearity was debated by Ahmed, et al. (2015), in the tentative of investigate a dynamic Bertrand duopoly with differentiated goods, where bounded rational players apply a gradient adjustment mechanism in order to update their price in each period.

Ma and Wu (2013) introduced a Bertrand triopoly scenario with bounded rational players, finding out that the time delay may not improve the game stability area. Yi and Zeng (2015) analyzed the air-conditioning chinese market through a dynamic Bertrand duopoly model with quadratic cost function, which is closer to reality but introducing a new perspective versus the existing economic literature. Both studies common hypothesis is the cost function non-linearity.

In the next section we apply the tools used before by Agiza and Elsadany (2003) and Zhang et al (2009) to investigate the dynamics of Bertrand duopoly model with bounded rational players. Assuming that both players offer differentiated products, with price adjustment mechanism based on their last period marginal profit, the common declared aim remain own profit maximisation. We will also present the explicit parametric equations, the conditions of equilibrium points existence and also local stability.

Research methodology

We use a duopoly market scenario, with players charging different prices for their products. Let $p_i(t)$, $i = \overline{1,2}$ represent the price charged by firm i during a certain time period $t = \overline{0,n}$. Each firm sells the quantity q_i , its linearity deriving directly from the inverse demand function expression

$$p_i = a - q_i - dq_j, \quad i, j = \overline{1,2} \quad (1)$$

where $a > 0$ and $d \in [0, 1]$. The maximal value $d=1$ leads to a homogeneous products scenario, whilst behavioural patterns of monopolists are reflected in $d=0$ situation. Hence, d parameter's value is inversely proportional with differentiation degree (if d value increases, differentiation diminishes), also reflecting the nature of the products: positive values highlight substitute products, negatives values complements, whilst zero values reflect independent products. The demand function for a specified product, decreases in its price, but increases/decreases in rival's price, in substitute/complement products scenario.

In our model, the basic system in strategic variables, p_1 and p_2 is:

$$\begin{cases} q_1 = a - p_1 - dq_2 \\ q_2 = a - p_2 - dq_1 \end{cases} \quad (2)$$

We further assume that firms production costs are linear, different (c_1 and c_2), matching also marginal costs. Accordingly, the profit function form become:

$$\pi_i = (p_i - c_i)q_i, (\forall) i = \overline{1,2} \quad (3)$$

Each firm's expected price for t+1 period can be found by solving the optimization problem:

$$\begin{cases} p_1(t+1) = \operatorname{argmax} \pi_1(p_1(t), p_2^*(t+1)) \\ p_2(t+1) = \operatorname{argmax} \pi_2(p_1^*(t+1), p_2(t)) \end{cases} \quad (4)$$

where $p_j^*(t+1)$ represents j firm expectation regarding his rival's product price during period t + 1 ($i, j = \overline{1,2}, i \neq j$).

The i firm marginal profit expression in t period (preceding calculations in Appendix A) is:

$$\frac{\partial \pi_i}{\partial p_i} = \frac{a(1-d) + c_i}{1-d^2} - \frac{2p_i}{1-d^2} + \frac{dp_j}{1-d^2}, \quad i, j = \overline{1,2}, i \neq j \quad (5)$$

leads to the unique solution of the optimization problem

$$p_i = \frac{a(1-d) + c_i + dp_j}{2} \quad (6)$$

In the real market, the information is usually incomplete, meaning players can use more sophisticated expectations, such as bounded rationality. Decision-making represent an adjustment process based on the of the game last period outcomes. The bounded rational player has no complete knowledge of market, thus he determines production price using the information of local profit maximizers. Consequently, decides to increase / decrease its price if he registered positive / negative marginal profit. Such an adjustment mechanism has been called myopic by Dixit. Hence, the dynamic adjustment mechanism can be modelled as

$$\begin{aligned} p_i(t+1) &= p_i(t) + \alpha_i p_i(t) \frac{\partial \pi_i(p_i, p_j)}{\partial p_i} \quad i, j \\ &= \overline{1,2} \end{aligned} \quad (7)$$

where positive parameter α_i represents the adjustment speed of i firm. In these circumstances, a duopoly game with heterogeneous players can be described by using the equational system:

$$\begin{cases} p'_1 = p_1 + \alpha_1 p_1 \left(\frac{a(1-d) + c_1}{1-d^2} - \frac{2p_1}{1-d^2} + \frac{dp_2}{1-d^2} \right) \\ p'_2 = p_2 + \alpha_2 p_2 \left(\frac{a(1-d) + c_2}{1-d^2} - \frac{2p_2}{1-d^2} + \frac{dp_1}{1-d^2} \right) \end{cases} \quad (8)$$

'' ' '' denotes the unit-time advancement, meaning if the right side variables represents period t results, then the left side ones represent outcomes of period t + 1.

Results and discussion

Due to the fact that Bertrand model is a economic model, we only study the dynamic behavior of the nonnegative equilibrium points (negative variable values almost always are meaningless in economics). Setting $p_1 \rightarrow p'_1$ and $p_2 \rightarrow p'_2$, the fixed points are obtained as nonnegative solutions of the non-linear algebraic system:

$$\begin{cases} p_1[a(1-d) + c_1 - 2p_1 + dp_2] = 0 \\ p_2[a(1-d) + c_2 - 2p_2 + dp_1] = 0 \end{cases} \quad (9)$$

We found four such points: $E_1(0,0)$, $E_2(0, \frac{a(1-d)+c_2}{2})$, $E_3(\frac{a(1-d)+c_1}{2}, 0)$ and last but not least $E_4\left(\frac{-ad(1+d)+2a+dc_2+2c_1}{4-d^2}, \frac{-ad(1+d)+2a+2c_2+dc_1}{4-d^2}\right)$ (Appendix B)

Points E_1, E_2, E_3 clearly represents boundary equilibriums. The fixed point E_4 is a Nash equilibrium with full economic meaning, because initial assumption guarantee that $d < 2$ is an always fulfilled must. We are further focusing on the local stability of equilibrium, studying the Jacobian matrix of the sytem (8), considering its eigenvalues in the complex plane study field. The Jacobian matrix at the point (p_1, p_2) has the form:

$$J = \begin{pmatrix} 1 + \alpha_1 \left[\frac{a(1-d) + c_1}{1-d^2} - \frac{4p_1}{1-d^2} + \frac{dp_2}{1-d^2} \right] & \alpha_1 \frac{dp_1}{1-d^2} \\ \alpha_2 \frac{dp_2}{1-d^2} & 1 + \alpha_2 \left[\frac{a(1-d) + c_2}{1-d^2} - \frac{4p_2}{1-d^2} + \frac{dp_1}{1-d^2} \right] \end{pmatrix} \quad (10)$$

Proposition 1: The boundary equilibria E_1, E_2, E_3 are unstable equilibrium points.

Proof: In order to prove the above mentioned result, we first determine Jacobian matrix $J(E_1)$:

$$J(E_1) = \begin{pmatrix} 1 + \alpha_1 \frac{a(1-d) + c_1}{1-d^2} & 0 \\ 0 & 1 + \alpha_2 \frac{a(1-d) + c_2}{1-d^2} \end{pmatrix} \quad (11)$$

whose eigenvalues are $\lambda_1 = 1 + \alpha_1 \frac{a(1-d)+c_1}{1-d^2}, \lambda_2 = 1 + \alpha_2 \frac{a(1-d)+c_2}{1-d^2}$

From the a, c_1 and c_2 positivity, also $d \in [0, 1]$, result that $|\lambda_1| > 1, |\lambda_2| > 1$. Then the equilibrium point $E_1(0,0)$ proved to be an unstable node.

Following the same rationality for the second point E_2 , the Jacobian matrix $J(E_2)$ will be:

$$J(E_2) = \begin{pmatrix} 1 + \alpha_1 \left[\frac{a(1-d) + c_1}{1-d^2} + \frac{ad(1-d) + dc_2}{2(1-d^2)} \right] & 0 \\ \alpha_2 d \frac{a(1-d) + c_2}{2} & 1 - \alpha_2 \frac{a(1-d) + c_2}{1-d^2} \end{pmatrix} \quad (12)$$

This time, the eigenvalues are $\lambda_1 = 1 + \alpha_1 \frac{a(2-d-d^2)+2c_1+dc_2}{2(1-d^2)}, \lambda_2 = 1 - \alpha_2 \frac{a(1-d)+c_2}{1-d^2}$

Parameters a, c_1, c_2 and d initial hypothesis, leads to the conclusion that $|\lambda_1| > 1, |\lambda_2| < 1$.

Consequently, $E_2(0, \frac{a(1-d)+c_2}{2})$ represent a saddle point.

In the same manner we treat point E_3 ; the $J(E_3)$ matrix become:

$$J(E_3) = \begin{pmatrix} 1 - \alpha_1 \frac{a(1-d) + c_1}{1-d^2} & \alpha_1 d \frac{a(1-d) + c_1}{2} \\ 0 & 1 + \alpha_2 \left[\frac{a(1-d) + c_2}{1-d^2} + \frac{ad(1-d) + dc_1}{2(1-d^2)} \right] \end{pmatrix} \quad (13)$$

having eigenvalues $\lambda_1 = 1 - \alpha_1 \frac{a(1-d)+c_1}{1-d^2}, \lambda_2 = 1 + \alpha_2 \frac{a(2-d-d^2)+2c_2+dc_1}{2(1-d^2)}$. Point $E_3(\frac{a(1-d)+c_1}{2}, 0)$ is a second saddle point.

Presented scenarios transposed in the real economic climate, compell firms to retire from the market. It is an economic anomaly, no firm will accept such a charged price lowering, in order to direct the economic result down to the breakeven point. Thus, the leaving market option could be anytime materialised.

Proposition 2: The Nash equilibrium point E_4 is stable, only if

$$\frac{4}{1-d^2} (\alpha_1 p_1^* + \alpha_2 p_2^*) - 4 < \alpha_1 \alpha_2 \frac{(2-d)(2+d)p_1^* p_2^*}{(1-d^2)^2} < \frac{2}{1-d^2} (\alpha_1 p_1^* + \alpha_2 p_2^*)$$

Proof. Finally, we investigate the local stability of equilibrium point E_4 . Jacobian matrix is:

$$J(E_4) = \begin{pmatrix} 1 - 2\alpha_1 \frac{p_1^*}{1-d^2} & \alpha_1 d \frac{p_1^*}{1-d^2} \\ \alpha_2 d \frac{p_2^*}{1-d^2} & 1 - 2\alpha_2 \frac{p_2^*}{1-d^2} \end{pmatrix} \quad (14)$$

where $p_1^* = \frac{-ad(1+d)+2a+dc_2+2c_1}{4-d^2}, p_2^* = \frac{-ad(1+d)+2a+2c_2+dc_1}{4-d^2}$

The characteristic equation of the $J(E_4)$ has the form $f(\lambda) = \lambda^2 - Tr(J)\lambda + Det(J) = 0$, where $Tr(J) / Det(J)$ represent Jacobian matrix trace / determinant, described by

$$\begin{aligned} Tr(J) &= 2 - \frac{2}{1-d^2} (\alpha_1 p_1^* + \alpha_2 p_2^*) \end{aligned} \quad (15)$$

$$\begin{aligned} Det(J) &= 1 - 2\alpha_2 \frac{p_2^*}{1-d^2} - 2\alpha_1 \frac{p_1^*}{1-d^2} + 4\alpha_1\alpha_2 \frac{p_1^*p_2^*}{(1-d^2)^2} \\ &\quad - \alpha_1\alpha_2 \frac{d^2 p_1^*p_2^*}{(1-d^2)^2} \end{aligned} \quad (16)$$

Second order discriminant prove to be positive, meaning that both eigenvalues are real.

$$\begin{aligned} Tr^2(J) - 4Det(J) &= 4 - \frac{8}{1-d^2} (\alpha_1 p_1^* + \alpha_2 p_2^*) + \frac{4}{(1-d^2)^2} (\alpha_1 p_1^* + \alpha_2 p_2^*)^2 \\ &\quad - 4 + 8\alpha_2 \frac{p_2^*}{1-d^2} + 8\alpha_1 \frac{p_1^*}{1-d^2} + 16\alpha_1\alpha_2 \frac{p_1^*p_2^*}{(1-d^2)^2} + 4\alpha_1\alpha_2 \frac{d^2 p_1^*p_2^*}{(1-d^2)^2} = \\ &\quad \frac{4}{(1-d^2)^2} (\alpha_1 p_1^* - \alpha_2 p_2^*)^2 + 4\alpha_1\alpha_2 \frac{d^2 p_1^*p_2^*}{(1-d^2)^2} \\ &\quad > 0 \Rightarrow \lambda_1, \lambda_2 \in R \end{aligned} \quad (17)$$

The local stability conditions of Nash equilibrium are given by Jury's conditions:

$$\begin{cases} 1 - Tr(J) + Det(J) > 0 \\ 1 + Tr(J) + Det(J) > 0 \\ Det(J) < 1 \end{cases} \quad (18)$$

First one veracity immediately result:

$$\begin{aligned} 1 - Tr(J) + Det(J) &= \frac{2}{1-d^2} (\alpha_1 p_1^* + \alpha_2 p_2^*) - \frac{2(\alpha_1 p_1^* + \alpha_2 p_2^*)}{1-d^2} + 4\alpha_1\alpha_2 \frac{d^2 p_1^*p_2^*}{(1-d^2)^2} \\ &\quad - \alpha_1\alpha_2 \frac{d^2 p_1^*p_2^*}{(1-d^2)^2} = \alpha_1\alpha_2 \frac{(2-d)(2+d)p_1^*p_2^*}{(1-d^2)^2} > 0 \quad (A) \end{aligned}$$

The last two conditions define a bounded region of stability in the plane of speeds adjustment.

$$\begin{aligned} 1 + Tr(J) + Det(J) &= 4 - \frac{4}{1-d^2} (\alpha_1 p_1^* + \alpha_2 p_2^*) + \alpha_1\alpha_2 \frac{(2-d)(2+d)p_1^*p_2^*}{(1-d^2)^2} > 0 \\ Det(J) - 1 &= -\frac{2}{1-d^2} (\alpha_1 p_1^* + \alpha_2 p_2^*) + \alpha_1\alpha_2 \frac{(2-d)(2+d)p_1^*p_2^*}{(1-d^2)^2} < 0 \end{aligned}$$

The necessary and sufficient stability condition is obtained by assembling above information:

$$\frac{4}{1-d^2} (\alpha_1 p_1^* + \alpha_2 p_2^*) - 4 < \alpha_1\alpha_2 \frac{(2-d)(2+d)p_1^*p_2^*}{(1-d^2)^2} < \frac{2}{1-d^2} (\alpha_1 p_1^* + \alpha_2 p_2^*) \quad (19)$$

Certainly, the Nash equilibrium point E_4 is stable in the area defined by Eq. (19) and loose its stability outside this area. In other words, this equation defines a stability region of Nash equilibrium point E_4 .

Conclusions

In the present paper, we have studied the dynamics of a repeated Bertrand duopoly model with bounded rational players. The mathematic analyse trigger the existence of four equilibrium points (whose stability is also investigated) highlighting the idea that the adjustment speed in a bounded rationality scenario (parameter α_1 and α_2 values) affect the stability of Nash equilibrium point. Lower values of speeds of adjustment, guarantee a stable Nash equilibrium of the game, in strictly interdependence with the differentiation degree and all other parameters evolution. Adjusting too fast the price speeds, in order to increase own profits, the equilibrium may become unstable and the system will fall into chaos (dynamics complex phenomenons such as bifurcations, attractors and cycles will appear). We have also offer some economic explanations to various dynamic processes in the Bertrand market, providing this way, theoretical references for firms activity.

Acknowledgements:

This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.

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Appendix A

$$\begin{cases} p_1 = a - q_1 - dq_2 \rightarrow q_1 = a - p_1 - dq_2 \\ p_2 = a - q_2 - dq_1 \rightarrow q_2 = a - p_2 - dq_1 \end{cases} \rightarrow q_1 = a - p_1 - d(a - p_2 - dq_1) = a - p_1 - ad + dp_2 + d^2q_1$$

$$(1 - d^2)q_1 = a(1 - d) - p_1 + dp_2 \rightarrow q_1 = \frac{a(1-d)}{1-d^2} - \frac{p_1}{1-d^2} + \frac{dp_2}{1-d^2}$$

$$q_2 = a - p_2 - \frac{ad(1-d)}{1-d^2} + \frac{dp_1}{1-d^2} - \frac{d^2p_2}{1-d^2}$$

$$q_2 = \frac{a - ad^2 - p_2 + d^2p_2 - ad + ad^2 + dp_1 - d^2p_2}{1-d^2} = \frac{a(1-d)}{1-d^2} - \frac{p_2}{1-d^2} + \frac{dp_1}{1-d^2}$$

$$\pi_1 = (p_1 - c_1)q_1 = \frac{a(1-d)}{1-d^2}p_1 - \frac{p_1^2}{1-d^2} + \frac{dp_1p_2}{1-d^2} - \frac{a(1-d)c_1}{1-d^2} + \frac{c_1p_1}{1-d^2} - \frac{dp_2c_1}{1-d^2}$$

$$\frac{\partial \pi_1}{\partial p_1} = \frac{a(1-d) + c_1}{1-d^2} - \frac{2p_1}{1-d^2} + \frac{dp_2}{1-d^2} = 0 \rightarrow p_1 = \frac{a(1-d) + c_1 + dp_2}{2}$$

$$\pi_2 = (p_2 - c_2)q_2 = \frac{a(1-d)}{1-d^2}p_2 - \frac{p_2^2}{1-d^2} + \frac{dp_1p_2}{1-d^2} - \frac{a(1-d)c_2}{1-d^2} + \frac{c_2p_2}{1-d^2} - \frac{dp_1c_2}{1-d^2}$$

$$\frac{\partial \pi_2}{\partial p_2} = \frac{a(1-d) + c_2}{1-d^2} - \frac{2p_2}{1-d^2} + \frac{dp_1}{1-d^2} = 0 \rightarrow p_2 = \frac{a(1-d) + c_2 + dp_1}{2}$$

Appendix B

If $p_1 \rightarrow p'_1$ and $p_2 \rightarrow p'_2$ then $\begin{cases} p_1[a(1-d) + c_1 - 2p_1 + dp_2] = 0 \\ p_2[a(1-d) + c_2 - 2p_2 + dp_1] = 0 \end{cases}$

- $p_1 = 0, p_2 = 0 \rightarrow E_1(0,0)$
- $p_1 = 0, a(1-d) + c_2 - 2p_2 + dp_1 = 0 \rightarrow p_2 = \frac{a(1-d)+c_2}{2} \rightarrow E_2(0, \frac{a(1-d)+c_2}{2})$
- $p_2 = 0, a(1-d) + c_1 - 2p_1 + dp_2 = 0 \rightarrow p_1 = \frac{a(1-d)+c_1}{2} \rightarrow E_3(\frac{a(1-d)+c_1}{2}, 0)$
- $a(1-d) + c_1 - 2p_1 + dp_2 = 0, a(1-d) + c_2 - 2p_2 + dp_1 = 0$

$$\begin{cases} a(1-d) + c_1 - 2p_1 + dp_2 = 0 \\ a(1-d) + c_2 - 2p_2 + dp_1 = 0 \end{cases} \rightarrow \begin{cases} 2p_1 - dp_2 = a(1-d) + c_1 & (d) \\ dp_1 - 2p_2 = -a(1-d) - c_2 & (-2) \end{cases}$$

$$\begin{cases} 2dp_1 - d^2p_2 = ad(1-d) + dc_1 \\ -2dp_1 + 4p_2 = 2a(1-d) + 2c_2 \end{cases} \xrightarrow{\text{sum}} p_2(4-d^2) = -ad - ad^2 + 2a + dc_1 + 2c_2$$

$$p_2 = \frac{-ad(1+d) + 2a + 2c_2 + dc_1}{4-d^2} \rightarrow -2dp_1 + \frac{-4ad(1+d) + 8a + 8c_2 + 4dc_1}{4-d^2}$$

$$= 2a(1-d) + 2c_2$$

$$-2dp_1 = \frac{8a(1-d) + 8c_2 - 2ad^2(1-d) - 2d^2c_2 + 4ad(1+d) - 8a - 4dc_1 - 8c_2}{4-d^2}$$

$$-2dp_1 = \frac{8a - 8ad + 8c_2 - 2ad^2 + 2ad^3 - 2d^2c_2 + 4ad + 4ad^2 - 8a - 4dc_1 - 8c_2}{4-d^2}$$

$$-2dp_1 = \frac{-4ad + 2ad^2 + 2ad^3 - 2d^2c_2 - 4dc_1}{4-d^2} \rightarrow p_1 = \frac{-ad(1+d) + 2a + dc_2 + 2c_1}{4-d^2}$$

$$\rightarrow E_4(p_1^*, p_2^*), p_1^* = \frac{-ad(1+d) + 2a + dc_2 + 2c_1}{4-d^2}, p_2^* = \frac{-ad(1+d) + 2a + 2c_2 + dc_1}{4-d^2}$$

Impact of Social Capital and Cultural Values on COVID-19

Rodica Cristina Butnaru¹, Gina Ionela Butnaru², Geanina Brînză³ and Alexandru Anichiti⁴

¹⁾ *University of Quebec, Montreal, Canada.*

²⁾ *Alexandru Ioan Cuza University, Iași, Romania.*

³⁾⁴⁾ *Ștefan cel Mare University, Suceava, Romania.*

E-mail: reteaca.rodica_cristina@uqam.ca; E-mail: gina.butnaru@uaic.ro

E-mail: brinzageanina@gmail.com; E-mail: alexandruanichiti@gmail.com

Please cite this paper as:

Butnaru, R.C., Butnaru, G.I., Brînză, G. and Anichiti, A., 2021. Impact of Social Capital and Cultural Values on COVID-19. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 317-325
DOI: 10.24818/BASIQ/2021/07/041

Abstract

COVID-19, caused by the SARS-CoV2 virus, determined the largest pandemic of the last century. 73 states were analysed from the point of view of the number of infections and deaths caused by COVID-19, influenced by the income inequality of the citizens of a country (GINI), social capital, and uncertainty avoidance. Populations face disproportionate rates of COVID-19 infection and mortality; inequalities consist of reduced access to health care, social mobility, or economic segregation (Oronce, et al., 2020). This study analyses the associations among the central aspects of social capital (trust in public institutions), income inequality (GINI index for income), national culture (level of uncertainty avoidance), and the SARS-CoV2 virus infection rate in 73 countries included in different time waves of the World Values Survey 2017-2020 (WVS) (Elgar et al., 2020). We performed the statistical analysis with the help of the Stata statistical program, and we used country level variables. The results of the study show that the income inequality of the citizens of a country (GINI), and uncertainty avoidance at the societal level influence the increase of the SARS-CoV-2 virus infection rate. On the other hand, the higher the trust in public institutions (social capital), the lower the SARS-CoV-2 virus infection rate. This research considers the variables related to social capital, as well as characteristics of the national culture, which may explain the SARS-CoV-2 virus infection rate. The results contribute to the understanding of the phenomenon at international level, and help the political authorities in formulating social solutions to this crisis.

Keywords: trust in public institutions, GINI, level of uncertainty avoidance, COVID-19, SARS-CoV2 virus infection rate, World Values Survey.

DOI: 10.24818/BASIQ/2021/07/041

Introduction

Bubonic Plague, Spanish Flu, Smallpox, Ebola, SARS and MERS, and now COVID-19 flu are not just health problems, they inevitably belong to our social nature. The COVID-19 pandemic broke out in Asia, spread rapidly in Europe, and then spread globally. COVID-19, compared to other epidemics, caused the amplification of the social problem through social networks, and certainly requires social solutions (Wu, 2021). The COVID-19 pandemic highly affected the economies, and disrupted global economic activities. Governments built a complex set of economic and health policies to control the crisis (Müller, 2020).

This topic quickly became a priority for researchers, and it was approached from several perspectives, i.e., based on social, economic, cultural, technological, medical factors, etc. Regarding economic factors, research shows that states with high income inequality have a high number of deaths due to the

SARS-CoV2 virus, which suggests that factors such as income inequality may explain why some countries are deeply affected by the COVID-19 pandemic (Oronce, et al., 2020).

Some researchers, such as (Ruck, et al., 2020; Bartscher, et al., 2020; Huynh, 2020), considered only one category of factors, and tried to explain its effects on the COVID-19 pandemic. To overcome this gap, the main purpose of this study is to integrate in the analysis more than one category of factors. In this research we consider a multidimensional approach, i.e., we analyse the SARS-CoV-2 virus infection rate from the perspective of the influence of social capital (trust in public institutions), income inequality (GINI index for income), national culture (level of uncertainty avoidance) in 73 countries included in the World Values Survey 2017-2020 (WVS).

Our study contributes to the literature on the importance of social capital and cultural values for society, considering the economic aspect of the country. The results of this study have important implications for policy makers when deciding in the future on health crisis measures.

In the first section, the study presents the analysis of the literature, followed by the research methodology and the research model, and at the end, a section of discussions and conclusions. The results show that income inequality of the citizens of a country (GINI) influences the increase in the SARS-CoV-2 virus infection rate, the higher the trust in public institutions (social capital), the lower the SARS-CoV-2 virus infection rate and that uncertainty avoidance will increase the SARS-CoV-2 virus infection rate.

Literature review

SARS-CoV-2 infection rate versus income inequality of the citizens of a country (GINI)

Infectious diseases can also be shaped by socio-economic status (SES), determined for example by habitus, nutrition, and crowded housing or clusters. Second, the focus on the unequal economy measured as income inequality (GINI index) should be complemented by measures of unequal wealth (GINI index for wealth), following the process of globalisation with tax-exempt multinational companies. Third, the aspects of social capital were measured in different time waves of the global values survey (EVS/WVS, 2021) for different countries, which is a weakness, because trust and other aspects of social capital vary over time, and depend on specific events, and social and economic trends (Wu, 2021).

Along the time, epidemics increased income inequality. The COVID-19 crisis led to job losses, and workers with lower education (pre-university) were most affected by the pandemic crisis (Furceri, et al., 2020). Thus, Aspachs, et al. (2020) show in their study that the effects of the COVID-19 pandemic can disproportionately affect the most vulnerable segments of the population, creating serious challenges for political stability and social cohesion. These issues led to wage inequality due to wage cuts, especially for low-income workers, and to job losses.

Countries with high levels of income inequality recorded significantly negative behaviours in terms of COVID-19 outbreaks, respectively deaths and number of cases. These aspects outline the socio-economic disadvantages which may influence the spread of SARS-CoV-2 and deaths associated with the virus. The elements shaping an image of the income inequality of the citizens of a country are obesity, smoking, pollution and/or poor housing. Governments must aim to bridge the gap between the citizens' income inequality and the low incomes of vulnerable groups, and to improve health (Wildman, 2021).

Therefore, this study proposes to test the following hypothesis:

H1: Income inequality of the citizens of a country (GINI) influences the increase in the SARS-CoV-2 virus infection rate.

Effects of COVID-19 on social capital

The mortality caused by COVID-19, social trust and group affiliation realistically illustrate that social capital issues can have negative effects on health. Mandatory rules implemented by governments have a significant impact on social distancing compared to national culture (Wang, 2020). Official strategies

associated with the COVID-19 pandemic are directly influenced by social capital, but there is no certainty that they will be an important factor in the components of COVID-19 (Bartscher, et al., 2020). Favourable economic developments are positively correlated with social capital, which is why it is considered that in times of crisis, in our case the health crisis generated by the COVID-19 pandemic, responsible social behaviour and collective action are required.

On the other hand, the empirical study conducted by Kokubun (2020) shows that there is a direct correlation between social capital and infection rates. In the same line, according to the study of Bartscher, et al. (2020), a higher social capital is expected to be indirectly positively correlated with the economy during the pandemic, and also post-pandemic COVID-19. In addition, the study shows that low social capital requires strict formal policies to curb the spread of the virus. Investments in building social capital are an insurance in case of future pandemics. Governments should focus on investing in social capital, not just in the health care system, in order to be well prepared for crisis situations similar to the crisis caused by the COVID-19 pandemic.

The empirical study conducted by Elgar, et al., (2020) mentions that social trust as a component of social capital, and group membership (cultural value related to the level of collectivism of a society) are associated with a higher death rate, possibly due to a higher infection rate and a lack of rigour in the physical distance policy.

Local community programs can increase social interaction and lead to pro-social behaviour and increased cooperation, which can be prerequisites for the formation of social capital, but investments need not be made only in areas with low social capital, because such an approach could lead to an erosion of social capital itself (Bartscher, et al., 2020). Economic units with strong social capital are correlated with slow declines in returns compared to economic units with low social capital.

Therefore, this study proposes to test the following hypothesis:

H2: The higher the trust in public institutions (social capital), the lower the SARS-CoV-2 virus infection rate.

The impact of uncertainty avoidance during the COVID-19 crisis

The way in which a society responds to a pandemic depends on collective behaviour, which is guided by cultural values specific to the cultural context (Ruck, et al., 2020). National culture is the explanatory vector of cultural differences among societies, and represents the context of collective behaviour. The cultural analysis model developed by Hofstede proposes six dimensions (individualism, power distance, masculinity, uncertainty avoidance, long-term orientation, indulgence), which explain the differences in collective behaviour among societies with a different mental programming (Hofstede, 2011). Individualism can be defined as a preference for a loosely-knit social framework in which individuals are expected to take care only of themselves and of their immediate families (Hofstede, et al. 2010). Bazzi, et al. (2021) demonstrated that robust American individualism (which is a combination of individualism in this country and the opposition of society to government intervention) contributed to undermining collective action against the COVID-19 pandemic. Gelfand, et al. (2021) showed that societies with strict rules were much more successful in managing the pandemic than others, while Messner (2020) concluded that countries with a high indulgence score would be less compliant with public health rules, and would participate in social activities, which might have an impact on increasing the infection rate during the pandemic.

The level of uncertainty avoidance identified in the collective behaviour of a country is a dimension related to the level of stress in a society in the face of an unknown future (Hofstede, 2011). The uncertainty associated with the COVID-19 pandemic represents the disproportionate inability of the individual to tolerate the absence of obvious information about the effects of the current crisis. Uncertainty creates anxiety and insecurity, and the COVID-19 pandemic is considered a more threatening crisis by the people with higher intolerance of uncertainty (Sauer et al., 2020). Thus, the population had to comply with the national rules imposed since the beginning of the COVID-19 crisis; in addition, human behaviours were modelled according to their cultural context (Ruck, et al., 2020).

The study conducted by Huynh (2020) explained the role of cultural dimensions in the practice of social distancing worldwide. By extracting data from Google COVID-19 reports regarding community

mobility, and using cultural Hofstede factors for 58 countries between February 16th, 2020 and March 29th, 2020, it was found that countries with higher levels of the *Uncertainty Avoidance Index* predicted lower proportions of people gathering in public, such as retail and recreation, grocery and pharmacy, parks, transit stations, jobs. However, there is no predictive factor in relation to the percentage of citizens living in their residential areas. The control variable, GDP per capita (as a state of wealth) showed that the results were robust. Therefore, this paper suggests some effective communications on the COVID-19 pandemic by emphasising the role of uncertainties. Governments must build policy measures to limit uncertainties in order to positively influence the expectations of both consumers and economic units (Müller, 2020).

This study considers individualism, long-term orientation, masculinity, power distance, and indulgence as control variables.

Therefore, this study proposes to test the following hypothesis:

H3: Uncertainty avoidance will increase the SARS- CoV-2 virus infection rate.

Research methodology

This study analyses the associations among central aspects of social capital (trust in public institutions), income inequality (GINI index for income), national culture (level of uncertainty avoidance), and the SARS-CoV-2 virus infection rate in 73 countries included in various time waves of the World Values Survey 2017-2020.

Consequently, we formulated the following research hypotheses:

H1: Income inequality of the citizens of a country (GINI) influences the increase in the SARS-CoV-2 virus infection rate.

H2: The higher the trust in public institutions (social capital), the lower the SARS-CoV-2 virus infection rate.

H3: Uncertainty avoidance will increase the SARS-CoV-2 virus infection rate.

We used multiple linear regression models to assess whether the SARS-CoV-2 virus infection rate was influenced by social capital, GINI index, and the degree of uncertainty avoidance. The multiple linear regression analysis has been used because regression allows you to estimate how a dependent variable changes as the independent variable(s) change and multiple linear regression is used to estimate the relationship between two or more independent variables and one dependent variable. Statistical analysis began with the careful selection of independent variables and control variables, followed by testing Pearson correlations among variables. This was done to avoid the introduction in statistical analysis of strongly and statistically significantly correlated variables, which would have led to inconsistent results. Then followed the actual multiple linear regression analysis and verification of the parameters of the analysed model by comparing goodness-of-fit statistics.

Data analysis

This study used data taken from the World Values Survey database, the 2017-2020 survey. This survey includes data for 79 countries, but in this analysis, we used data for 73 countries, as for Andorra, Hong Kong, Macao, New Zealand, Puerto Rico and Taiwan, the World Bank (2021) website did not provide data on the GINI coefficient. Thus, with missing data, these countries were removed from the statistical analysis. We performed the statistical analysis with the help of the Stata statistical program, and we used country level variables. The data for the *Percentage of people tested positive for COVID-19 in the total number of tests* was sourced from worldometer.com, while the variable *Uncertainty Avoidance* from Hofstede-insights.com.

Selection and description of variables

The following variables are used in this study:

- 1) Dependent variable: a) Percentage of people tested positive for COVID-19 in the total number of tests (until March 7th, 2021);
- 2) Independent variables: a) GINI; b) Uncertainty Avoidance; c) Social capital – trust in the civil service;
- 3) Control variables: a) Individualism; b) Long-term orientation; c) Masculinity; d) Power Distance; e) Indulgence.

Table no. 1. Description of the variables used

Variable	Code	Description	Type of variable	Scale
Percentage of people tested positive for COVID-19 in the total number of tests	Infection rate	Percentage of people tested positive for COVID-19 in the total number of tests – at country level, until March 7th, 2021	Interval	0-100
GINI	GINI	The Gini coefficient has probably been the most traditional and well-known index in economics to measure income inequality in a society. Its values range between 0 and 1, where 0 indicates a society where everybody earns the same, while a Gini index approaching 1 means the opposite situation—that is, a society where a few people (and eventually only one person) earn most of the country’s wealth. (Crespo and Hernandez, 2020, p.1).	Interval	0-1
Uncertainty Avoidance	UA	A dimension related to the level of stress in a society in the face of an unknown future (Hofstede, 2011).	Interval	0-100
Social Capital - civil service	SC	This dimension refers to the trust in public institutions. The variable has the values 5 for very low trust, 4 for low trust, 3 for medium trust, 2 for high trust, and 1 for very high trust in public institutions.	Likert (interval)	1-5
Individualism	I-dc	Individualism can be defined as a preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families (Hofstede et al. 2010).	Interval	0-100
Long-term orientation	LTO-dc	Societies who score low on this dimension prefer to maintain time-honoured traditions and norms while viewing societal change with suspicion (Hofstede et al. 2010).	Interval	0-100
Masculinity	M-dc	The Masculinity side of this dimension represents a preference in society for achievement, heroism, assertiveness, and material rewards for success (Hofstede et al. 2010).	Interval	0-100
Power Distance	PD	Related to the different solutions to the basic problem of human inequality (Hofstede et al. 2010);	Interval	0-100
Indulgence	I	Related to the gratification versus control of basic human desires related to enjoying life (Hofstede, 2011).	Interval	0-100

Source: personal contribution

Research model

As shown above, in this paper we used multiple linear regression equations. We used this type of regression to evaluate how the SARS-CoV-2 virus infection rate was influenced by the social capital, the GINI coefficient, and the degree of uncertainty avoidance. We used the control variables: individualism; long-term orientation; masculinity; power distance; indulgence.

To test the hypotheses of this study and to analyze the factors influencing the SARS-CoV-2 virus infection rate, we used the multiple regression model shown in Equation 1 (Eq.1):

$$Y = \beta_0 + \beta_1 + \beta_2 + \varepsilon \tag{1}$$

Model 1 becomes:

$$\text{Infection rate} = \beta_0 + \beta_1 \text{GINI} + \beta_2 \text{UA} + \beta_3 \text{I-dc} + \beta_4 \text{LTO-dc} + \beta_5 \text{M-dc} + \beta_6 \text{PD} + \beta_7 \text{I} + \varepsilon \tag{2}$$

Model 2 becomes:

$$\text{Infection rate} = \beta_0 + \beta_1 \text{GINI} + \beta_2 \text{UA} + \beta_3 \text{SC} + \beta_4 \text{I-dc} + \beta_5 \text{LTO-dc} + \beta_6 \text{M-dc} + \beta_7 \text{PD} + \beta_8 \text{I} + \varepsilon \tag{3}$$

Where Y is the dependent variable, β are vectors of the parameter proposed to be estimated, ε is the error term.

Table 2 shows the parallel correlations among the variables. Thus, the correlations among the variables are weak, without a correlation above 0.700. Even if there are some variables significantly correlated, there is still no multicollinearity, which means that there are no factors preventing consistent results.

Table no. 2. Correlations among variables

		Infection rate	GINI	UA	SC	I-dc	LTO-dc	M-dc	PD	I
Infection rate	Correlation Sig. (2-tailed)	1								
GINI	Correlation Sig. (2-tailed)	0.370* 0.000	1							
UA	Correlation Sig. (2-tailed)	0.389* 0.000	-0.044 0.078	1						
SC	Correlation Sig. (2-tailed)	0.636* 0.000	0.118 0.147	0.520* 0.000	1					
I-dc	Correlation Sig. (2-tailed)	-0.313* 0.000	-0.285* 0.003	0.299* 0.000	0.030 0.176	1				
LTO-dc	Correlation Sig. (2-tailed)	-0.068 0.345	-0.397* 0.000	-0.149 0.90	-0.152 0.307	- 0.072* 0.000	1			
M-dc	Correlation Sig. (2-tailed)	-0.110 0.109	0.176 0.161	-0.093 0.116	0.045 0.278	0.087 0.089	0.027 0.103	1		
PD	Correlation Sig. (2-tailed)	0.354* 0.000	0.153 0.281	0.289* 0.000	0.065 0.212	- 0.700* 0.034	0.232 0.123	-0.448 0.096	1	
I	Correlation Sig. (2-tailed)	0.058 0.210	0.337* 0.000	-0.269 0.332	0.090 0.90	0.343* 0.000	-0.605* 0.000	0.044* 0.000	-0.441* 0.000	1

Note: *** indicates that $p < 0.05$;

Source: our own calculations based on Stata statistical analysis software

Table 3 shows the regression coefficients. Two models were tested. Model I includes the cultural dimensions defined by Hofstede et al. (2010) as independent variable. Model II also includes the dependent variable social capital.

Table no. 3. Regression results

Model I			Model II		
Infection rate	β	Std. error	Infection rate	β	Std. error
GINI	0.004** (0.048)	0.001	GINI	0.003** (0.049)	0.001
UA	0.001*** (0.004)	0.000	UA	0.000* (0.057)	0.000
I-dc	0.000 (0.354)	0.000	I-dc	0.000 (0.725)	0.000
LTO-dc	0.000 (0.548)	0.000	LTO-dc	0.000 (0.327)	0.000
M-dc	0.000 (0.691)	0.000	M-dc	0.000 (0.124)	0.000
PD	0.001* (0.068)	0.000	PD	0.000 (0.818)	0.000
I	0.000 (0.240)	0.000	I	0.000 (0.422)	0.000
Cons.	0.300*** (0.000)	0.011	SC	0.136*** (0.000)	0.033
			Cons.	-0.311*** (0.000)	0.114

Note: *, **, *** indicates that $p < 0.10$, $p < 0.05$, $p < 0.01$. Dependent variable: infection rate (percentage)

Source: our own calculations based on Stata statistical analysis software

Table 4 presents the goodness-of-fit statistics for the regression model: R^2 , adj. R^2 , root MSE and Prob. > F. Prob. > F tests of the model coefficients are significant ($p < 0.05$), confirming the causal relationship of the proposed models, and accepting the hypothesis that the β coefficients are different from zero. R^2 is 0.359 in the first model, and increases to 0.525 in the second model, which shows that model II is more efficient, with independent variables better explaining the dependent variable. The same is confirmed by the adjusted R^2 .

Table no. 4. The goodness of fit statistics

Model I		Model II	
Root MSE	0.768	Root MSE	0.668
Prob. > F	0.000	Prob. > F	0.000
R^2	0.359	R^2	0.525
Adjusted R^2	0.265	Adjusted R^2	0.445

Source: our own calculations based on Stata statistical analysis software

Discussions

The following hypotheses were proposed in this study:

H1: Income inequality of the citizens of a country (GINI) influences the increase in the SARS-CoV-2 virus infection rate. The results show that a country's GINI score has a statistically significant effect on the percentage of COVID-19 infections in the total number of tests performed. The effect of GINI on the spread of infectious diseases had been studied before, generally observing a statistically significant effect of this indicator on the speed of the spread of infectious diseases. Therefore, hypothesis H1 is confirmed. This hypothesis confirms the results obtained in previous research by Elgar et al., (2020).

H2: The higher the trust in public institutions (social capital), the lower the SARS-CoV-2 virus infection rate. The results show that a country's social capital has a statistically significant effect on the percentage of COVID-19 infections in the total number of tests performed. The effect of this indicator on the spread of infectious diseases had been studied before, generally observing a statistically significant effect of this indicator on the speed of the spread of infectious diseases. Therefore, the hypothesis H2 is confirmed. Thus, the results obtained in previous research by Elgar et al., (2020), Wu (2021) and Kokubun (2020) are also confirmed.

H3: Uncertainty avoidance will increase the SARS-CoV-2 virus infection rate. The results show that the score of this cultural dimension (uncertainty avoidance) of a country has a potential significant effect on the percentage of COVID-19 infections in the total number of tests performed. In model I, this variable has a statistically significant effect on the dependent variable. However, in model II, the effect of this variable becomes statistically insignificant, as a result of the introduction of the variable *social capital* in the general model. Therefore, more studies are needed to determine whether the level of uncertainty avoidance has an effect on the spread of infectious diseases. Thus, the hypothesis H3 is only partially confirmed, which shows that we obtain results which partially contradict previous studies (Sauer et al., 2020; Gelfand et al., 2021).

Table 5 summarizes the results of the proposed hypotheses, as follows:

Table no. 5. Hypotheses results

No.	Hypothesis	Coefficient M1	Coefficient M2	Is the hypothesis supported?
H1	GINI → Infection rate	0.004** (0.048)	0.003** (0.049)	YES
H2	SC → Infection rate	Not in the model	0.136*** (0.000)	YES
H3	Uncertainty avoidance → Infection rate	0.001*** (0.004)	0.000* (0.057)	Partially

Note: *, **, *** indicates that $p < 0.10$, $p < 0.05$, $p < 0.01$.

Source: our own calculations based on Stata statistical analysis software

Conclusions

The aim of this article was to answer the following question: *Can international capital, the GINI coefficient, and the degree of uncertainty avoidance explain international differences in increasing the SARS-CoV-2 virus infection rates?* It is widely assumed that social cohesion, public confidence in government sources of health information, and general concern for the wellbeing of others have a positive effect on the infection rate in a pandemic (Elgar et al., 2020). Country data on *income inequality*, *social capital*, and *uncertainty avoidance* were related to the values of SARS-CoV-2 infection rate in 73 countries, and these relationships were tested through the statistical analysis.

The infection rate was positively and statistically significantly correlated with income inequality and low confidence in public institutions (low social capital), while the degree of uncertainty avoidance was statistically significantly correlated with the infection rate in the first model, becoming statistically insignificant in the second model. These associations took place in multiple and controlled linear regression models, taking into account Hofstede’s cultural dimensions (Hofstede et al., 2010). The results indicated that more economically unequal societies, where the level of social capital was low, recorded more SARS-CoV-2 virus infections.

On the other hand, cultural differences, i.e., the level of uncertainty avoidance of the society, have a potential impact on the SARS-CoV-2 virus infection rate. Due to the fact that the hypothesis H3 is only partially confirmed, in future research it is necessary to study this variable by groups of countries to determine the effect of uncertainty avoidance on the spread of infectious diseases. This study has some limitations. Firstly, there were countries and territories that were not part of the analysis due to the lack of information from the World Bank regarding their GINI: Andorra, Hong Kong, Macao, New Zealand, Puerto Rico and Taiwan. Secondly, the accuracy of the results depends a lot on the accuracy of the data provided by the governments of the countries involved in the study. However, we believe that this article has practical implications and contributes to the global understanding of the phenomenon and helps the political authorities in formulating social solutions to this crisis. The implications of this study are two-fold. Firstly, it shows that countries with a high-income discrepancy (GINI) are in a poor spot when it comes to epidemics and pandemics with more effort being required from these states in order to keep their most vulnerable citizens safe in case of a pandemic. Secondly, social capital is also very important, and, in times of crisis (health crisis) the institutions of the state should make efforts to maintain or improve their public image.

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Reconfigurations of Business Environment in Tourism Industry Under the Impact of COVID-19

Gina Ionela Butnaru¹, Maria Magdalena Maftai² and Mirela Ștefănică¹

¹⁾ Alexandru Ioan Cuza University, Iași, Romania.

²⁾ Ștefan cel Mare University, Suceava, Romania.

E-mail: gina.butnaru@uaic.ro; E-mail: mariamagdalenamaftei@gmail.com;

E-mail: mirela.stefanica@uaic.ro

Please cite this paper as:

Butnaru, G.I., Maftai, M.M. and Ștefănică, M., 2021. Reconfigurations of Business Environment in Tourism Industry Under the Impact of COVID-19. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021.7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 326-335
DOI: 10.24818/BASIQ/2021/07/042

Abstract

The main purpose of this paper is to analyse the reconfiguration of the business environment in the tourism industry as a result of the effects of the COVID-19 pandemic. The COVID-19 pandemic, perceived as the deepest crisis in the history of tourism, strongly influenced people's lives and their leisure behaviour, and led to the cessation of global business in general, and of tourism in particular. The widespread pandemic raised significant challenges for the development and sustainability of tourism, agrotourism, and business in areas with tourism potential. Thus, we highlighted the fact that a sustainable recovery aiming economic prosperity, environmental integrity, and social equity can be achieved only in a context where the entire planet is aware of the globalisation and of the importance of education in managing cooperation between peoples. This research focuses on an analysis of the business of tourism industry under the effect of the COVID-19 pandemic, as well as how these businesses will have to adapt in order to survive in the new conditions. In this context, COVID-19 becomes an accelerator for cooperation and digitalisation, and leadership is fundamental and vital to bring together business representatives, academics, and all citizens with a global perspective, who can put into motion capital flows, investments, technology, people, and ideas. The results of this research underline the fact that all tourism activities will have to be reconfigured to survive, and policy makers will have to come up with initiatives and focus on supporting and developing the operations of tourism companies during the COVID-19 pandemic.

Keywords

business environment, tourism industry, Covid-19 crisis, global/European perspective.

DOI: 10.24818/BASIQ/2021/07/042

Introduction

The new type of coronavirus, abbreviated COVID-19 (SARS-CoV-2), affected the business environment of the tourism industry, and millions of people missed the chance to explore new destinations, to embrace different cultures and customs, missing opportunities to create new jobs, to support businesses initiated for the development and protection of tourist destinations. The COVID-19 pandemic has been affecting human health and global economies (Donthu and Gustafsson, 2020), due to the fact that the SARS-CoV-2 virus is highly contagious (Liu, et al., 2020, Hafner, 2020). International tourist arrivals in the first quarter of 2020 dropped to a fraction of what they were a year ago (UNWTO, 2020). The tourism sector has been one of the most affected sectors of activity due to the closure of airports, the suspension of activities in the hotel industry, travel restrictions, etc (The Guardian, 2020). Thus, companies in the service sector in general, and tourism in particular were severely affected by the inherent risk regarding people's safety and health. The COVID-19 crisis

significantly affected the business environment in the tourism industry, as some of them either completely suspended their operations, or reduced them considerably for a limited period of time (European Parliament, 2020), or adapted to the new situation, thus developing the online trade in response to the fact that people were isolated at home (Dannenberg, et al., 2020). According to the UNWTO (2020), the perspectives fell sharply and showed a high degree of uncertainty about the near future for the tourism sector. However, confronted with such a recession, tourism ended the year 2020 more united and determined than ever (Pololikashvili, 2020). Thus, according to Gössling, et al. (2020), tourism is an industry in which incomes are permanently lost because unsold products and services (such as accommodation) cannot be sold at a later date. Although accommodation can usually be sold online, it requires physical contact (the tourist must physically live in the accommodation unit). In this context, economic operators engaged in tourism-related activities recorded significant decreases in revenue (Do, et al., 2021) due to lower demand, increased cancellations or postponements of the services already contracted (UNWTO, 2020).

Research methodology

The aim of the research is to analyze the reconfiguration of the business environment in the tourism industry as a result of the effects of the COVID-19 pandemic.

The objectives of the research are:

- analysis of the tourism sector in the current pandemic context
- identifying the effects of the health crisis on the tourism industry, respectively the business environment in the tourism industry
- highlighting the necessary measures to be adopted in the tourism industry in order to overcome the COVID-19 crisis

The qualitative exploratory research undertaken is based on the method of analysis of documents, official or statistical documents issued by various representative international organizations, namely UNWTO, European Commission, European Parliament, World Health Organization, Global Green Growth Institute. The secondary data used in our research, data provided by these organizations in the reports published during the pandemic will help us to highlight the changes generated by the COVID-19 pandemic that must be faced by all those involved in tourism.

Results and discussion

The current context in the global tourism sector

In the last 10 years, tourism was one of the fastest growing economic sectors in the world, with forecasts confirming the continuous growth of this sector until the end of 2020. In 1950, there were 25 million tourists, with an annual increase of over 5.6% until 2018, i.e., 1.4 billion people who made a trip abroad for tourism purposes. Thus, World Tourism Barometer (2016) shows that international arrivals will grow to 1.8 billion by 2030 (UNWTO, 2016, p. 14 quoted in Fayos-Solà and Cooper, 2019) (UNWTO, 2017). Forecasts showed a continuous increase, but due to the COVID-19 pandemic, the year 2020 completely changed the global situation of the economy in general, and tourism in particular (Mehta et al., 2021). Tourist destinations were affected by government policies on restrictions to limit the spread of the virus (Kunzmann, 2020). A decrease of up to -22.4 million tourists globally was recorded in the first quarter of 2020 (table no. 1).

Table no. 1. International Tourist Arrivals by (Sub)region (million)

	2010	2017	2018	2019	2020 (Q1)
World	952	1,333	1,408	1,462	-22.4
Europe	487	676.6	715.9	744.3	-19.1
Asia and the Pacific	208.2	324.1	347.7	360.6	-34.6
Americas	150.3	210.9	215.9	220.2	-15.2
Africa	50.4	63.3	68.8	73.2	-12.5
Middle East	56.1	57.7	60.1	64.2	-10.8

Source: UNWTO- World Tourism Barometer, 2020, p. 6

Tourism Barometer, *International tourism faces deepest crisis in history* (UNWTO, 2020, p.14), shows that this is the largest decline in revenue recorded in the history of tourism with a high-risk for about 100 to 120 million direct jobs in tourism, especially in the economic destinations, where tourism generated labour, such as Small Island Developing States (SIDS), and, in general, in countries where the size of the tourism sector represented the largest share of total activities. In this context, the involvement of governments and international organisations is important to minimise the impact on jobs, companies, and livelihoods for millions of people. However, the perspectives are still extremely uncertain due to the evolution of the pandemic, which proves to be stronger than the previous ones, due to the intensity of international travel and the naivety of the population (Tsamakis et al., 2020). These factors led to severe measures, including travel restrictions which are still in place in many destinations, and stopping the virus is slow.

UNWTO (2020, p.10) called for the need to reopen tourism in a responsible, safe, coordinated, and hassle-free manner when travel restrictions are lifted. Restoring confidence in the sector is crucial. Thus, three scenarios for international tourism were outlined for 2020: Based on the three UNWTO scenarios published in May 2020, which showed decreases of the indicator of international tourist arrivals from 58% to 78%, current trends suggest a decrease closer to 70% for 2020 (UNWTO, World Tourism Barometer, 18(5), August/September 2020). Later, alternative ways to recover from the global blockage were described, based on a possible lifting of travel restrictions in July, September, and December 2020.

Scenario 1 showed a recovery of the level recorded in 2019 in 2 and a half years, starting with the end of 2020 (until mid-2023). Scenario 2 suggested a recovery after 3 years (by the end of 2023), and scenario 3, the slowest, in 4 years (by the end of 2024) (UNWTO, World Tourism Barometer, 18(5), August/September 2020, p. 11). These recovery periods largely exceed the periods observed in previous crises, both globally (11 to 19 months) and for the most severely affected specific regions (1 to 3 and a half years). Looking into previous crises in World Tourism Barometer, 18(2), May (2020, p. 19), it took 11 months for international arrivals to regain pre-crisis levels after the 2003 SARS epidemic, 14 months after the attacks in September 11, 2001, and 19 months after the global economic crisis of 2009. In the most affected regions, the recovery took between 1-3 and a half years for tourist arrivals to reach pre-crisis levels. The analysis of previous crises showed that in recovery, the time varies greatly from one crisis to another, worldwide and by region.

Thus, it took 14 months for tourist arrivals in Asia, the United Kingdom and the Pacific to return to pre-crisis levels after the SARS epidemic. Europe regained its pre-global economic crisis levels after 29 months for international arrivals. The slowest but most affected region in the post-crisis recovery process was America after the terrorist attacks of September 11, 2001. It took up to 42 months (3 and a half years) for America to recover its international arrivals lost after this date. In this case, the longer recovery time was also due to the impact of the 2001 economic crisis in some American countries, as well as the SARS outbreak in early 2003, which affected Canada and other destinations.

Extended scenarios for 2021-2024 indicate a strong return in 2021 (UNWTO, World Tourism Barometer, 18(5), August/September 2020, p. 11). Even if these estimates turn out to be positive, international arrivals are expected to remain below 2019 levels in both 2021 and 2022 for all three scenarios, unless there is a major breakthrough in the treatment and prevention of COVID-19.

The impact of COVID-19 on tourism and business environment in the tourism industry

Since the beginning of the COVID-19 pandemic, tourists have faced situations of cancellation of travel plans, avoiding places and people they considered hazardous for health. The economic consequences of the COVID-19 pandemic, which began in late 2019 in Wuhan, China (Altuntas and Gok, 2021), have had serious effects on the global economic system, causing damage to the tourism sector. Thus, according to data provided by UNWTO (2020), after decades of global tourism growth, the forecasts for 2020 on international arrivals were revised. The crisis generated by COVID-19 came at a time when the tourism sector employed more people than ever before (70 million workers worldwide in the tourism sector) (Butnaru et al., 2020). In general, the problems caused by epidemics or pandemics have a strong impact on the tourism industry (the first area affected by such crises). In this context, economic agents engaged in tourism-related activities (travel agencies, hotels, restaurants, carriers, rent-à-car)

recorded significant decreases in revenue due to lower demand, increased cancellations or indefinite postponements of services already contracted, etc. (Pāvāļuc, et al., 2020).

Harvard Business School, emphasises through Quelch (2020) that communication is very important in this period, and the leaders of the economic and social environment should build communication strategies. The pandemic period is a time when all resources must be used, and individuals should be encouraged to work online and to be mobilised effectively in crisis situations. The reunification of work teams has a potential role in overcoming uncertainties and the crisis itself. Currently, the society is in a new era of work - remote work - in which employees strive to assimilate the new rules, leaders do not yet have well-established work trajectories, and organisations must present a perspective on the future (Harvard Business School, Gerdeman, 2020). Carlisle, et al. (2021) also show that clear and decisive communication is the way by which leaders can support team members to work remotely in an uncertain and unprecedented time. Videoconferencing and data transmission by e-mail are the means by which the activity within an institution can be carried out predominantly in times of crisis (Harvard Business School, Gerdeman, 2020). The huge challenge of working from home is represented by the focus on work tasks, and the necessity to balance the family members' demands. Thus, flexibility, determined by time and availability, is important. Leaders have the task of assessing the contribution of each team member based on workload and work management capacity in the circumstances generated by the COVID-19 pandemic, then they have the role of balancing the tasks of a project according to emerging needs. There is a risk that, during this period, the individual's performance and commitment is affected, due to the fundamental changes caused by the crisis, but a proof of goodwill from organisations is expected (Harvard Business School, Gerdeman, 2020).

The outbreak of the COVID-19 pandemic affected the activity and development of tourism businesses, of hospitality industry (Altuntas and Gok, 2021, p. 2). In order to return to normal operating activities, the companies involved will have to comply with certain operating rules in this new environment. On April 15th, 2020, the European Commission, in cooperation with the President of the European Council, presented the European Union's Guidelines to health protocols in tourist accommodation units. This part of the guidelines proposes the following principles for the operation of tourist accommodation structures (European Commission, 2020):

- a) *Health and safety of guests* - guests using the tourist accommodation unit and workers participating in the provision of the tourist service must take measures to prevent infection and transmission of the SARS CoV-2 virus (Jones and Comfort, 2020, p. 3045) and of any other viruses. Measures must be clearly communicated, including through digital, visible and effective means, for both guests and employees.
- b) *Training of employees and tourists* - all employees working in tourist units should be aware of the symptoms of COVID-19 and should be informed about the basic measures of infection prevention and control. Guests should also receive all necessary information in an accessible manner, including by digital means, before arrival and at the accommodation site, regarding all current guidance from local public health authorities, as well as specific measures which are implemented and which are affecting their arrival, stay and departure.
- c) *Personnel management* - it is necessary to take into account measures to reduce the staff's presence in the unit, such as working from home for all personnel performing tasks which may be compatible with telework. Measures to reduce the number of physical contacts and the time of physical contact among the people in the unit should be considered.
- d) *Physical distancing and hygiene* - the unit should implement specific measures to ensure that physical distancing is maintained in common areas where guests can gather for extended periods of time (i.e., more than 15 minutes), such as the establishment of a maximum number of guests allowed in each common area (i.e., restaurants, cafes, bars, lobby). The allocation of places or the (digital) provision of booking the places for meals or for swimming pools or gyms should be considered.

However, one of the advantages of tourism is that it is considered an activity in which tourists are mostly outdoors. In fact, tourists visiting tourist destinations are looking for a unique opportunity to relax in a clean and quiet environment. The lockdown led to a visible improvement in air quality and to a reduction in pollution by up to 30% in the areas most affected by COVID-19 (Girdhar, et al., 2021).

Zawadka (2019) considers that rural tourism, through various types of physical activities, such as horseback riding, cycling and hiking, could increase in an environment dominated by the COVID-19 pandemic, with gyms closed and less time spent outdoors by the population.

The evolution of the COVID-19 pandemic left its mark on global crisis management, with 2020 being a devastating year for global health. Therefore, in 2021, countries around the world will have to continue the fight against COVID-19, with the awareness and hope that science is evolving, providing the availability to build strong health systems to maintain the health of the population. The World Health Organisation (2020) will do this during 2021 through: global solidarity for global health security, accelerating access to COVID-19 tests, medicines and vaccines, promoting everyone's health and addressing global health inequities, global leadership for science and data management, revitalising efforts to fight infectious diseases, controlling drug resistance, preventing and treating of non-communicable diseases (NCDs - Noncommunicable diseases according to World Health Organization), and improving conditions for patients with mental health problems, rebuilding a better, greener and healthier world, the need to demonstrate greater solidarity - among nations, institutions, communities, and individuals, in the fight against the virus (WHO, 2020).

Measures on reconfiguration of business environment in tourism industry during COVID-19 crisis

Rate of improvement of travellers' confidence

Travellers' main concern in this period dominated by COVID-19 is to spend time safely. Thus, the first lever used by global organisations is to increase travellers' confidence.

Free movement of citizens without restrictions and the reopening of internal borders are necessary conditions for improving travellers' confidence, and basic conditions in global tourism. The COVID-19 pandemic led all states to implement travel restrictions by forcing cross-border travellers to comply with quarantine. Business, study, or leisure travels were virtually impossible (Goniewicz, et al. 2020), but they had positive effects on the citizens' quality of life, by the awareness of the importance given to personal hygiene, maintaining of a safe distance in tourist destinations, and the authenticity of local communities (Koh, 2020).

Restoring safe transport is another important factor in increasing travellers' confidence. Thus, the European Commission, through Communication from the commission Covid-19: Guidelines on the progressive restoration of transport services and connectivity defined the ways in which the health of workers and of passengers in the transport sector can also be protected in relation to other economic activities, such as tourism. The European Agency for Health and Safety at the Workplace published general measures for health and safety at the workplace regarding the return to work (European Agency for Safety and Health at Work, 2020).

Tourist services with minimised hygiene risks are another important factor for increasing travellers' confidence. In addition, the European Commission, through COVID-19: EU Guidance for the progressive resumption of tourism services and for health protocols in hospitality establishments, established principles to guide the Member States when resuming tourism activities, and developed protocols related to COVID-19 for tourist accommodation structures, which will minimise the risks of infection for both customers and hotel personnel.

Digital technology started to be used naturally to provide transparent information to citizens who have the right to protect themselves and the others through responsible behaviour. Travellers need access to information in order to plan their trips, also during their actual holidays, about borders, travels, and tourist accommodation units, safety, and hygiene conditions of the place where they intend to travel, regarding the public health and safety regulations in force. Digital technologies and data are also important tools in the fight against the pandemic. For instance, the South Korean model was the most effective during the pandemic, helping to prevent lockdown by combining digital technology with other preventive strategies (Lee, et al., 2020). Consequently, the contact tracking strategies are strengthened, supporting public health authorities in monitoring and limiting the spread of the virus. The evolution from an Industry 4.0 to a Society 5.0 in the context of the COVID-19 pandemic involves the use of technological strategies including artificial intelligence and robotics (Sarfranz et al., 2021, p. 591). They contribute to the monitoring of social distancing (Gupta, et al., 2021), or to the facilitation of

disinfection, especially in places with regular tourist flows. Digital innovation centres support the tourism sector in the new reality generated by the pandemic by providing robots for disinfection and cleaning, robots for crowd management, intelligent booking systems, etc. Consumers, coming in contact with human resources and robots, showed a positive attitude for structures equipped with robots, to the detriment of human interaction (Kim et al., 2021). The year 2021 will bring to everyone's attention a "hackathon" dedicated to the use of digital technologies in tourism (European Commission, Digital Innovation Hubs (DIHs) in Europa, 2021, Kwok and Koh, 2020).

Protecting people's rights to purchase tourist services through access to safe information, effective assistance and dispute resolution bodies contribute to the increase of travellers' confidence. The cases in which tourists are not always reimbursed directly the money paid in advance for transport and travel services cancelled due to the COVID-19 pandemic, often being sanctioned for cancelling tourist services, are examples to avoid in the next period (European Commission, *Rețeaua Centrelor Europene ale Consumatorilor (ECC-Net) referitoare la COVID-19*).

Travel restrictions

The gradual elimination of travel restrictions is coordinated globally, so that everyone can benefit from the holidays they desire in the period to come. By establishing this framework, the communication of the removal or maintenance of travel restrictions also aims to support the sustainability of the tourism ecosystem for future generations. Previous trends used for a return to normalcy promoted by new information technologies and communication in times of crisis, the common economy, local production and consumption, online learning, outdoor hiking or cycling, cooperation among regions will not be interrupted by travel restrictions (Kunzmann, 2020, p. 22). It is about supporting the Member States to lift isolation measures and to resume work and social life, in line with epidemiological and public health criteria. From the common European Roadmap to lifting the measures of limiting the spread of COVID-19, elaborated by the European Commission (2020, p. 1), a coordinated framework based on common, objective and non-discriminatory principles, criteria and recommendations was established to guide Member States, competent authorities, industry bodies, economic operators and citizens through stages of the isolation ending process. However, lifting measures too quickly could cause a sudden resurgence of infections. Until the discovery of an effective vaccine or treatment, the needs and benefits of travel and tourism should be weighed against the risks of facilitating again the spread of the virus, and a recurrence of COVID-19 cases, which could require a reintroduction of isolation measures. For this reason, preparation plans need to be put in place at all levels - from global, national to individual units, transport operators, and other segments of the tourism sector - so that appropriate action can be taken quickly and in a coordinated manner, based on explicit criteria (Sigala, 2020, Altuntas and Gok, 2021). The needs and benefits of travel and tourism must be weighed against the risk of facilitating the resurgence of the virus and recurrent cases, which may require the reintroduction of isolation measures (Jamal and Budke, 2020).

Predominant economic conditions

While the COVID-19 pandemic initially began as a public health crisis, later it spread through the unprecedented blockade of the global economy and is still developing, with rapid effects, such as the collapse of the tourism sector. It depends on international travel restrictions, which are unlikely to be lifted soon, even if countries relaunch their domestic economies. The effects will be felt in many other sectors. As we learned from other crises, people from disadvantaged social and economic groups in developing countries are the most vulnerable, and probably the most affected (Perry, Aronson and Pescosolido, 2021), as they have low immunity, and their governments have no safety resources and cannot afford the kind of incentive packages which European countries and the USA implemented. The overriding priority is to get the economy back on track, favouring the development of digital industries which supported in this period online dating, remote work, culture and entertainment, education and research with software and intensive communication (Kunzmann, 2020), but the climate generated by the crisis has not disappeared. While we enjoy cleaner air than in recent decades in many cities, the resumption of the economy will bring back the same problems. The transition to green as a stimulus and development assistance packages are proposed to revive the economy and to address some of the worst consequences of the economic crisis (Global Green Growth Institute, 2020).

The tourism industry is a sector in which offline and online information and service providers such as travel offices, digital platforms, tourist technology providers, travel agencies and operators, accommodation service providers, destination management organisations, attraction and recreation activities for travellers. Multinational companies and small enterprises operate in this sector, of which 90% are represented by SMEs (Dube, Nhamo and Chikodzi, 2020). Tourism exists in different types of regions: urban centres, islands, coastal, rural, remote and ultra-peripheral areas, being the backbone of the economies of many states, in terms of international arrivals and revenues.

The crisis we are facing had a strong impact globally, and especially in tourism, manifested by an acute liquidity crisis and the threat of jobs (Perry, Aronson and Pescosolido, 2021). This crisis has a major impact on small and medium-sized enterprises (Kunzmann, 2020), in the absence of liquidity and uncertainty, small and medium-sized enterprises are struggling to maintain their livelihoods, to obtain financing, and to keep their employees. Without immediate action and emergency funding, many companies could go bankrupt in the coming weeks or months (Donthu and Gustafsson, 2020). Carlisle, et al. (2021) presents studies providing guidelines and managerial strategies for operators, for future prosperity, as the COVID-19 pandemic continues to evolve. They include digital, social and ecological skills, understanding diversity, continuous development and communication skills.

During this period, global tourism will have as a short-term priority the promotion of local tourism. Quarantine measures and creativity in this crisis offer tourists the opportunity to enjoy the rich cultural diversity, the nature of their own country, the pleasure of discovering new experiences throughout the year close to home, and to taste the local products. These experiences can help increase the benefits of local economies, as stated by Williamson and Hassanli (2020). In particular, the negative scenarios refer to urban destinations with foreign visitors, while rural destinations (Kunzmann, 2020) have benefited due to local historical, natural, gastronomic and cultural attractions (Vaishar and Šťastná, 2020).

Cooperation between tourism actors is another important factor which leaves its mark in the general framework of tourism development locally, regionally, nationally, at EU level, and especially in the context of COVID-19 pandemic at global level (Jones and Comfort, 2020). However, for an efficient operation, a real cooperation is necessary between policy makers and groups of tourism-relevant actors.

Conclusions

The COVID-19 crisis illustrated the economic importance of tourism, but also its fragility, exposing the need for wiser growth and deeper connections to be developed between visitors and hosts, connected by a responsible industry and supporting resilient destinations.

The COVID-19 pandemic strongly influenced people's lives, the way they spend their leisure time, and the way they travel. Moreover, the pandemic raised significant challenges for business performance and development. The companies in the field of tourism have a great impact on the development of tourist areas, through their socio-economic contribution. Therefore, the outbreak of the COVID-19 pandemic affected the activity and development of businesses in the tourism sector, making it very important for decision makers to find ways to support these businesses, and for business owners to find ways to adapt to the context generated by the new business environment.

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Supply Chain vs. Green Supply Chain Management

Adrian Istrate-Scrădeanu¹, Cristian Negruțiu², Cristinel Vasiliu³ and Vasile Dinu⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: istrate@europe.com; E-mail: cristian_negrutiu@yahoo.com

E-mail: cristi_vasiliu@yahoo.com; E-mail: dinu_cbz@yahoo.com

Please cite this paper as:

Istrate-Scrădeanu, A., Negruțiu, C., Vasiliu, C. and Dinu, V., 2021. Supply Chain vs. Green Supply Chain Management. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. 7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 336-345
DOI: 10.24818/BASIQ/2021/07/043

Abstract

The concept of green supply chain management (GSCM) appeared at mid '50s, however the studies on this topic grew exponentially only after beginning of XXI century. A modern and competitive business ecosystem is defined by the integration of industrial actions in harmony with environmental policies governed by a green supply chain. Both are hardly influenced by cost drivers and customer drivers, the balance between them leading to company and environmental overall performance. Beside costs there are also stakeholders pressure, including here but not resuming to industry regulators, consumers, NGOs, that are pushing for a greener supply chain even to sub-supplier's level.

The study purpose is to enhance environmental supply literature and to investigate on selected companies practical examples of GSCM implementation. As scientific method we will use descriptive analysis, our paper focusing on environmental policies of top players from various industries as described by themselves on annual reports. The results will show that there is still little emphasis financially speaking on the environmental policies of respective companies compared with their turnovers. Although it might not be a complete novelty, the originality of the study is the authors beliefs that on the long run chasing a green supply chain is becoming a competitive advantage if properly handled, not only from environmental point of view but also as cost of the final product, resilience of the supply chain, capability to overpass turbulent situations and market image. From practical point of view companies will be more interested to invest in a sustainable environmental plot, switching to green supply chain if they will see the rewarding part of this action, subject action being an investment.

Keywords

Green supply chain, sustainability, competitive advantage, clean industries.

DOI: 10.24818/BASIQ/2021/07/043

Introduction

Over 300 laws, agreements, pacts, rules draw the bindings for handling environmental issues. From Asia-Pacific Partnership on Clean Development and Climate up to Vienna Convention for the Protection of the Ozone Layer partners try to cover all environmental aspects like air and water quality up to waste management and chemical safety. The 2015 United Nations Climate Change Conference showed that all stakeholders have a common interest, including private sector. Participating 196 countries agreed, to a global pact, the Paris Agreement, to reduce emissions as part of the method for reducing greenhouse gas.

The scale of companies implementing environmental management system standard has increased rapidly. For example, a study from 2006 revealed that more than 40,000 companies have implemented ISO14001 (Zhu and Sarkis, 2006). Nowadays, according to International Organization for Standardization there are over 300.000 companies from 171 countries who adopted this standard 14001:2015. According to Zhu and Sarkis (2004) and Zhu et al. (2008a,b,c), green supply chain

management (GSCM) consists in a set of environmental rules to be followed by logistics management with the aim to include subject environmental rules both into the forward and reverse logistics. In practice this set of environmental rules may include but not limiting to reducing packaging and waste, continuous assessment of suppliers based on their environmental performance, inovating more eco-friendly products, and reducing foot print carbon emissions associated with the transport of goods produced (Walker, et al., 2008). Green Supply Chain Management should be a company goal and focus throughout all company processes not just a set of some green practices to be followed, it should become a scope itself, implemented at all levels from management up to basic production level (Davies and Hochman, 2007).

Having in consideration such abundances of laws, agreements, pacts, rules how can a company fulfil its targets for the benefit of its shareholders? Do companies started to use GSCM and put pressures on all its partners to respect environmental rules just for the sake of common good or did they manage to transform through innovation the rules in a competitive advantage, making the supply chain rotation more efficient? The study aim to enhance environmental supply literature and seeks to answer the research questions proposed. Another objective of this study is to investigate on selected companies practical exemples of GSCM implementation.

By studying several examples of the statements, effective actions and results we will draw a conclusion with the anticipated result that adopting and respecting eco-rules is becoming a competitive advantage and a driver for higher profits, but still not enough funds are funneled on this.

Review of the scientific literature

There are several definitions of GSCM in the specialty literature. According to Asian Productivity Organization ed. (2001), to make a supply chain green presume to incorporate environmental standards or awareness into company purchasing decisions and among relationships with suppliers. Beatrice Kogg, a sound voice from the industry, foster for the “The International Institute for Industrial Environmental Economics” the definition of a GSCM as defined by Zsidisin and Siferd (2001, p.69) “the set of supply chain management policies held, actions taken, and relationships formed in response to concerns related to the natural environment regarding the design, acquisition, production, distribution, use, re-use and disposal of the firm’s goods and services”. According to Zhu et al. (2008, p.262) GSCM “ranges from green purchasing (GP) to integrated life-cycle management supply chains flowing from supplier, through to manufacturer, customer, and closing the loop with reverse logistics”. By compiling work of Walker et al. (2008) later Diabat and Govindan (2011, p.660) gave another dimension of GSCM as “the green supply chain concept covers all phases of a product’s life cycle, from the extraction of raw materials through the design, production, and distribution phases, to the use of the product by consumers and its disposal at the end of the product’s life cycle”.

Green Supply Chain Management involves environmental considerations into all stages of a supply chain no matter upstream or downstream, starting from product design, supplier selection and collaboration (Van Hoof and Thiell, 2014), manufacturing and remanufacturing processes, forward and reverse logistics (Liu, et al., 2020), green development (Li, et al., 2020) and product end-of-life management (Srivastava, 2007). The challenges of the environmental protection combined with the ones of competitive advantages, put focus over supply chains with green supplier management (Zhu et al., 2013; Brandenburg et al., 2014). Traditionally, the focus of green supplier management is on first-tier suppliers (Giunipero, et al., 2012; Walker and Jones, 2012). The increasing pressures from various stakeholders like environmental non-governmental organizations (NGOs) and the media result in going beyond the organizational boundaries into green multi-tier supplier management (GMSM) (Grimm et al., 2014, 2016; Tachizawa and Wong, 2014; Wilhelm, et al., 2016).

Research methodology

Hervani, Helms and Sarkis, (2005, pp 335) gave not only an extensive definition to GSCM put also draw a concrete diagram of the various processes that are involved in GSCM:

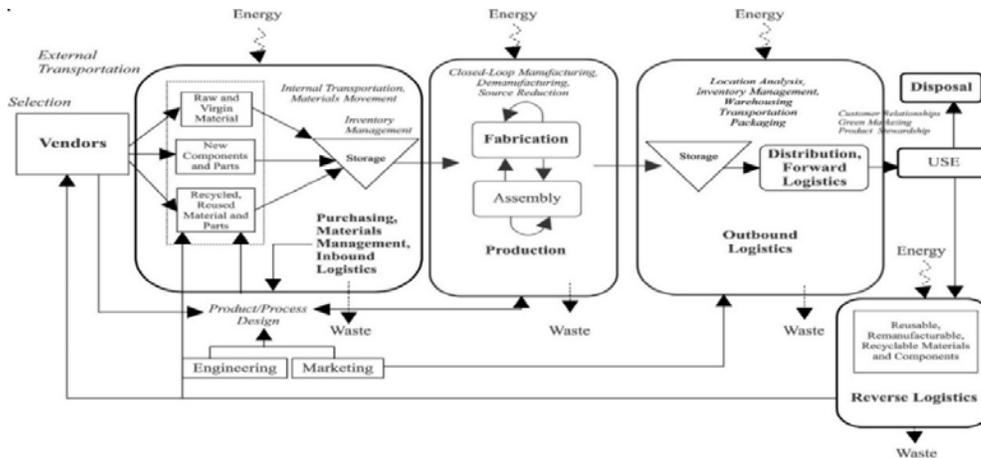


Figure no. 1. Process involved in green supply chain management.

Source: Hervani, Helms and Sarkis, 2005, p.335

By studying figure no. 1, it can be identified as in every common supply chain, there are three major pillars of the supply chain respectively: Vendors (of raw, parts or recycled materials), Producers and Distributors. Each one has its own processes that implies consumption of energy and each one is connected through storage module. No matter the layer or level of operation we underline the consumption of energy. Our research questions are:

- What are the major, identifiable steps that companies take to add the green components to their supply chain?
- Do companies take green path just to follow the laws and rules?
- Is the green path a competitive advantage?

We will take several examples of sound companies, involved in every tier of a supply chain, to observe the steps taken in the effort to become greener with the aim to become more competitive.

From research methodology point of view, we will use descriptive analysis, including companies own public statements regarding environmental current and future approach. Examples of companies are from various industries but with heavy impact on environment. A brief introduction in their own history will be given to see how they reach in top of their own industries. Public sources like Carbon Major Database (www.cdp.net) will be used to see current ranking of studied company or industry from greenhouse gasses emission. Also, in our analysis we will take in account companies published environmental policy, statement, vision, money they had invested, or they will spend towards environmental protection. At the end we will compare amount spend to protect environment versus their turnover over a year period.

Results and discussion

Following industries and their exponents, with heavy impact on the environment, will be observed from the point of view of pledges and commitments, concrete actions and impact on revenues and profits:

- Primary industry – mining, Rio Tinto, UK/Australia
- Chemical industry – chemicals, BASF, Germany

- Food and beverages industry – food, Nestle, Switzerland
- Manufacturing industry – automotive, Volkswagen, Germany

Rio Tinto- history, figures, steps taken

Rio Tinto Plc is acting in the business of finding, mining, and processing of minerals resources. It operates through five product groups: Aluminum, Copper, Diamonds & Minerals, Energy, and Iron Ore. The company as known today was founded on March 30, 1962 and is headquartered in London, the United Kingdom. The roots of the company are back in 1873, on the banks of Rio Tinto river, in Andalusia, Spain. Currently the company has over 46.000 employees, operates in 36 country, using over 37.000 suppliers. It ranks second largest mining company in the world after BHP Billiton.

According Carbon Majors Database, 2017 edition, the distribution of emissions is concentrated: 25 corporate and state producing entities account for 51% of global industrial GHG emissions. All 100 producers account for 71% of global industrial GHG emissions. Rio Tinto held the 24th place in this ranking, being responsible for 0.75% of the Global Green House Gases over the studied period of 1988-2015.

As per Rio Tinto “Climate Change” (<https://www.riotinto.com/sustainability/climate-change>) report here are the statements: “We have considered climate change as part of our strategy for two decades and it is fully integrated into our strategic planning, risk and governance processes. Our ambition is to reach net zero emissions by 2050 across our operations. We have set new targets to reduce our emissions intensity by 30% by 2030 and our absolute emissions by 15% over the same timeframe. To help us achieve our ambition and targets, we plan to invest around \$1 billion over five years in emissions reduction projects, research and development. Since 2008 we have reduced the absolute emissions from our managed operations by 46%. Today, 76% of our electricity consumption is from renewable energy, compared with 26% of global electricity production. Most of our operations already have significantly lower carbon intensities than sector averages. We also continue to work on new technology solutions such as our partnership with Alcoa and Apple, to produce aluminum without any direct CO₂ emissions.”

Published results of Rio Tinto show vast fluctuation of the market. Being a primary product market, it is highly dependable on the rest of the world economy. Iron ore stock price is a viable indicator of overall market trends and health. There were years like 2006 when Rio Tinto had 42% operating margin, but also years like 2015 with only 13%. However, taking in consideration the statement made by Rio Tinto in 2019, that they are looking to spend 1 billion USD over the next 5 years, we may conclude that this represents 0.52% from their gross sales revenue from the last 5 years and 2.92% from their net earnings from the last 5 years, without taking in consideration future market movements.

BASF - history, figures, steps taken

BASF, is ranking as the biggest chemical manufacturing company in the world. The company is headquartered in Ludwigshafen, Germany and owns various subsidiaries in more than 80 countries around the world. At the end of 2019, the company employed 117,628 people, with over 54,000 in Germany and posted sales of €59.3 billion. BASF was established in 1865 by Fredric Engelhorn. The company also was responsible for setting up gasworks, whose by-product tar was used to produce dye, soda and acids. With a turbulent history, including during World War II a factory at Auschwitz, BASF managed not only to survive the war, but through aggressive acquisition and tough leadership to become the largest chemical company in the world.

By 2008, greenhouse gases released by BASF’s worldwide gone to 27.1 million metric tons (2007: 27.5 million metric tons). In 2019, the emissions reached the value of 20.1 million metric tons of CO₂ equivalents, almost 10% decrease (2018: 21.9 million metric tons of CO₂ equivalents). As per Greenhouse Gas Protocol (www.ghgprotocol.org) which BASF is part of, goes up to 100 million metric tons of CO₂ in 2019 (2018: 118 million metric tons of CO₂ equivalents). BASF is aiming that by 2030 to achieve the target of carbon neutral growth, to increase their production without increasing their carbon footprint.

“We want to contribute to a world that provides a viable future with enhanced quality of life for everyone. We do so by creating chemistry for our customers and society and by making the best use of available resources. Sustainability is at the core of what we do, a driver for growth as well as an element of our risk management.” (<https://www.basf.com/global/en/who-we-are/sustainability.html>)

By 2017 BASF invested in new and improved environmental protection plants and facilities about 234 mil euro, while in 2018 this expenditure raised to 277 mil euro. However, these amounts are almost 3 times lower than the one allocated for provisions for environmental protection measures and remediation (compulsory expenditure as per local laws), respectively 600 mil euro for 2017 and 639 mil euro for 2018 (www.basf.com/reports). We may assume that at the rate of investments shown in the past years, BASF will spend about 1-1.2 bln euro investments in the environment protection for the next 5 years. According financial data published, the amounts to be spend on environmental protection convey to 0.35-0.4 % from their net revenues or 3.5-3.75% from their net income.

Nestle - history, figures, steps taken

The history of Nestle began in 1866 when Milkmaid brand is launched by the newly established company Anglo-Swiss Condensed Milk Company. Next year, in 1867, the pharmacist Henri Nestle launch in Vevey, Switzerland, his product consisting of “flour with milk”. In 1905 Anglo-Swiss and Nestle merged in a new company that held the name of Nestle and the HO in Vevey. The company quickly developed in markets like Germany, Spain, United States and Britain. After first World War Nestle put pressure on expending the production on its second-best product, chocolate, war crisis in both World Wars being an opportunity for Nestle. Is good to mention that in 1939 launch a coffee powder extract, what will be known later as Nescafe. After war, Nestle expend massively in pharma and healthcare products, adding continuously brands to its portfolio. In 1985 Nestle launch on of its current success, Nespresso. By 2014 Nestle become the world biggest food company in the world.

According to its own statements, Nestle is concentrating its effort in several directions, naming here: tastier and healthier food, healthier lives, nutrition knowledge and other but also on climate change, caring for water and environment. Nestle aim to take leadership in climate change by setting ambitious goals. 189 factories of Nestle (about one third of all its factories) are consuming in 2019 energy from renewable sources. Also, in 2019 the production of Nestle reduce its gas emissions with 34% compared with 2010, while in 100 warehouses of Nestle emissions has been cut with 35 %. Every tone of product of Nestle produce directly and indirectly 105 kgs of CO₂. Following is from Nestle report on climate change: “As climate science has developed, so has our ambition to reduce our operational impact. In September 2019, we announced plans to accelerate our commitment to tackle climate change. With the expiration of our 2°C science-based target at the end of 2020, we have committed to achieving zero net GHG emissions by 2050 and aligning our efforts with the ambitious 1.5°C target outlined in the most recent Intergovernmental Panel on Climate Change report. More than 90% of our GHG emissions occur along our value chain. We will address these through a range of product developments and collaborative actions with our suppliers. Read more about how we are developing our climate change mitigation strategy.”

In 2018 Nestle committed that by 2025 all it packaging to be reusable or recyclable. In 2020 Nestle announced that they will invest 2 billion CHF for development of this initiative. 6 million kilograms of CO₂ emissions has been cut by Nestle by adding 28.000 photovoltaic panel to its production sites in Dubai.

There are not specific financial figures published by Nestle in respect of the investments of climate and environmental change, however, Nestle recognize that: “Nestlé’s reputation is based on consumers’ trust. Any major event triggered by a serious food safety or other compliance issue could potentially impact upon Nestlé’s reputation or brand image.” The Nestle business was linear for the last 10 year with a sales results around 100 billion CHF and with a margin of 12-13 %. In 2019 the group reported sales of 92.5 billion CHF and net profit of 12.6 billion CHF. We can estimate from investments announced or committed by Nestle that the amounts spent for climate and environmental change might be around 2.5-3% of their sales in line with other global players.

Volkswagen - history, figures, steps taken

Volkswagen is a German automobile manufacturer, established in 1937 to produce a low-price car. Translated Volkswagen means people car. Due to turbulent times over second world war, under British command, mass production of the Volkswagen began later on 1946. In 1949 control of the company has been passed to the West German government and the state of Lower Saxony. Volkswagen production expanded rapidly in the 1950s. One of the most successful cars was Beetle model, while later Golf model being popular. Starting 1960 company went public, 60 percent of the company being on stock market. Company grew exponentially due to organic growth but also through acquisitions. Volkswagen owns several other brands, naming here Audi and Porsche, SEAT, Škoda, Bentley, Lamborghini, and Bugatti. In 2015, for a short period Volkswagen became world's largest car manufacturer. On the same year U.S. Environmental Protection Agency (EPA) found out that the manufacturer's diesel-powered cars contained software that altered the vehicle's performance to pass emissions tests. Over 10 million automobiles worldwide had to be recalled. In the United States alone, the carmaker was fined with over \$4 billion.

According its own environmental policy Volkswagen is committed to: "We intend to become a CO2 neutral company by 2050. By 2025, we plan to reduce our total life cycle Greenhouse Gas Emissions of passenger cars and light duty vehicles by 30% compared to 2015. By 2025, we plan to have reduced the production-related environmental externalities (CO2, energy, water, waste, volatile organic compounds) by 45% per vehicle compared to 2010. By 2025, the share of battery electric vehicles in our model portfolio will be between 20 and 25%. The share of electric vehicles in the Group fleet is to rise to at least 40% by 2030." The four major areas Volkswagen is concentrating is climate change, resources, air quality and environmental compliances.

Volkswagen is describing its own supply chain and steps taken to sustain a GSCM. According to them: "Approximately one third of the gross weight of many Volkswagen brand vehicles is already accounted for by recycled metal and oil-based materials." The example of its Kassel factory is self-explanatory: "All aluminum cuttings produced from alloy Al 226 with a residual moisture level below two percent can now be melted directly on site, producing new raw material. Thanks to the new approach, Volkswagen itself saves some 3,250 MWh of energy per year, representing a reduction of 1,430 tones in CO2 emissions. On the logistics side, this process also reduces the distance traveled by trucks by 800,000 kilometers per year. In addition, nitrogen oxide output is cut by 0.5 tons per year and Volkswagen also reduces the use of many consumables such as melting salts (-1,300 tons p.a.) and calcium hydroxide (-16 tons p.a.), as well as the production of waste such as salt slag (-2,670 tons p.a.) and filter dust (-130 tons p.a.)."

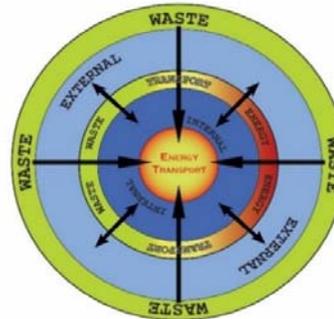
Volkswagen measures its own progress on reducing CO2 emissions using an index called DCI, decarbonification index. The DCI includes the CO2 emissions from the supply chain, our own production, the provision of fuel, emissions from 200,000 km of driving and from recycling. The group noticed that 77% of the emissions generated are from the car produced itself with an average of 124 grams of CO2 per kilometer. The total amount to 382.488 tons of CO2 emissions in 2019. Having in consideration that the biggest footprint carbon is generated by their products, Volkswagen decided to invest massively in the electric car production, investing by 2024 over 33 billion euro with the aim to become world leader to e-mobility by 2028. Subject commitment was done in 2019.

In 2019 sales of Volkswagen group accounts for 252 billion euro, while profit counts for 19 billion. Therefore, we can observe that Volkswagen will invest for R&D, development of new ecofriendly cars about 2.6% of its revenues.

By observing above statements, effective actions and plans from the examples we extrapolate, generalize, and synthesize a set of minimum rules followed by companies for a green supply chain. By following subject rules, which are not exhaustive, we may also answer to the questions of our study.

- What are the major, identifiable steps that companies take or should take to add the green components to their supply chain?

One of the first and common step while introducing the green component in a supply chain is **defining** what green means for the subject organization. Either through internal processes or adding third party standardization algorithm defining and future applying goes together. It has been observed that another step will be to **set up goals** for a GSCM and continuous improvement of these targets through incremental steps. Becoming greener and reaching goals cannot be fulfilled without an objective, measurable audit of the current standpoint and milestones. Continuous **measurements** to observe, detect and correct deviations from the plan is another step. Since a modern, green supply chain goes to every layer and levels of the supply chain itself and organization mixed teams are required to be involved, **commitment** to respect plans to reach the goals. All above are to be achieved only with firm implication and directives from the management, **leadership** being required at all steps. Looking back at the Hervani drawing (figure no. 1) and considering the pillars of the supply chain it has been identified and confirmed that the supply chain acts like physical system: defined by internal and external layer, segregated by storage buffer. Each change between layers is with energy consumption, each process in respective modules is also energy consumer and involves transport. At every stage of the processes waste is generated. It has also been observed that exchanges between layers is bi-directional, with consumption of energy, involves transport and generates waste at every stage.



Figures no. 2. Layers of a supply chain
Source: authors contribution

Considering statements and figure above we do notice that every process between supply chain pillars producer, vendor, distributor has in common energy consumption, transport and waste production Effective steps done by company to have a GSCM start with usage of a **clean energy** source or by buying **green certificates**. An analysis of the **transport** needs how is do it and by whom with the aim to streamline and to maximize the transport capacity is also compulsory and widely used in a GSCM. In a supply chain, storage is involved therefore an **efficient warehousing** or storage platform using green energy or maximizing storage capacity is required. Sustainability efforts for a GSCM is supported by **technology**, either through high algorithms computers that redesign processes for maximum efficiency and minimum losses, including here IoT or AI. We must underline that in a regular supply chain the circles are closed by waste as per figure 2. In a green supply chain, through **reverse logistics** the waste is re-introduced and re-used in the cycles. There are also other steps identified and reported as effective to create a GSCM. Third party expertise with focus on green may conclude in beneficial **partnerships**, with companies certifying from procurement sources up to compliance audits (Bostan, et al., 2020; Dinu, 2020).

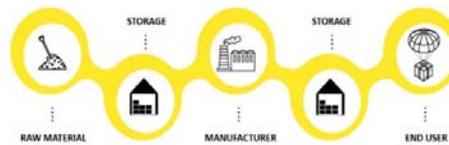


Figure no. 3. Basic chain
Source: authors contribution

- Do stakeholders of a supply chain take green path just to follow the laws and rules?

If we schematize more a supply chain from raw material producer up to end user, we will observe that each stake holders have its own interest in the green path. It is author observation from practical examples that depending on the layer and level, participants will abide laws and rules from different considerations. A raw material producer will follow the laws, aiming to reduce its financial risk. A producer will obey rules on one hand to reduce its financial risk but also to have and show a corporate responsibility towards its end consumers, to preserve its public image. The end consumer will follow rules to avoid any penalties from responsible bodies controlling proper waste collection for example. Once again, it is author assumption that stakeholders follow laws and rules from their own considerations rather than acting purely from goodwill. There are several reasons to take the green path, not necessarily just to follow the laws and rules like lowering operational costs, increased sales, lower taxes, saving resources, reduce or eliminates wastes, preserving the environment for future generation and many more.

➤ *Is the green path a competitive advantage?*

In the search of a green path, the willingness to have a green supply chain, companies are pushed to innovate and to put pressure to other stakeholders of a supply chain to become greener. It is also noted that while following the green path the stakeholders follow each other participant actions becoming an observer and corrector of effective actions.

There are several products launched by companies to minimize their impact on the environment but at the end they bring additional value, becoming a competitive advantage. Some examples of products initially designed to become more ecofriendly that proved to be also very efficient in terms of energy consumption, transport impact or waste reduction are: AdBlue liquid that reduce gas exhausted but also save fuel, ships scrubber that reduce SO_x gases but reduce also corrosion and ships engines life, LED bulb that reduce energy consumption but also increase bulb life, rPET (100% recycled PET) reduce waste generated but also save costs to acquire raw material and examples might continue.

Conclusions

The movement for a green supply chain is a common effort. Beside the ethical and moral obligation for the green component it has been observed that in the search for a greener product companies are pushed to innovate.

Companies should focus on their own processes, suppliers' processes and end users one's with the aim to reduce the impact on the environment by reducing energy consumption or using energy from green or renewable sources, choosing the less environmentally impact transport, doing its best to diminish its waste and to reintroduce its waste in a reverse logistic by recycling it. Compared with a traditional supply chain on a GSCM the main aim (Figure no. 2) will be to reintroduce waste in the ecosystem as a potential energy or transport generator. The GSCM is defined by green exchanges of statute from internal to external layer and vice versa.

Acknowledgement

„This paper was co-financed by The Bucharest University of Economic Studies during the PhD program”.

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Internet of Things (IoT) and Sustainability

Mihai Ioan Rosca¹, Cristina Nicolae², Emanuel Sanda³ and Angela Madan⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: mihai.rosca@mk.ase.ro; E-mail: nicolaeandreea20@stud.ase.ro;

E-mail: sandaemanuel20@stud.ase.ro; E-mail: angela.madan@mk.ase.ro

Please cite this paper as:

Rosca, M.I., Nicolae, C., Sanda, E. and Madan, A., 2021. Internet of Things (IoT) and Sustainability. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 346-352 DOI: 10.24818/BASIQ/2021/07/044

Abstract

Internet of Things (IoT) technologies have started to impact society as a whole and have become a key enabler for sustainable development. The purpose of this paper is to examine the connection between IoT and sustainability providing a critical reflection on current literature. The research methodology consists of a literature review in the research field of IoT technologies and their beneficial impact in various sectors, such as sustainable urban development or farming. The aim is to provide an in-depth, detailed analysis on the various ways in which IoT can help with current global environmental issues and achieve sustainable development. The paper highlights the importance of IoT technologies in protecting the environment and emphasizes the need for all stakeholders to adapt such technologies nowadays and in the future. The main value of the current paper is to help enrich the literature on IoT technologies, sustainable development, and environmental protection. The Internet of Things (IoT) is believed to be one of the enabling paradigms of sustainable digital transformation and environmental protection (Salam, 2019). IoT is emerging as a powerful enabler in many application domains, such as water and energy management, environmental monitoring, health, smart cities, smart industry and supply chain management. This paper contributes to academic literature and business by revealing a possible link between sustainability and Internet of Things. This subject sparks interest among both marketers and researchers.

Keywords: Internet of Things (IoT), sustainability, sustainable development, technology, environment.

DOI: 10.24818/BASIQ/2021/07/044

Introduction

Since the beginning of the 21st century scientists have been sounding the alarm on the environmental crisis we are facing. Changes are needed in the behaviors that have brought us here: spewing unprecedented greenhouse emissions into the atmosphere, the overexploitation of Earth's limited resources, and the continuous destruction of the environment and natural world. In addition, the COVID-19 pandemic, post-Brexit challenges, and the changes in corporate social responsibility have highlighted the importance of putting sustainable development at the core of current and future progress and growth (UN, 2015). Some of the most serious environmental concerns include but are not limited to climate change, biodiversity loss, and the looming water crisis. Nowadays, countries and governments across the world are working to develop sustainable solutions and plans.

Internet of Things (IoT) applications can bring benefits to the environment (Maheswar and Kanagachidambaresan, 2020; Araral, 2020). The beneficial relationship between IoT and sustainability has been studied lately (Laine, 2014; López-Vargas, et al., 2020). The current article covers the impact of IoT on sustainable urban development and smart cities, as well as resource preservation and smart farming. These concepts have evolved a lot recently, becoming part of modern society, not only as global priorities, but also as business opportunities. Through reflection and analysis, the research seeks to explore and clarify what are the real implications of IoT technologies on these sectors. Due to the increased global interest in modern technology, the link between sustainability and IoT has become a

relevant and useful research subject. The paper is exploratory and seeks to empirically analyze the level of understanding about the relationship between sustainability and IoT, as well as the stage of IoT adoption in various sectors. Firstly, the paper reviews the current literature on sustainable development and IoT technology. Secondly, it analyses the link between IoT and sustainable urban development and smart cities. Thirdly, it presents the main concerns and challenges related to resource preservation, smart farming and IoT.

The link between sustainable development and IoT: Review of the scientific literature

Over the past three decades the well-being of civilization has been placed above the protection and conservation of the environment (Attenborough, 2020). Concepts such as sustainability and sustainable development are emerging due to the global environmental crisis (Shukla and Kumar, 2020). Sustainable development can help to “preserve the world for future generations and improve quality of life” (Mohammadian and Rezaie, 2020, p. 9). Sustainability focuses on ‘triple bottom line’ approaches, as social, environmental, and economic responsibilities (Ferdig, 2007, p. 28) and has two main goals: “living within the ecological limits and meeting the needs of everyone” (Lorek and Spangenberg, 2014, p. 42). Sustainable development emphasizes “natural balance” so as not to compromise the “quality of life of future generations” and is at the same time oriented towards “economic and social progress” (Cătoiu, Vrânceanu and Filip, 2010), having an impact on business since 1960s (Leonidou and Leonidou, 2011).

Sustainability, as well as consumer behavior and attitudes towards sustainable development have been studied in the past years (Wood, 1991; McWilliams and Siegel, 2001; Maignan and Ferrell, 2004, Zaharia et al., 2010). Many companies have made sustainability a key pillar of their business activities (Baleanu et al., 2011). Leonidou and Leonidou’s (2011) extensive research of expert studies in the field of marketing/environmental management has clearly demonstrated that in the last 40 years it has undergone a transformation, moving to an advanced stage characterized by “greater maturity and rigor”. According to McDaniel and Rylander (1993), sustainability is here for “the long run”. There are divergence and complexities “surrounding sustainability” (Beringer and Adomßent, 2008). One of the key issues is related to sustainability measurement and reporting. Parris and Kates (2003) demonstrated that “there are no indicator sets for sustainability” that are universally accepted. Dietz et al. (2009) mentioned that specialists have argued about how to measure sustainability. Sustainability is meaning many things to many people. This is how IoT technologies come into play. Internet of Things (IoT) applications are mentioned in that they can bring benefits to the environment (Maheswar and Kanagachidambaresan, 2020; Araral, 2020). IoT can help fight climate change, resource scarcity and species endangerment (Beier, et al., 2018; Garrity, 2015; Schneider, 2019).

It has the potential to address some of the most acute human, economic and environmental needs (IoT Forum, 2017). The beneficial relationship between IoT and sustainability has been studied lately (Laine, 2014; López-Vargas, et al., 2020). Development of the IoT with numerous applications in different industries proved to be a great advantage (Abu Ghazaleh and Zabadi, 2020). The Internet of Things is able to make a positive contribution to any environmental problem, “from reducing water related disasters and economic losses, to energy efficiency, to better and larger scale connectivity, and effective water management decision making” (Salam, 2019, p. 4). It was mentioned also that “high technologies like digitalization, Information Technology (IT), Information and Communication Technology (ICT), Internet of Thing (IoT), Internet of Business (IoB), Internet of Energy (IoE), and Internet of Manufacturing (IoM) are high technology techniques to implement strategies and solutions needed for sustainable development” (Mohammadian and Rezaie, 2020, p. 12). The IoT rapid evolution is generating “the need for a revised definition of sustainability” (Daj, 2016).

IoT can enable sustainable development in ecological engineering (Schneider, 2019), earth systems engineering (Lee et al., 2014), industrial ecology (Zhu and Zhao, 2018), and environmental sustainability and green engineering (Maksimovic, 2018). IoT can help achieve the aim of the Paris Agreement and the targets in UN Sustainable Development Goals (SDGs) (Salam, 2019; IoT Forum 2017). IoT and connected devices were considered to be the major drivers of change (Laine, 2014). Recent evolutions are forcing the business world to add a new word to its dictionary: “globality” (Thrassou and Vrontis, 2009). Digital technology is having “an increasingly pervasive impact on every

aspect of economic and social life in the European Union, from the increasing use of robots and artificial intelligence, to e-health and online public services” (European Commission, 2017, p. 3).

IoT relates to “the integration of physical objects communicating with one another and through the internet to achieve some useful objectives”. It assumes the combination of three main “elements: web-based (middleware), things-based (e.g. sensors), and semantic-based (knowledge)”. The term Internet of Things was mentioned for the first time in 1999. IoT is a new paradigm that connects “computing technologies, wireless sensor networks, Internet communication protocols, sensing technologies, communication and devices with embedded technologies”. It is expected that IoT will have an impact on consumers, businesses, and society. (Haddud, et al., 2017) Today, IoT market revenue is \$212 billion worldwide. (Vega, 2020) Digital technologies, such as IoT, are changing the way people live, are offering opportunities for the society and can improve the environment. (Mohammadian and Rezaie, 2020). IoT has been introduced as “the next Information and Communication Technology (ICT) revolution”. Many initiatives on IoT are being performed in “the USA, Europe, Japan, China and Korea” (Zarei, et al., 2016). On the basis of the European Research Cluster on the IoT (IERC) report, “the three drivers for development of IoT are: increasing the economic prosperity, quality of life and environmental protection” (Smith, 2012, p.232), also mentioned in the literature on sustainable development (Zarei, et al., 2016). Translating the idea of sustainability to action implies a transformation in human “perspective and behavior” (Ferdig, 2007).

IoT and sustainable urban development: smart cities

Worldwide one clear trend is urbanization. It is estimated that two thirds of the growing world population will be made up of city dwellers by 2050 (UN, 2018). The world will experience an increased demand for, and pressure on, various kinds of resources: from water, to energy, to transportation, to sewage and garbage management etc. which come with the urban lifestyle. Modern day cities can be reinvented and developed in a sustainable manner. There are many industries that have started to incorporate IoT technologies. For example, “a large number of Internet of Things like GIS, GPS, and remote sensing are becoming popular in smart mobility for best travel routing, influencing travel choices. RFID and IP cameras are mounted in all public places in which commuters enjoy better security. Regarding public utilities like water, air, and power, the IoT technologies are deploying with these physical things to enhance efficient utilization while in different modes of the sources–transmission-destination” (Somayya and Ramaswamy, 2016, p. 841).

Sustainability, advanced technologies and digitalization employed in urban planning, could be the tools to assist in the creation of new urban areas characterized by high quality living. Sustainable and eco-friendly ‘smart’ cities of the present and the future should be built based on green strategies, sustainable water management and environmental care. Digitalization and high technologies could change human life through renewable energies, innovative management, “ubiquitous and smart services like hybrid vehicles” (Mohammadian and Rezaie, 2020). The use of IoT’s as part of modern-day urban development is understood in terms of creating those engineered systems that act as enablers of sustainability by ensuring active protection of the natural and environmental systems (Council, 2013).

As examples of what could constitute the ecosystem of a smart city, IoT’s can be used for:

- prediction of loads on smart grids (i.e. predicting energy consumption).
- prediction of water demand (by using various information sources).
- journey planning considering traffic incidents.
- prediction of parking space availability (García, Ruiz and Gómez-Nieto, 2016).
- solving the urban congestion and traffic. Optimizing transportation systems. (Oliveira, Oliver and Ramalhinho, 2020)

Amsterdam evolved from the by-gone fishing village into the present day Sustainable Smart City. The city has implemented a smart grid, smart LED lighting, smart meters, promoted the use of electric vehicles, built charging terminals, etc. These are expected to promote more efficient urban

management, innovation and economic growth, strong social cohesion, and sustainable development (Somayya and Ramaswamy, 2016). The adoption of IoT's in urban development is not without challenges. To ensure their success, coherent and integrated planning is required, as well as sizeable investments. As such, today's cities and those of the future will rely on heavy government involvement to establish the necessary means to provide citizens with services in an equal and sustainable manner, as well as ensuring quality of life (García, Ruiz and Gómez-Nieto, 2016). The role and need for involvement of local and central governments in the deployment of IoT's for sustainable city development is necessary given the existing challenges. There were noted challenges with regards to developing models and proof-of-concept implementations that align with sustainability goals. Also IoT potential to generate large amounts of data encounters difficulties to store, analyze, model and turn into decision-making inputs focused on individual privacy. Regulations, governmental incentives, monetary benefits and tax credits, industry goodwill are some of the methods to encourage consideration of the sustainability goals at the system analysis and design of the IoT projects. An efficient business model is vital for sustainable IoT development (Salam, 2019).

IoT and resource preservation: smart farming

The world population is expected to grow in the next decades. (UN, 2017). Coupled with an increase in living standards, income, and the globalization of the Western consumerist lifestyle, this will inevitably lead to an ever-increasing pressure on food supplies and the agricultural production underlying it. Intensive agriculture is already a reality in the most advanced economies of the world and a rapidly growing demand for food could act as a catalyst for: (1) employing ever more intensive methods of increasing agricultural output (through intensive land, pesticides, fertilizer and water use); (2) accelerating deforestation to clear valuable and fertile land for agriculture.

The use of technology, in the form of IoT and AI, could be the alternative towards a smarter use of existing, limited resources and delivering the required growth needed to feed the world's populations. (Dlodlo and Kalezhi, 2015) Employing technology in agriculture is not exactly new. An assortment of devices has been used for quite some time to perform at least basic duties such as: monitoring soil humidity, measuring wind intensity and direction, and detecting certain properties of the soil. The advent of IoT introduces new opportunities for a larger scale adoption of such technologies, while hitching the devices train to data transmission networks, information processing applications and solutions, and modeling algorithms that translate all of the above into smart farming decisions.

Several elements could act as catalysts of smarter agricultural practices towards more efficient resource utilization and increased output. First, 'smart' devices that can be used in agriculture – a variety of sensor types that can measure soil humidity, compaction, air permeability; air and soil temperature; wind speed and direction; atmospheric pressure. Second, wireless communication networks – to which 'smart' devices connect for data exchange purposes. Third, software solutions – server or cloud based – to collect, store and process the data generated by (1) and transmitted via (2). Fourth, Artificial Intelligence powered models and algorithms that can map and model the state of a certain crop and support or drive business decisions, such as: when to plant, when to harvest, when and where to irrigate, water, fumigate, apply pesticides, fertilize etc. (Kodali et. al. 2016; Na et. al. 2016).

Implementing and using IoT's in agriculture would generate the kind of data (rainfall, humidity, temperature, soil moisture, salinity, climate, heat and direct sunlight, pest alerts) that has the potential to support farming decisions with the aim to boost productivity and quality, optimally utilize resources and generate much needed profits for the farmer. As an example, soil humidity information can help with minimizing the risk of crop diseases and pests. Coupled with accurate weather data, farmers can decide on the optimum timing and amount required for watering or irrigation. Anticipating pest movement can enable pest control decisions to optimize the correct amount and timing for using (or not using) farming pesticides (Rubala and Anitha 2017). Regarding water management, "IoT water systems and energy technologies can help reduce water usage and offer new ways for cleaning and recycling" (Salam, 2019, p. 27).

Adding an extra layer of data modeling and analytics, through AI algorithms, IoT has the potential to increase output, reduce environmental impact and resource utilization, as well as decrease costs and boost profits. Of particular interest is the judicious use of water for irrigation, as well as deployment of

fertilizers and pesticides in the right place, at the right time, and in the right amount (Lerdsuwan and Phunchongham 2017). IoT can promote in farming sustainable production of safe, healthy, profitable agricultural products, engaging farmers and industry groups (Salam, 2019).

IoT's have a real potential in transforming farming and agriculture. Still, these prospects are not without barriers and caveats, mostly related to cost of implementation and profitability for the farmer. But as competition increases and governments promote more sustainable development policies, the implementation of IoT's in agriculture can only increase and at a faster pace for that (Elijah, et. al. 2018). Amid some trends and predictions, the road ahead is definitely a promising one and certainly worth looking forward to (Laine, 2014), as IoT's becomes more and more integrated into our daily lives (Hristov, 2017).

Conclusions

It can be concluded that IoT technologies have great potential to support and enable sustainable development. The role of IoT in sustainability research is vast, with scientific research in many various industries. It is used in farming, water management, recycling and has the potential to play a vital role in community management and stability, through the development of smart cities. The paper concludes with implications for research, practice, and policy and future analysis and research directions. IoT technologies are undergoing continuous and real changes at the moment. This paper calls for more empirical research in order to identify consumers' awareness and openness to accommodating such devices in their daily life. As a relatively new field of research, future studies should also focus on the connection between IoT and other environmental components, for example ocean protection, hydric stress and water scarcity, or waste management.

It is important to develop an efficient business model for sustainable IoT marketing development. Lorek and Spangenberg (2014) named the adjustments of the environmental challenges to the system, based mainly on technological improvements, a disaster, summarizing that economic growth based on "technological innovation" is a necessary and important step towards sustainable development, while not being quite enough.

This paper contributes to academic literature and business by establishing a link between sustainability and IoT. Firstly, it brings fresh information into an understudied area, the impact of IoT technologies on some of the most important environmental components. Secondly, the paper covers two concepts that are extremely volatile and relevant for both present and the future: IoT and sustainability. Most importantly, the paper demonstrates that it is indeed possible to conciliate IoT and sustainability.

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Ethical Leadership: Concept Contextualization for Post-Pandemic Sustainability

Corina Șerban¹, Andreea Bichel², Cristinel Vasiliu³ and Laurențiu Tăchiciu⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: corinasrn@yahoo.com; E-mail: andreea_bichel@yahoo.com

E-mail: cristi_vasiliu@yahoo.com; E-mail: laurentiu_tachiciu@gmail.com

Please cite this paper as:

Șerban, C., Bichel, A., Vasiliu, C. and Tăchiciu, L., 2021. Ethical Leadership: Concept Contextualization for Post-Pandemic Sustainability. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021.7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 353-361
DOI: 10.24818/BASIQ/2021/07/045

Abstract

While the World strives to adapt to the changes called forward by the SARS-CoV-2 pandemic, the focus shifts to more sustainable business models, the current paper proposing the ethical leadership style as a sustainability promoter, capable to answer to post-pandemic requirements.

This paper draws upon existing research in order to perform a critical literature review of the ethical leadership style, while contextualizing it and analyzing its' impact on specific fields of interest related to future sustainability trends. The main aim of the paper is to explore those ethical leadership characteristics that can successfully relate to the sustainability antecedents in order to demonstrate the existence and validity of such a link at a theoretical level. Furthermore, the link was also analyzed through two case-examples of ethical leaders' impact on sustainability at a global level.

Following to the current research, the conclusion was that a direct link exists between the ethical leaders and the capacity of the leader to promote business sustainability. In fact, for all the characteristics of ethical leadership proposed in recent literature, either an obvious direct link, or a mediated link could be observed to the sustainability criteria. As practical implication we propose that focus and implementation of the ethical leadership style within organizations could be a valid answer to the sustainability requirements brought forward in times of unprecedented crisis.

Keywords: leadership; ethics; sustainability; innovation; SARS-CoV-2; ethical leadership.

DOI: 10.24818/BASIQ/2021/07/045

Introduction

As the World learns to adapt to an unprecedented crisis, that impacted whole humanity both economically and socially, scarring communities, increasing social difference, and modifying abruptly and definitively the status quo of all aspects of life, the interest shifts to new models of business, that center around both sustainable and innovative products and process chains. In such crises, the leaders have the challenge of formulating and directing the vision to allow the business to survive, or, hopefully, improve during or after the crisis. A first step leaders must take is to create a consensus of interpretation of the existing situation within the organization, while secondly obtaining shared agreement on the vision and actions to be taken for full commitment (Carrington, et al., 2019). Although this process is bivalent, in many cases the consensus being first formed within followers and then adopted by leaders (Carrington, et al., 2019), existing evidence points out that under uncertainty, especially with fast-paced changes, senior leadership will have a key role to play (He and Harris, 2020). Therefore, the trends that will generate from the pandemic flow of change will potentially become a leadership cultural legacy that will shape the new business reality.

Amid the tragedies of lost lives, closed businesses, impoverished families, and the psychological strain that the pandemic has perpetuated, it has been noted an increased sensitivity of the society towards

business ethics and social responsibility (He and Harris, 2020, Zahra, 2021). Linked directly to the leadership style, ethics has "a central role in the practice of leadership" (Ciulla, 2006 quoted by Gorski, 2017, p. 374) and it has been mainly connected to the transformational, servant or authentic leadership, gaining in the last decades its own style, ethical leadership, that it has been more and more researched.

Highly connected to the morality, ethical leadership represents the understanding and acceptance of the business direction towards positive outcomes for all stakeholders, and not only the shareholders of a company (Kujala, et al., 2019). Focusing on leaders as “guardians and communicators of ethical standards” (Stouten, et al., 2013) ethical leadership uses signaling directed both within the company as well as outside of it to promote positive moral values. The ethical leadership's final purpose is to perpetuate mutual positive outcomes that translate in business sustainability. (Bass and Steidlmeier, 1999 quoted by Lin, et al, 2020, p. 64). As it was previously stated that leaders have the tendency to increase the involvement in their advocacy efforts (doing good), the more the issue is local and personal (London, 2008), considering that the current pandemic crisis has directly touched each one of us, we argue that ethical leadership could be a sustainable answer to the leadership trends post SARS-CoV-2 crisis.

The relationship between leadership and sustainability in times of pandemic

Sustainability is a profound topic these days as the organizations, governments and citizens have embraced this concept (Dabija and Băbuț, 2019). In the context of leadership, sustainability is known as corporate responsibility, inclusive capitalism, shared value creation or even social enterprise.

The relationship between the general environmental pillars of economy and sustainability is also explored in the literature, while crises affect the levels of income, the consumption decreases is affecting the society and its environmental pillars (Ilyas and Abid, 2020). Academically, all these terms boil down to sustainable development especially in time of the pandemic. Nowadays, a leader easily outlives humanity by wisely taking into consideration the social inclusion, by making sure that granting access to his team to job and self-fulfillment opportunities are insured. In this case, sustainability has both an environmental and a social dimension, research in this area included innovation as a main subject that can enhance organization reputations and performance. In times of SARS-CoV-2, leaders started to serve as coaches who can train managers developing an inclusive perspective on environmentally sustainable matters (Bitencourt, et al., 2020; Tohănean, et al., 2020).



Figure no. 1. Timeframe of Recovery of (Run Rate) Credit Metrics to 2019 Crisis – Europe, Middle East and Africa

Source: <https://www.spglobal.com/ratings/en/research/articles/210217-covid-19-heat-map-some-bright-spots-in-recovery-amid-signs-of-stability-11841918>

Above, we have the sectors that will require time and innovation in order to have the expected recovery. There are five sectors highly affected by the pandemic, and the orange color indicates a later recovery and a bigger challenge for the leaders of these sectors.

While a lot of countries are still on lockdown, many businesses are being closed, we will possibly see the economic effect, together with the psychological side of the affected parties in the first half of 2021 even continuing to 2022.

Even in times of an unprecedented crisis, leaders from different industries are still maintaining the power to take decisions that will affect employees, together with other parties and stakeholders. Leadership plays a crucial role in the implementation of ethical and responsible policies inside an organization, while the support of their employees and other stakeholders will directly help the innovation processes (Nicolaidis, 2018).

Ethical leadership: concept understanding and definition

Business ethics are generally conceptualized as “doing good”, doing the right thing while expecting to have a positive outcome (Ferrell, et al., 2019), being treated from a double perspective: the normative one, that refers to values and norms to be applied for organizational decision, and the descriptive one, related to codes and compliance systems applied to decisions that can be interpreted as right or wrong. As the “resulted good” should not be limited to customers, nor the financial results of the business, it is important to underline the direct connection to the stakeholder approach (Freeman, 1984 quoted Kujala, et al., 2019, p. 124) that states that companies should answer to the needs and expectations of all involved stakeholders such as: employees, customers, suppliers and distributors, investors and local communities, so that on long term all parties gain satisfaction in the give-take balance.

The ethical leadership theory draws upon the Social Learning Theory that states that people are able to learn certain behaviors through observation of a legitimate model (Bandura, 1977, 1986 quoted by Stouten, et al. 2013, p. 681). In this specific case followers observe and take cues from their leaders, specifically moral embedded actions. Moral emotions are the ones “that arise of events/entities/goals that are linked to the interests or welfare either of society as a whole or at least of persons other than the judge agent” (Banks, et al., 2020).

Another explanatory theory, the Signaling Theory implies the fact that leaders’ actions are more important than credited per fact, as they send ethical signals that trigger the social influence process (Banks et al., 2020). A similar idea is credited by Executive Symbolism, that states that top leaders can have significant symbolic value through the signals that they send when acting (Hambrick and Lovelace, 2018 quoted by Mishra and Schmidt, 2018, p. 841). All these theories have at the core the leader’s role of influencer.

In fact, due to the visibility acquired through their position on the organization hierarchy, leaders easily gather the attention of followers and become credible behavioral role models (Ahmad, 2018). Yukl (2013) quoted by Velez and Neves (2018), p. 663, argued that leaders have an essential role in forming the opinions of the employees on what is considered as beneficial and ethical, therefore a positive model is desirable. More so, ethical leaders are considered to base their acting on constructs and characteristics such as principled decision, honesty, trust, caring and fairness (Brown and Trevino, 2006).

A recent definition of the Ethical Leadership Theory developed by Banks, et al. (2020, p.7) states that it represents "the signaling behavior by the leader targeted at stakeholders comprising the enactment of pro-social values combined with the expression of moral emotions."

Considering that a company has a visible purpose, apart from the core activity and law requirements to bring added value in society (Graafland, et al., 2004 quoted by Gorski, 2017, p. 372), the current expectations regarding ethics and social responsibility have increased as a result of the mentality shift due to the pandemic. This is a moment when people wish to unite and support each other in society (Severo, et al., 2021), and they turn a critical eye to those around them expecting the same, the ethical leader being a choice of sustainability management.

Ethical leadership: major impact research results translated within pandemic business environment.

Ethical leadership has major impact in ethic areas related to followers, but recent studies and increasing interest have shown that it goes beyond, touching aspects such as: job satisfaction, voice behavior, personal initiative, trust in leader, organizational commitment, work engagement, in-role performance, work withdrawal behaviors, deviant behaviors, and employee emotions (Velez and Neves, 2019 - drawn upon previous literature). The current study will detail those dimensions that are of most impact within the SARS-CoV-2 context.

In the realm of issues brought forward by the pandemic, organizational sustainability has gathered increasing interest, with a focus on economic and environmental issues, and less researched, the social dimension, that refers to the employees' well-being (Di Fabio, 2017 quoted by Ilyas, et al, 2021, p. 195). Related to the economical dimension, ethical leadership was proposed as a positive model that instills responsibility within employees and motivates them to become resourceful, being related to higher commitment and engagement from followers within the working environment (Kalshoven, 2011 quoted by Ilyas, et al., 2021, p. 196). As Mo and Shi (2018), quoted by Lin, et al (2020), p. 63, argued, ethical leadership increases the company's revenues through direct relation to positive employee performance. Lin, et al. (2020) noted that ethical businesses attract quality employees during recruitment. Sustainability is also directly related to employees' performance, while ethical and fair treatment from leaders to followers promotes commitment that translates precisely in their increased performance.

Connected to the social dimension, it was also argued that ethical leaders offer a healthy, safe and fair working environment for their employees due to their moral attributes (Lin, et al., 2020). Ethical leadership has been proven to decrease workplace bullying (Ahmad, 2018), emotional exhaustion (Dust et al, 2018), while, on the other hand enhancing psychological empowerment (Dust, et al., 2018), group learning behavior (Walumbwa, et al. 2016) and creativity within followers (Chen and Hou, 2016), therefore fostering a positive work environment.

Highly related to the business sustainability is also the trustworthiness dimension, both from the part of employees, as well as from other stakeholders. As ethical leaders use communication and moral commitment as tools and have been demonstrated to reduce deviant employee behaviors (Stouten, et al., 2013), their ability to engender organizational trust has been positively connected to ethical leadership, a very important aspect, more so in time of crises. Trust is a main aspect that impacts the leader-follower dyad, and ethical leaders promote honest and truthful connection with their employees, being considered by followers as main decisional factors who take into account the greater good of the employees (Ciulla 2004, quoted by Velez and Nemes, 2019, p. 665).

Related to the environmental dimension, ethics has been often than not connected to Corporate Social Responsibility. While business ethics are viewed as mandatory and essential, established through rules and norms, Corporate Social Responsibility is considered as more of incremental value, than requirement (Ferrell, et al., 2019). Connected to the reputation, it can impact hiring opportunities, employee loyalty and relation to regulatory groups (Russell, et al., 2016 quoted by Ferrell, et al., 2019, p. 499). Recent studies underline that the pandemic has offered the challenge for businesses to shift to genuine and authentic Corporate Social Responsibility and answer to urgent global social and environmental challenges (He and Harris, 2020), ethical leaders being empowered to send the message that "we are all in this together", being able to recognize problems and their organizations' ability to help solve them.

One of the most researched aspects of the SARS-CoV-2 pandemic business developments is the innovation that has, at a fast-pace, taken place at all levels, from digitalization, to products transformations and process optimizations, and that is thought to develop even further, once the pandemic will cease and the companies will be able to shift focus from the essential activity and accommodate even further the requirements of the "new post-COVID reality". In this context, behaviors attributed to ethical leaders have been shown to encourage employees to voice their ideas, a fact positively related to individual creativity, and therefore, indirectly to innovation (Chen and Hou, 2016). An explanation would be the trust in the leaders that follow ethical procedures for all stakeholders and expect positive outcomes, enabling communication with the employees that become

more willing to take risks. As lately, in order to compete in an innovative market, companies seek to shift downward the proactive behavior, the initiatives and ideas (Viswesvaran, 2010 quoted by Velez and Neves, 2019, p. 664), the ethical leaders' behavior play an essential role in answering these requirements.

The pandemic has undoubtedly marked all aspects of life, but with all crises comes great opportunities. Innovation has been identified as an organizational resilience instrument, time response being a crucial aspect to be considered (Ebersberger and Kuckertz, 2021), therefore shifting to leadership styles that promote and foster innovation, ethics and sustainability being a logical, following step.

Research Methodology

The authors will proceed to a critical analysis of the worldwide relevant literature in the field. Due to the relatively few empirical data and the descriptive character of the paper, the authors will focus on a qualitative analysis. The main research tool will be drawing upon recent existing literature in order to highlight the ethical leadership characteristics and research if a link is possible to the sustainability antecedents. The keywords used were “ethical leadership” or “leader ethic”, the abstracts were read and we focused on those papers that were directly showing characteristics or impacts of the ethical leadership within the organization resulting in a total of 29 articles.

The authors categorized the information according to the literature review. This research method has been chosen due to its usefulness for seeking to develop a hypothesis. In order to showcase the relevance of the ethical leadership concept and post-pandemic sustainability examples have been brought forward from international context. Therefore, it will be possible to build future case studies relevant to the ethical leadership styles and its' impact on sustainability.

Last but not least, the authors will present their own observations and conclusions regarding the contextualization of leadership for post pandemic sustainability.

Results and discussions

Through our research, we have drawn the characteristics of the ethical leader from a sample of 25 related articles. Those characteristics that were repetitive were disregarded, resulting in 14 main impacts of the ethical leadership concept on researched aspects of the business environment, as they are presented within Table 1, bellow. A conceptual link was then created in order to identify and underline which of these characteristics match the antecedents of the business sustainability concept. The sustainability antecedents or enablers are: economic competencies, organizational or social competencies (employees' wellbeing) and environmental competencies.

For the purpose of the research, a relation was considered as present when the characteristics of the ethical leader are directly connected - do not require an intermediary in order to demonstrate the connection - through implied, similar or identical meaning (first degree relation), as well as when the characteristics of the ethical leader are connected to the sustainability antecedents through a mediator – a third party implied characteristic (second degree relation).

Table no. 1. Link between Ethical Leader Characteristics and Sustainability Criteria

Sustainability Antecedents	Ethical Leader Characteristics	Relation type (Mediator, if case)	Author
Environmental & Organizational	“[promotes] pro-social values combined with the expression of moral emotions”	First degree relation	Banks, et al, 2020
Economical	“improves [employees’] engagement at the workplace”	First degree relation	Ilyas, et al., 2021
Economical	“engenders trust that in turn leads to positive employee performance”	First degree relation	Ilyas, et al., 2021
Organizational &	“decreases [employees’] deviance in a linear manner”	Second degree relation (fosters healthy work)	Stouten, et al., 2013

Economical		environment, that allows economic development)	
Organizational	“cares about the greater good of the employees”	First degree relation	Ciulla, 2004 quoted by Velez and Neves, 2019
Organizational & Economical	“influences employees behaviors or OCB (organizational citizenship behavior)”	Second degree relation (fosters healthy work environment, that leads to economical development)	Velez and Neves, 2019
Organizational & Economical	“will lower employee exposure to workplace bullying”	Second degree relation (fosters healthy work environment, that leads to economical development)	Ahmad, 2018
Organizational & Economical	“significantly relates to group learning behavior”	Second degree relation (fosters knowledge that leads to economical development)	Walumbwa, et al., 2016
Organizational & Economical	“influences employee creativity through voice behavior”	Second degree relation (fosters knowledge that leads to economical development)	Chen and Hou, 2016; Brătianu, et al., 2020
Environmental	“[positively] related to Corporate Social Responsibility”	First degree relation	Akdoğan, et al., 2016
Organizational & Economical	“offer a healthy, safe and fair working environment”	Second degree relation (attracts better employees)	Lin, et al., 2020
Economical	“[has] moderating role between technological innovation and firm innovation”	First degree relation	Lin, et al., 2020
Economical	“maintain[s] positive employee performance resulting in higher revenues for the company “	First degree relation	Mo and Shi, 2018 quoted by Lin et al, 2020
Organizational & Economical	“enhances [the]sense of psychological empowerment”	Second degree relation (fosters healthy work environment, that leads to economical development)	Scott, et al., 2018

Source: Developed by authors

By analyzing the data above, it is seen that for each of the ethical leaders’ characteristics researched within the existing literature, can be observed a link with at least one of the sustainability antecedents. Although the ethical aspect, that is considered as a main feature for the ethical leadership style, could be linked mainly to the environmental competencies, that imply obtaining positive results for all stakeholders, in fact the existing literature proves a strong link to the organizational competencies and how the employees perceive the ethical leaders’ impact within the organization. Also, in more than half of the cases, the organizational competencies lead to visible economical competencies.

Therefore, we can attest that in order to obtain business sustainability, the ethical leadership style characteristics will enable the appearance of those competences considered as sustainability antecedents, proposing it as a suited model to be adopted during and after the tumultuous experience of the pandemic.

In order to further demonstrate the link between ethical leadership and sustainability, within the pandemic context, we propose to analyze the below examples from the international context. In current context companies have strived to put the shoulder in the fight against the SARS-CoV-2 spread, by not only creating safe work environment for their employees, but also through donations for the hospitals or for the vaccine research. Leadership has played a center role, in many cases transforming themselves in advocates of ethical behavior, with the purpose of convincing others to follow their lead, or simply to show that the companies that they represent care of their stakeholders.

A renowned example is Bill Gates, whose efforts towards global cooperation were remarkable. Through the foundation “Bill and Melinda Gates”, they attempted to create a set of fair principles to ensure the vaccination allocation at a global level, no matter the country’s economic development stage (Guidry et al., 2021). Apart from their substantial amounts donated in the pandemic fight, that reached \$1.75 billion (as of December 2020, [gatesfoundation.org](https://www.gatesfoundation.org)), in order to lay the groundwork to procure vaccines for more than 150 countries, the role of an advocating leader has an even greater impact as to increasing followers' donations. A study performed in 2020 by Karlanand List has showed that a matching grant offered by Bill Gates has increased the funds raised, by comparison to one of an anonymous donor. Although one may argue that nowadays Bill Gates is more a philanthropist than a leader, he was considered a model of transformational leadership, his "hands-on", fair, and socially responsible attributes placing him as an ethical leader role-model that sets an example for all those who position themselves in this category.

Another high-tech leader figure, Twitter founder, Jack Dorsey donated \$1 billion worth of stock (nearly one third of his net worth) to fund responses to the pandemic, claiming the wish and hope that his actions will inspire others to do the same ([bbc.com](https://www.bbc.com)). His bold, visionary style, his empowering people skills and leading by example choice, as well as welcoming criticism and feedback, caring for his employees and the environment, all in accordance to ethical principles, are all skills compliant to the ethical leadership style.

These examples are not limitative, but some of the most renowned of this period. As it is considered a test of moral capitalism in the business community, it is certain that accountability will be hold during, but mostly after the crisis, the ethical leaders being the ones expected to strive post SARS-CoV-2 pandemic.

Conclusions

According to Afsar, et al. (2020) and Zhao and Zhou (2019), there are many perspectives that can explain the connection between sustainable behaviors and responsible leadership. However, through this paper, the ethical dimension of leadership was successfully connected to the sustainability antecedents, enabling their occurrence within the organization and therefore proposing it as a preferred model to be adopted during and after the pandemic.

The three sustainability antecedents and their connection to the ethical leadership characteristics are:

- the economical dimension through a positive model that instills responsibility within employees and motivates them to become resourceful and it’s being related to a higher commitment and engagement of the teams.
- the social dimension explained through the ethical leaders that offer a healthy, safe and fair working environment for their employees and most often than not impacts also the economical dimension.
- the environmental dimension as a mandatory and essential dimension established through rules and norms such as Corporate Social Responsibility that is now considered as a pillar of the business environment as well through leader role model capability and implication in advocacy.

Furthermore, the examples provided have demonstrated the capability of ethical leaders of impacting the sustainability dimension at organizational, as well as world-wide level with the purpose of convincing others to follow their lead or to demonstrate care for all stakeholders, proving globally that we are all in this together.

For future articles, a new approach and stance is possible, by drawing a social identity theory among top leaders at country-level, taking into account the ethical impact within different social cultures.

Acknowledgement

This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.

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Climate Change as a Driver of Emerging Risks

Ana-Maria Bolohan¹

¹*The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: e-mail: anabolohan@yahoo.com

Please cite this paper as:

Bolohan, A.M., 2021. Climate Change as a Driver of Emerging Risks. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 362-367
DOI: 10.24818/BASIQ/2021/07/046

Abstract

Climate change constitutes an important driver of emerging risks. While a wide range of forward-looking studies and reports study the impact of climate change: on the food security, on future challenges for food and feed safety, animal and plant health and also nutritional quality are usually not examined in depth.

This study explores the possibility of: using the specific driver, climate change, for long-term anticipation of multiple emerging risks, using climate change scenarios; using crowd-sourcing and text mining to collect a broad range of signals from different information sources; using a knowledge expert's network from international organizations.

Climate change and its implications for food safety request a complex scientific study, given the number and diversity of hazards that have to be considered, the large number of uncertainties involved and the interconnections between different areas. Climate change effects are characterized by a multidisciplinary nature (human–plant–animal health and environmental sciences) and go further recognition of specific emerging risks. In Europe there are numerous issues that are driven by climate change and that may affect food safety. Climate change has the potential of causing, enhancing or modifying the occurrence and the intensity of some food-borne diseases and the establishment of the invasive alien species harmful to plant and animal health. It has a major impact on the occurrence, concentration and toxicity of blooms of potentially toxic marine and freshwater algae and bacteria, on the dominance and persistence of different parasites, viruses, fungi, vectors and invasive species, harmful to plant and animal health.

Keywords

climate change, emerging risks, food safety, plant health, crop productivity.

DOI: 10.24818/BASIQ/2021/07/046

Introduction

The studies aim to contribute to build a more systemic, overarching and global approach to the food safety, considering the food system in a larger context where various environmental, economic, social and technological factors and their relations can drive to an excess of potential changes. It doesn't address a single hazard in a single area but rather, multifaceted effects.

Climate change and its implications in food safety, demand a complex scientific work, given by the number and diversity of hazards to be considered, the large uncertainties involved and the interconnections between the different areas. Climate change effects are characterized by a multidisciplinary nature (human-plant-animal health and environmental sciences) and go beyond the recognition of detailed emerging risks.

In Europe there are various issues that are driven by climate change and that may affect food safety. Climate change has the potential of causing, enhancing or modifying the occurrence and the intensity of some food-borne diseases and the establishment of the invasive alien species harmful to plant and animal health. It has a major impact on the occurrence, concentration and toxicity of blooms of the potentially toxic marine and freshwater algae and bacteria, on the dominance and persistence of the different parasites, fungi, viruses, vectors and invasive species, harmful to plant and animal health. Climate change may also affect:

- Susceptibility to the disease/infestation of plants and animals;
- Transport pathways in the environment, exposure and toxicity to the toxic compounds;
- Use patterns of pesticide and fertilizers, affecting the plant health and crop productivity;

- Patterns of veterinary drugs and additives use, triggered by the introduction and spread of the new pests and diseases;
- Sewer overflow into rivers and coastal environment, due to the heavier and more frequent rainfalls and flooding;
- Food hygiene, in primary production, transport, distribution and storage;
- Other drivers (ex. social behavior, global trade patterns or increasing pollution, societal changes, consumption patterns, novel food/feed sources, farming practices and technologies) which are difficult to separate from the climate change.

A very large number of issues are related to plant health, suggesting a major public concern and sensitivity to the potential effects of climate change in this area. The analysis of information provided by experts specifies that the climate change may affect the emergence of specific risks in food and feed safety, in animal and plant health and also in the nutritional quality. However, it shows a more visible effect on the possibility of emergence, for which the confidence level is higher.

Impact of climate change on crop quality

The effects of extreme weather events at global level on nutrient supply have not been quantified (Park, et al., 2019). In their study, Park, et al. (2019) investigated micronutrient, macronutrient and fiber supply changes during extreme weather events within 87 countries, in a year when a major extreme weather incident occurred. The main finding is that the global effects of extreme weather events on nutrient supply are very modest; however, in the context of the nutrient needs for healthy child progress in low-income settings, the effects observed are substantial.

In the recent IPCC report on 'Climate Change and Land' (IPCC, 2019), supported by (Hoegh-Guldberg, et al., 2019) shows that 'increased atmospheric CO₂ levels can also lower the nutritional quality of crops (high confidence)'. A larger number of studies describe climate change impacts on crop yield, but the impacts on the nutritional quality (planned as the level of micro and macronutrients) of the crops, have received much less attention even though this is a critical aspect of food security. For example, grain protein content is a very important characteristic affecting the nutritional quality but also the end-use value and baking properties of the wheat flour (Asseng, et al., 2019). Research has revealed that elevated CO₂ concentrations from the atmosphere may lead to a significant decline in wheat grain protein content, reducing grain quality with potential impacts on nutritional value.

Overall, at CO₂ levels likely for the mid-21st Century, there is a evidence of a small decline in grain Zn and Fe content, e.g. in rice (-3% Zn), wheat (-9% Zn) (Myers et al., 2014), possible to be due to yield dilution effects: when grown at elevated CO₂, crop biomass/yield tends to increase by approx. 15% (Ainsworth and Long, 2005) induced by increased atmospheric CO₂ (Reich et al., 2018a, 2018b; Wolf and Ziska, 2018). This decline in micronutrient quality has gained a lot of media attention, accompanied by media headlines such as 'nutrient collapse'. The media seemed to focus on the dilution of grain Fe, Zn, etc., due to CO₂ enrichment. However, increased temperature or shifts in rainfall patterns could offset the yield-related decreases in grain quality. (Kohler et al., 2019) highlight the necessity to consider the complexity of predicting climate change effects on food and nutritional security when numerous environmental parameters change in an interactive manner.

Impacts of climate change on indirect human exposure to pathogens and chemicals from agriculture

Climate change may also affect transport pathways, fate (including bioaccumulation and elimination), toxicity and exposure to toxic compounds. The magnitude of increases will depend on the type of contaminant. Risks from many pathogens and particle-associated contaminants could increase significantly.

Increasingly frequent flooding events, due to the more extreme weather conditions, acid rain and fertilizer-induced soil acidification can affect bioavailability and mobilization of the contaminants (heavy metals, Persistent Organic Pollutants) and fecal matter from the soils and sediments, that through canals, rivers and lakes they will be transported onto agricultural land and subsequently into animal's food and crops. Permafrost thawing may also release heavy metals as mercury into our freshwater systems. Environmental factors associated with climate change has a major influence in the methylation process of mercury in aquatic systems, which may cause bioaccumulation of methylmercury in the aquatic food chain (FAO, 2020).

Climate change can also affect fate and transport of chemical contaminants in agricultural systems. Increases in temperature and changes in moisture content are probable to reduce the persistence of chemicals, though changes in hydrologic characteristics are likely to increase the potential for contaminants to be

transported into the water supplies. Rising soil temperatures are predictable to facilitate the uptake of heavy metals by plants (e.g. arsenic in rice). Climate change may also affect the pattern of use (type, amount) of the fertilizers, triggered by a reduced nutrient availability and soil quality, affecting the plant health and crop productivity.

Harmful algal blooms - Surveys, around the world, demonstrates that trends of harmful algal blooms (HABs) caused by the marine and freshwater algae and bacteria producing toxins are in a continuous change. It is assumed that global change (Gobler, et al., 2017; Wells, et al., 2015) and in particular, planet warming (Solomon, et al., 2007; Stocker, et al., 2013) may be responsible for the increase in frequency and intensity of HABs in all aquatic environments (marine, freshwater and brackish) (Paerl and Huisman, 2009).

The EFSA report on the cyan toxins (Testai, et al., 2016) concludes that temperature seems to have a positive influence to the production of toxic rather than non-toxic fractions of freshwater cyanobacteria populations, both in field and laboratory experiments. The result suggests that in a future scenario of global warming, we can expect an increase in an exposure of humans and farmed animals to cyan toxins. This issue received a lot of attention in the IPCC Special Report on Oceans and Cryosphere in a Changing Climate (SROCC42, see section A8.2 in the summary for policymakers and chapter 6 on Extremes, Abrupt Changes and Managing Risks) and in FAO (2020).

Increased risks of plant phytopathogen and pest occurrence that affect plant fitness - Bacterial, viral and fungal infections can decrease plant fitness and product survival, and lead to secondary infections (Jones, 2016). Climate change is foretold to alter the severity of damage, caused by 31 globally important pest species (Lehmann, et al., 2020). The answer of 31 major global pest species to climate warming, submits that the damage they cause will increase for nearly half of them. Though, the majority show mixed reactions (range expansion, population dynamics, life history and trophic interactions) indicating that a single species population can both increase and decrease in severity, depending on the context (Lehmann et al., 2020).

Water resilience: how a hotter planet could put pressure on our plants - The climate modelling from the JRC, exposes that unless warming is reduced to 2°C above pre-industrial levels by the end of the century, in some regions of the tropics green water resilience will decline by 40%, the Mediterranean (including Spain), South Africa, Australia and regions of coniferous forests circling in the northern hemisphere (e.g. Scandinavia). Resilient green water supply needs high levels of precipitation and low variability, such conditions are the most favorable for plant yield and ecosystem stability. Plant growth will be compromised as rainfall is reduced and becomes more variable (higher number of both droughts and flooding events).

Soil salinization - Rising sea levels triggered by climate change increase seepage of the saltwater into agricultural soils. This situation negatively affects plant health and, in consequence, the global food production. The EU-funded Sal Far project focuses on the farmland degradation due to salinization. Scientific researches are directed on the salt tolerance of various crops, aiming to recommend alternative methods of farming under saline conditions.

Impact on plant growth - Changes in precipitation patterns, increasing temperatures and rising atmospheric CO² concentrations might also play a direct role for crop growth and crop yield (Kimball, 2016). Researchers have discovered that most of the gains derived from elevated CO² on crop growth will be lost due to increasing temperatures (Asseng, et al., 2015). In addition, an increase in the frequency of drought and heat stress might have a serious impact on plant growth and crop yield (Semenov and Shewry, 2011; Witcombe et al., 2008). Further research on the mechanisms controlling growth at high temperatures can help to breed plants that are adapted to the global warming.

Influence of the changing ultraviolet radiation, increasing or decreasing in a changing climate - There is a very strong link between the greenhouse effect and the changes in ozone layer. Increases in ultraviolet radiation (UV) may as well have both positive and negative effects on wild and farmed plants, for e.g. the fiber content in crops may increase on an increased UV. On the other hand, UV causes the build-up of a reactive oxygen species, which in high cellular levels leads to a necrosis and ultimately to plant death (Nawkar, et al., 2013).

Lack of plant pollination due to mismatch of plant flowering and insect pollination caused by phenological changes - Many crops and wildflowers need insect pollination to produce fruit or set seed. Changes in phenology, due to climate change, may mean that a crop flowers earlier in the year than previously, before a sufficient population of its pollinator (e.g. bees) is available, thus resulting in an inadequate pollination.

Establishment of toxic plants and invasive weeds - Toxic plants are widespread in tropical areas. Climatic changes (and increasing trade) can contribute to a shift and expansion of these plants' geographic ranges. In addition, climate change may create a new biosecurity challenge by permitting establishment for the new weeds that will outcompete the local species.

Pathogen internalization - Severe hail causing damage to the plant tissue, drought, sudden massive rain showers and modified absorption properties of the soil, along with vicinity of open-air sewage channels and non-insulated septic tanks, can apply additional probability of spread of pathogens and their internalization through root systems, leaf and plant injuries, along with wider spread of pathogens between plants and fields through local floods.

Increased risks of plant phytopathogen and pest occurrence that affect plant fitness - Bacterial, viral, fungal infections can decrease the plant fitness and product survival, and lead to many secondary infections (Jones, 2016). Climate change is predicted to modify the severity of damage caused by 31 globally important pest species (Lehmann, et al., 2020). The reply of 31 major global pest species to the climate warming suggests that the damage they cause will increase for nearly half of them. Still, the majority show mixed responses (life history, range expansion, population dynamics and trophic interactions) indicates that a population of single species can both increase and decrease in severity, depending on the context (Lehmann, et al., 2020).

Revisiting risk assessment approaches

Climate change reflections can substantially have an impact to the risk assessment of human, plants, animal health and to the environment. Therefore, for risk assessment to remain relevant, climate change needs to be accounted for. In addition, holistic approaches to deal with numerous stressors (including climate change) are becoming of growing importance in food and feed safety area. EFSA is exploring them first in the bee health area.

Climate change may possibly be addressed in risk assessment through the following means:

In the formulation phase, climate change should be considered for two main aspects:

- Part of 'emerging risks', leading to the new hazards or to conditions increasing existing risks (e.g. increased exposure or incidence); this covers risk assessments for human, plant and animal health under EFSA remit, and can lead to the making of additional risk assessment questions (e.g. covering new hazards).
- Climate change scenarios can be considered in a conceptual model when describing the exposure scenario and for the exposed entities. For environmental risk assessments, climate change-related modifications can be assimilated through the ecosystem services framework. Climate change scenarios can be considered when determining the representative biogeographical zones/receiving environments, for the relevant ecosystem services, for the service providing units and for the various parameters of protection (magnitude of effects, their spatial and temporal scale, which also contains an assessment of climate change impact on 'vulnerability' and 'recovery potential of valued non-target organisms'). The significance of default assumptions, such as representativeness of the focal species and their biology/ecology, interspecies variability and ecosystem functions coverage through structural indicators, might need to be re-assessed.
- Beyond the formulation phase problem: when implementing the conceptual model developed as part of the problem formulation, climate change should be considered in the hazard and exposure assessment:
- In the hazard identification phase, climate change considerations may lead to specific hazards inclusion or prioritization. In hazard characterization, climate change scenarios can be considered when evaluating trends in prevalence, in incidence over time or geographic areas. Environmental stress linked to climate change can also lead to increased susceptibility.
- For exposure assessment, climate change scenarios can be considered when assessing fate and distribution in the environment, (including representativeness of the applied environmental fate parameters). In plant health remit, climate change scenarios can be used to evaluate the potential area of a quarantine pest establishment.

Climate change should be a part of the uncertainty analysis when the available knowledge or information is insufficient for addressing it, as part of the scenarios. Where relevant, EFSA Panels could consider, the opportunity of regularly including climate change in their risk assessments.

Emerging issues follow-up

The wide variety of issues acknowledged and characterized in this report emphasizes the need for policy-makers and some other relevant players in the food system to consider adjusting surveillance and monitoring to prepare for emerging risks caused by the climate change.

The interconnections presented by the different areas and between issues stimulate the envisaging of the integrated food system policies in multiple sectors and foster closer collaboration among policymakers, risk assessors, risk managers and researchers. It needs the development of innovative technologies, innovative adaptation strategies, investments in transdisciplinary research and data sharing among scientists.

This report underlines the knowledge gaps in current understanding of how climate change affects the areas in EFSA's remit and encourages researchers to endeavor to fill them. Environmental sciences need to be connected with human nutrition and epidemiology with a 'One Health' vision. The identified emerging issues hold some useful input for researchers and risk assessors and pave the way to many possible collaboration opportunities.

The characterized list of emerging issues can aid decision makers to mark informed decisions and use correct resources to handle potential emerging risks. Further research on the generic issues will help specify the affected species, geographical areas etc. Breaking down all these generic issues into more tangible, actionable ones will allow for detailed characterization and, finally, risk assessment.

Contribution

This project aims to contribute to a wide range of initiatives at EU and UN level taking part or stimulating interagency and interinstitutional collaboration exercises. It falls within a global commitment in preventing, mitigating and responding to climate change health impacts. It has supported better informed decision making, finding gaps in knowledge, facilitating vulnerability assessments and suggesting methodologies for enhancing preparedness to the current and future climate impacts.

Methodology

A methodology to identify, characterize and analyze the overall potential impact of a complex global disruptive change (climate change) on food safety, plant, animal health and nutritional quality was developed that:

- focuses on all food and feed safety, animal health, plant health and nutrition areas;
- leads to identification of a broad range of issues in all EFSA's areas;
- constitutes a transparent and structured procedure for identifying, characterizing and analyzing weak signals characterized by a limited evidence base;
- allows a quantitative analysis of expert assessments, addressing the lack of data and knowledge uncertainty;
- provides elements and methodological framework to support risk managers, researchers and risk assessors working on food safety;
- informs on future efforts to further develop the methodology.

Acknowledgements:

This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.

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How Does the European Recognition Change the Economic Value of a Product? Case Study “Cașcaval de Săveni”

Daniela Popa¹ and Ionuț Cătălin Nica²

¹⁾²⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: dana.popa@madr.ro; E-mail: ionut.nica@madr.ro

Please cite this paper as:

Popa, D. and Nica, I.C., 2021. How Does the European Recognition Change the Economic Value of a Product? Case Study “Cașcaval de Săveni”. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. 7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 368-377
DOI: 10.24818/BASIQ/2021/07/048

Abstract

The promotion of geographical indications (GIs) can help to improve the relationship between producers and consumers with the effect of increasing the demand for such products and thus increasing the supply. The EC analysis of agri-food trade in the 27 European countries with such agri-food products showed that consumer interest in products in this category has increased, creating advantages and opportunities for countries with products registered as a European quality scheme. This paper aims to increase the awareness of agri-food producers about the potential benefits of obtaining and registering agri-food products on European quality schemes. Consequently, „Cașcaval de Săveni” (PGI) model was analysed to illustrate the positive economic impact that the development of a quality scheme can have on a product. The economic data presented has not been included in other studies. As far as it goes for the value of the present, because Romania has only 8 products registered as GIs the subject is of interest and represent new ground that can be developed and it suitable for studies. Based on the present paper traditional producers from Romania can evaluate using these findings the high benefits of registering their products as IGs. We hope that the research will stimulate the development of short food chains and associations of them for the registration of other IGs.

Keywords

food, EU quality schemes, Romanian traditional products, PGI, Sustainable agriculture

DOI: 10.24818/BASIQ/2021/07/048

Introduction

EEC Member States at that time (1957: Belgium, Germany, France, Italy, Luxembourg, the Netherlands, 1973: Denmark, Ireland, the United Kingdom, 1981; Greece and 1986: Portugal, Spain, under the Treaty establishing the European Community, defined: designations of origin (a) and geographical indications (b) in Regulation (EEC) No 2454/93 Having regard to Council Regulation (EEC) No 2081/1992 of 14 July 1992 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs, namely "specific characteristic" and "certificates of specificity" (c) in Council Regulation (EEC) No 2454/93 2082/1992 of 14 July 1992 on certificates of specificity for agricultural products and foodstuffs, thus:

(a) designation of origin: means the name of a region, a specific place or, in exceptional cases, a country, used to describe an agricultural product or a foodstuff: - originating in that region, specific place or country, and - the quality or characteristics of which are essentially or exclusively due to a particular geographical environment with its inherent natural and human factors, and the production, processing and preparation of which take place in the defined geographical area;

(b) geographical indication: means the name of a region, a specific place or, in exceptional cases, a country, used to describe an agricultural product or a foodstuff: - originating in that region, specific place or country, and - which possesses a specific quality, reputation or other characteristics attributable to that geographical origin and the production and / or processing and / or preparation of which take place in the defined geographical area.

(c) 'specific character' means the feature or set of features which distinguishes an agricultural product or a foodstuff clearly from other similar products or foodstuffs belonging to the same category. (...). 'certificate of specific character' means recognition by the Community of the specific character of a product by means of its registration in accordance with this Regulation.

The research and studies carried out so far by the European Commission have required, in the context of the reorientation of the Common Agricultural Policy by diversifying agricultural production, the promotion of specific products that can bring considerable benefits to the rural economy, especially in less favored or remote areas. Thus, for products that differ in their specific characteristics from other products in the same category, consumers benefit from information through "EU-specific symbols" which are written on the packaging and which allow them to make an informed choice. account of product traceability.

At present, Regulation (EU) No 1151/2012 on agricultural and food quality systems, which replaced the two specific food quality regulations, namely (EC) 510/2006 and 509/2006, provides extended protection against imitations, counterfeits for agricultural products and foodstuffs intended for human consumption.

With the accession of Romania, on 01.01.2007, only for a few spirits it was possible to keep the European recognition, as names of geographical indications. For this reason, for agri-food products, there were two subsequent approaches in national legislation: one that implemented European legislation in line with the European regulatory framework and the second, which created applicable legislation at national level. Initially, the national approach that promoted a voluntary quality scheme regarding the attestation of traditional products, defined by Order no. 690/2004 for the approval of the Norm regarding the conditions and criteria for the attestation of traditional products, did not benefit from European recognition.

Only in 2018, the necessary steps were taken to create a national voluntary quality scheme, by Order no. 724/2013 on the attestation of traditional products that repealed Order no. 690/2004 for the approval of the Norm regarding the conditions and criteria for the attestation of traditional products. The changes have been submitted to the European Union for approval, and since February 2020, Romania has the first voluntary agricultural product certification scheme registered in the Technical Regulation Information System (TRIS) database. Quality schemes certify the quality and characteristics of products or the production process for consumers and contribute to the sustainable development of the rural environment. The CAP provides for measures to access European funds to promote agri-food products registered on quality schemes (Popa and Nica, 2021).

The paper is structured as follows. The introduction contains an overview of European legislation on quality certification schemes as well as the Romanian evolution of the quality scheme „traditional food” [„produs tradițional”]. After detailing the two types of recognition, respectively voluntary quality scheme for traditional food in 2020 and GIs a Romanian successful model has been presented. Using the study case, the positive economic impact of registering a product as quality scheme has been presented. Finally, the conclusion was that a traditional product can be more easily transformed in a PGI. Also, the benefits of certifying a product as any IG were exposed.

Review of the scientific literature

The protection of Geographical Indications (GIs) has, over the years, emerged as one of the most contentious intellectual property right (IPR) issues in the realm of the World Trade Organisation (WTO). It has gained ore interest since its protection has been ensured multilaterally under the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement of the World Trade Organisation. (Singh, 2016; Ferrer-Pérez, 2020) For almost 30 years, the European Union (EU) has introduced

legislation for the protection of geographical indications for agricultural products and foodstuffs, as an instrument for an active quality policy (Josling, 2006, 2007, Leufkens, 2018).

Due to historical developments in Europe, Italian, French and Spanish manufacturers and processors in particular have so far used the advantages of the system, also known as more vigorous GI regulation than producers in other European Union (EU) countries, thus achieving a figure of considerable business and export potential (Mora, 2007; Parrott et. al., 2002). A continuous increase in sales and efforts to register new products can also be seen in Portugal, the United Kingdom and a few other countries, which indicates that there is a potential for permanent growth for products with designation of origin protection throughout Europe (Profeta, et al., 2006; BstMLF, 2008; Ilbery and Kneafsey, 2000b).

The currently promoted agricultural quality policies at EU level provide both support for organic production and support for the identification of standard support tools to increase the visibility and marketing of quality products in relation to other products (Harvey, 2004).

The link between sustainability goals and GIs is manifold: Several case studies show that GI products can be seen as drivers for sustainable and rural development and contribute to Sustainable Development Goals (SDGs), even if there might scope for more targeted focus on the EU level (Chilla, et. al., 2020).

Research methodology

The present paper identified a strong correlation between the registration of the product *Cașcaval de Săveni* as PGI and the economic growth of the businesses producing it. In order to demonstrate the positive impact of registering a product as IGs the 5 producers of the PGI *Cașcaval de Săveni* were analysed taking into consideration: the raise of the quantity of product, number of costumers, economic development, the distribution of the product, marketing and population dynamic in the area of production.

Both qualitative and quantitative data was processed and analysed in order to determine the development of the product in a 5-year period. All the data came from secondary reliable sources as the Ministry of Agriculture and Rural Development and National Statistical Institute (NSI). Comparing data from before and after the registration is a suitable method to determinate the growth of the businesses after registering the product as PGI.

Results and discussion

Cascaval de Săveni, the evolution from National Voluntary Quality Scheme traditional product to European PGI

The legal framework governing quality systems at EU level, Geographical Indication (IG), consists of two quality schemes, namely Protected Designations of Origin (PDO) and Protected Geographical Indications (PGI). Either of these two schemes contain in the name of the IG something linking to the region or geographical area where they are produced, for marketing purpose. For PDO, it is mandatory that all stages of production or processing take place in the defined geographical area, while for a PGI it is sufficient that only one of the production phases of the process takes place in the geographical area.

The creation of a national legal framework for the registration of specific products has brought major benefits to small producers, as it has been a first step towards the recognition of their product at European level. By registering the product in the National Register of Traditional Products, it was possible to identify products that are suitable to be registered as quality systems, which have specific features related to a geographical area. In the case of “*Cașcaval de Săveni*” and “*Cârnați de Pleșcoi*”, the grouping of producers in order to prepare the documentation for PGI had as a starting point the unique registration of each producer in the voluntary quality scheme “traditional product”. For products already registered or in the final phase of registration in the EU that have started from a traditional product, in this case “*Cașcaval de Săveni*” currently being registered as a Protected Geographical Indication (PGI)

and "Cârnați de Pleșcoi" already PGI a development of the activity can be seen, threw the opening stores outside the production area, especially in urban or tourist areas.

Romania through the Ministry of Agriculture and Rural Development submitted to the European Commission on 27.04.2017, the Application for registration to obtain the protection of a quality system of an agricultural and / or food product for the name "Cașcaval de Săveni" submitted by the group of Producers Association "Cașcavalul de Săveni" (PACS) registered with the number RO / PGI / 0005/02361. The recognition of the product as PGI was possible after the 6 members: SC CICOS SRL, SC GERARD SRL, SC VIOFANNY LACT PRODCOM SRL, SC GENYS COMPANY SRL, SC FAVIS SRL joined by the economic operator SC VLĂSIE COMPANY SRL obtained in 2014, 2015, respectively, from MADR the certification as a traditional product of their cheese obtained in the Săveni area (Table 1). Since 2016 they are constituted in PACS and together they wrote and submitted the documentation in order to obtain the European protection Protected Geographical Indication (PGI) for the product Cașcaval de Săveni at the Ministry of Agriculture and Rural Development.

Table no. 1. The situation in the years 2014-2015, of the traditional product Cașcaval de Săveni with different personalized names from the geographical area of Botoșani County, where the Săveni Cheese is produced

Year of registration	Name of the certified product	Working point address	Manufacturer of the certified traditional product	The number of the certificate according to order no. 724/2013
2014	CAȘCAVAL CICOS	George Enescu commune, George Enescu village, Botoșani county	SC CICOS SRL	253
2014	CAȘCAVAL LELIȚ A	Coțușca village, Coțușca commune, Botoșani county	SC GERARD SRL	254
2014	CAȘCAVAL DE SĂVENI VIOFANNY	Săveni locality, Serg alley. Maj. Ilie Teodores-cu, no. 1, Botoșani county	SC VIOFANNY LACT PRODCOM SRL	255
2015	CAȘCAVAL GENYS	Vârfu Câmpului commune, Vârfu Câmpului village, Botoșani county	S.C. GENYS COMPANY S.R.L.	334
2015	CAȘCAVAL FAVIS	Lișna village, Suhârău commune, Botoșani county	SC FAVIS SRL	350

Source: Ministry of Agriculture, Forests and Rural Development.

On 16 January 2020, the European Commission published the application for registration of the name 'Cașcaval de Săveni' pursuant to Article 50 (2) (a) of Regulation (EU) No 182/2011. Regulation (EC) No 1151/2012 of the European Parliament and of the Council on systems relating to the quality of agricultural products and foodstuffs, for the purpose of expressing opposition by the authorities of a Member State or third country date of publication in the Official Journal of the European Union (OJ C15 / 2020). On 30.03.2020, the Republic of Bulgaria through the Ministry of Agriculture, Food and Forestry submitted to the EC, the act of opposition declared admissible by the European Commission. On 08.04.2020, the Hellenic Republic (Greece), through the Ministry of Rural Development and Food, submitted to the European Commission, the opposition act for the name Cașcaval de Săveni, declared admissible by the EC.

Currently, the procedure for finalizing the registration of the product "Cașcaval de Săveni - I.G.P. for Romania by arguing that the application submitted complies with the requirements of Regulation (EU) no. 1151/2012 of the registration of a protected name and that it does not harm the producers of 'KAȘCAVAL' in the Hellenic Republic and the Republic of Bulgaria, who have the possibility to continue marketing the two products (known as cheese, KASCAVAL). "Cașcaval" is a product from the category of dairy products, as widespread as „telemeaua", manufactured / produced and marketed in Romania since the 14th century, although the etymology of the word „cașcaval" is based on the scientific evidence presented above, since the occupation of the Carpato-Danubian-Pontic-European Space.

In the opposition, it was argued with the use of the name „cașcaval” for a series of products and that the request for protection refers to the compound name “Cașcaval de Săveni”.

Cascaval de Săveni, an economic perspective

In the documentation submitted by APCS in 2016, published on the MADR website, the members of the association presented the following economic information current production and estimated quantity for 5 years (tons / year), Number of customers (current and potential) on each segment of the product chain (production, distribution, marketing), as follows

1. Regarding the production evolution

Table no. 2. Current production and estimated quantity over 5 years (tones / year)

Producer	Current production 2016	Estimated quantity year I 2017	Estimated quantity year II	Estimated quantity year III	Estimated quantity year IV	Estimated quantity year V	The total amount estimated for 5 years
SC CICOS SRL	30	30	36	36	36	40	178
SC GENYS COMPANY SRL	5	10	15	20	25	30	100
SC GERARD SRL	36	40	44	48	52	60	280
SC FAVIS SRL	60	70	80	90	100	120	460
SC VIO-FANNY LACT PRODCOM SRL	22	26	31	37	44	50	210
SC VLASIE COMPANY SRL	100	140	180	210	250	280	1060
TOTAL PACS	253	316	386	441	507	580	2288

Source: Ministry of Agriculture, Forests and Rural Development

Table no. 3. Number of customers (current and potential) in each segment of the product chain (production, distribution, marketing)

Producer	Number of customers (Production)		Number of customers (Production)		Number of customers (Production)	
	Current	Potential	Current	Potential	Current	Potential
SC CICOS SRL	70	100	2	1	7	2
SC GENYS COMPANY SRL	70	150	1	5	4	10

SC GERARD SRL	54	70	12	15	12	15
SC FAVIS SRL	120	200	12	20	18	24
SC VIOFANNY LACT PRODCOM SRL	25	40	2	5	27	35
SC VLASIE COMPANY SRL	145	280	6	10	6	12
TOTAL PACS	484	840	35	56	74	98

Source: Ministry of Agriculture, Forests and Rural Development

Table no. 4. Geographical destination of the current product and estimated at 5 years

Producer	Current destination	Estimated destination in the first year	Estimated destination in the second year	Estimated destination in the third year	Estimated destination in the year IV	Estimated destination in the year V
SC CICOS SRL	Romania (BT, BR, B)	Romania (BT, BR, B, Romania (BT, BR, B, SV)	Romania (BT, BR, B, SV, IS)	Romania (BT, BR, B, SV, IS)	Romania (BT, BR, B, SV, IS, NT)	Romania (BT, BR, B, SV, IS, NT, CJ)
SC GENYS COMPANY SRL	Romania (BT, IS)	Romania (B, BT, IS, SV)	Romania (B, BT, IS, SV, CT)	Romania (B, BT, IS, SV, CT, BR, GL)	Romania (B, BT, IS, SV, CT, BR, GL, BC)	Romania (B, BT, IS, SV, CT, BR, GL, BC, TL, BV)
SC GERARD SRL	Romania (BT, SV, GL, CT)	Romania (BT, SV, GL, CT)	Romania (BT, SV, GL, CT)	Romania (BT, SV, GL, CT)	Romania (BT, SV, GL, CT)	Romania (BT, SV, GL, CT)
SC FAVIS SRL	Romania (BT, B, CT, SV, IS, BC)	Romania (BT, B, CT, SV, IS, BC)	Romania (BT, B, CT, SV, IS, BC)	Romania (BT, B, CT, SV, IS, BC)	Romania (BT, B, CT, SV, IS, BC)	Romania (BT, B, CT, SV, IS, BC)
SC VIOFANNY LACT PRODCOM SRL	Romania (BT, B, SV, IS)	Romania (BT, B, SV, IS, BC)	Romania (BT, B, SV, IS, BC)	Romania (BT, B, SV, IS, BC)	Romania (BT, B, SV, IS, BC)	Romania (BT, B, SV, IS, BC)
SC VLASIE COMPANY SRL	Romania (VN; BZ, B, TL, BR, CT, BT)	Romania (VN; BZ, B, TL, BR, CT, BT, NT)	Romania (VN; BZ, B, TL, BR, CT, BT, GL)	Romania (VN; BZ, B, TL, BR, CT, BT, BC)	Romania (VN; BZ, B, TL, BR, CT, BT, PH)	Romania (VN; BZ, B, TL, BR, CT, BT, NT, GL, BC, PH)

Source: Ministry of Agriculture, Forests and Rural Development

Table no. 5. Current and estimated economic situation over 5 years (*1000 RON)

Producer	Current economic situation	Economic situation estimated in the first year	Economic situation estimated in the second year	Economic situation estimated in the third year	Economic situation estimated in the year IV	Economic situation estimated in the year V
SC CICOS SRL	500	600	600	700	700	800
SC GENYS COMPANY SRL	380	465	545	625	705	785
SC GERARD SRL	600	700	800	900	950	950
SC FAVIS SRL	1400	1600	1800	2000	2200	2500
SC VIOFANNY LACT PROD-COM SRL	330	416	527	629	792	900
SC VLASIE COMPANY SRL	1400	2000	2700	3300	4100	4750
TOTAL PACS	4610	5781	6972	8154	9447	10685

Source: Ministry of Agriculture, Forests and Rural Development website: www.madr.ro.

2. Regarding the producers' evolution in terms of turnover

Table no. 6 The evolution regarding the turnover for the economic operators from the applicant group in the years 2016-2019

Producer	2015	2016	2017	2018	2019
SC CICOS SRL	2.174.200	1.152.765	845.675	1.303.559	682.510
SC GENYS COMPANY SRL	310.831	344.131	334.552	333.304	352.590
SC GERARD SRL	1.446.096	1.302.803	1.192.000	1.072.547	928.658
SC FAVIS SRL	819.957	1.044.430	1.227.988	1.003.167	1.456.611
SC VIOFANNY LACT PRODCOM SRL	1.365.719	1.318.132	1.015.755	681.578	297.008
SC VLASIE COMPANY SRL	5.870.798	4.944.613	4.069.379	3.110.856	1.562.983

Source: www.risco.ro.

Cascaval de Săveni, marketing growth from traditional product to European PGI

During these years, the transition from a traditional product to a product that will acquire a European protection of the product name Cașcaval de Săveni has meant an increase in the notoriety of the product. They managed through the representative form of association to make known the product Cașcaval de

Săveni in large chains of supermarkets. Thus, from the individual cheese products of the members from the Săveni area today Cașcaval de Săveni brand is offered to consumers, being a growing trend. The president of the association declared that since 2014 and until now, he can say that sales have increased by 50 %. Cașcaval de Săveni can be found in the dairy district of the whole country in the networks of Kaufland, Penny, Carrefour, Auchan, Mega Image and others. One of the producers of Cașcaval de Săveni, who has little left on the road of registration as a Protected Geographical Indication -at this time the Romanian documentation is being translated into the 27 languages, in order to be published in the Official Journal of the EC of the Regulation publishing the decision registration of PGI protection for Cașcaval de Săveni - opened in April 2020 the first store in Săveni, then two more in the city of Botoșani.

According to the statements of the president of APCS, not only the quantity of Cașcaval de Săveni product has been increasing in the last two years, but also the investments in its own store and 2 others in Botoșani, through online sales of websites and promotional Facebook of the members of the association with the local products, increase the notoriety of the product

Although European consumers are not yet sufficiently familiar with the names of quality schemes in Romania, the term traditional is very popular. The protected designation of origin and protected geographical indication logos were recognized by 18% of the responders of Eurobarometer 473 from 2018. As the traditional term is common in Romania, the transition from the specific name to the PDO or PGI quality scheme will also facilitate the integration of these new names in the minds of consumers, which will have a positive impact on other European quality schemes marketed nationally.

Through the individual actions of the APCS members, but also those of the MARD to promote the quality schemes registered and being registered, it can be seen from the initial situation of the PACS members that a major change took place. According to the conditions of the order on attestation of traditional products the estimate for the third year of the members of the association was of 441 t / year, effectively according to the report for 2019 the production achieved was 900 t / year, with a marketed production value of 18.076.000 lei.

Under the conditions imposed by order no. 724/2013 attestation of traditional products, the production limit for traditional products was 150 kg / year (365), but this was not reached by each producer, the average in 2015 for the 6 producers was 42 t / year (source: PACS members). On the way to the acquisition of European protection, the product being now registered in the Register of Systems in the field of nationally protected quality, there is both an increase in production capacity and an increase in turnover of producers in the applied group.

Cașcaval de Săveni and European funds

By protecting the name Cașcaval de Săveni-IGP, the potential of the area increases, by developing production capacities by using EU funds to modernize production capacity or accessing support measures to promote quality schemes.

The producer group also brings benefits for a better organization of the activity of promotion and defense of the right to trade under the specific name. At the same time, economic operators received additional points if they had products that are traditionally attached to the case when they accessed a measure from the EAFRD, for example measure 123 "increasing the added value of agricultural and forestry products for the expansion and modernization of the milk processing plant".

Conclusions

The usefulness of registering a traditional product has the effect that the product is obtained only in a well-defined quantity, according to the provisions of Order No. 724/2013 for small producers, or associations that must be registered / authorized from a sanitary-veterinary point of view, by knowing the traceability the product is in a direct relationship with the consumer. By associating both farmers raising animals in the area where many new operators use the same method of obtaining a product, according to a well-known recipe in the area will benefit from the effects of the local development model for Săveni cheese, which has an administrative point of view. , the geographical area corresponds to the

northern half of Botoșani County, which is located in the northeastern part of Romania, respectively: Bucecea; Vârfu Câmpului; Căndești; Mihăileni; Dersca; Hilișeu Horia; Lozna; Șendriceni; Văculești; Brăești; Leorda; Dimăcheni; Corlăteni; Broscăuți; Dorohoi; Ibănești; Pomârla; Cristinești; Suharău; George Enescu; Cordăreni; Vorniceni; Ungureni; Unțeni; Știubieni; Havârna; Hudești; Concești; Darabani; Mileanca; Drăgușeni; Săveni; Vlăsinești; Dângeni; Trușești; Dobârceni; Hănești; Avrămeni; Adășeni; Coțușca; Viișoara; Păltiniș; Rădăuți Prut; Mitoc; Manoleasa; Mihălășeni; Ripiceni. In this area, the animal farms have been restructured, modernized due to the good delivery price of the milk that is used to obtain the Cașcaval de Săveni product, the increase in the number of employees at the operators in the area who obtain the product. The association comprising all manufacturers verified by an inspection and certification body that allow negotiations with commercial network chains.

As the producers presented in the estimate transmitted to the European Union the PGI recognition raises the stake for small producers. After the member of PACS joint forces the Cașcaval de Săveni became a well-known brand that was commercialized all over Romania threw supermarket chains. Also, the producers opened shops in different cities in order to sell their product directly to the consumers. Because of the growth of product, the production has also increased, leading to a higher income for the producers.

Acknowledgements:

This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.

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Internet World During COVID-19 Pandemic

Razvan-Ion Chitescu¹, Ionel Magdalena² and Daniela Baiasu³

¹⁾²⁾³⁾ *National University of Political Studies and Public Administration, Bucharest, Romania.*

E-mail: razvanric@yahoo.com; E-mail: ionutmagdalena@yahoo.com

E-mail: daniela_baiasu@yahoo.com

Please cite this paper as:

Chitescu, R.I., Magdalena, I. and Baiasu, D., 2021, Internet World During COVID-19 Pandemic, In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 378-386 DOI: 10.24818/BASIQ/2021/07/049

Abstract

The coronavirus pandemic has affected the global population through social and economic instability, xenophobia and racism against people of Chinese descent, and the spread of misinformation and conspiracy theories online. The imposition of isolation measures at home has favored the use of the online environment, testing the strength of fixed and mobile data providers to remain in this market.

The imposition of home isolation measures, characteristic of the COVID-19 pandemic period, has favored the intensive use of the online environment, testing the strength of fixed and mobile data providers to remain in this market. The development of online courses as well as the development of online professional activity was among the main causes of the increase in data, voice, and interconnection traffic in Romania, approximately 25%. This is associated with the increase in the first six months of the year is that of online payments, from drugs to bills.

The paper presented aimed to highlight the most important issues regarding the use of the Internet - services and consumer profile in two periods of time that characterized the pandemic period COVID-19 (alert and emergency). These were identified by reporting to benchmarks services provided by providers, the type of services used, the type of activities performed, the level of data and device security. The results obtained by analyzing the data obtained through sociological research that had as a tool the questionnaire emphasizes the change of the consumer profile in the analyzed period and the intensification of the use of the Internet and all the effects generated by it.

Keywords

COVID-19, Internet, data traffic, labour market.

DOI: 10.24818/BASIQ/2021/07/049

Introduction

The coronavirus pandemic, known as Wuhan coronavirus or COVID-19, began in December 2019 in Wuhan, China. Following the widespread alert of this virus, on March 11, 2020, the World Health Organization declared that the coronavirus outbreak had become a pandemic (Branswell and Joseph, 2020).

It plunged the world into one of the most serious human economic and social crises of modern times, causing massive human suffering and laying bare the extreme vulnerability on workers and enterprises. COVID-19's impact in the world of work has been particularly felt by the most disadvantaged and vulnerable. The pandemic has affected consumer spending, industries, investment rates, capital flows, and supply chains. According to International Labor Organization, the equivalent of 400 million full-time jobs has been lost.

In Romania, the first case was registered on February 26, 2020, in Gorj County (digi24.ro, 2020). As measures, the authorities have banned: flights to and from Romania, gatherings of more than 100 people (reaching eight people during the state of emergency - March 16 - May 14, 2020), closing schools, and teaching courses online. Also, many economic activities have shifted to e-work.

Among the negative effects that have manifested themselves have been social and economic instability in many parts of the world, xenophobia, and racism against people of Chinese origin, and the spread of misinformation and conspiracy theories online (Clamp, 2020).

The effects of the pandemic were felt in all areas of activity, at the personal, group, or country / regional, or global level. According to a forecast of the European Commission, in 2020 the economic zone of the European currency will contract with a record value of 7¼% and will increase by 6¼% in 2021. Also, the EU economy will contract by 7% in 2020, to grow by about 6% in 2021 (EC, 2020). Among the negative effects that have manifested themselves have been social and economic instability in many parts of the world, xenophobia and racism against people of Chinese origin, and the spread of disinformation and conspiracy theories online (Clamp, 2020).

Romania is no exception. The pandemic has affected, from an economic point of view, consumer spending, industries, investment rates, capital flows, and supply chains, and socially created panic, frustration, instability.

Isolation at home has led more and more people to use the online environment for various activities: social networks, entertainment, online games, educational programs, shopping other than those strictly necessary, job responsibilities.

In this context, our research tried to identify, compared to certain periods that the Romanian society did not go through, what was internet consumption, what was it used for, and whether the consumer remained the classic one or his profile changed.

The study had two research hypotheses:

1. The internet consumer during the restrictions imposed by the alert state has changed;
2. Increased use of internet traffic has increased, but so have consumer risks and vulnerabilities

These issues are intensely debated at the regional, European and national level but previous studies have not accentuated the problem and have not enhanced the value of such an approach for the segment targeting the consumer profile in terms of gender, age, profession, security concern.

Literature Review

The COVID-19 pandemic changed everybody's way of living in a very short time, causing the impact on the Internet latency caused by the increased amount of human activities that are carried out online (Massimo et al, 2020).

As a response to the COVID-19 pandemic, many governments have introduced steps such as spatial distancing and staying at home to curb its spread and impact. the importance of information and communications technology is even higher than usual, and it has been crucial in keeping parts of the economy going, allowing large groups of people to work and study from home, enhancing social connectedness, providing greatly needed entertainment, etc (Kiraly et al, 2020).

The impact of the internet is beneficial and profound but with the associated risks. The rapid evolutions of ITC technologies and applications, the entry into the labor market of the M generation have contributed to the increase of favorability for telework (Grigorescu and Mocanu, 2020). Three positive principles of the Internet altered the social and economic environment, and these are: connecting everyone, closing the loop (any initiative can receive feedback), and empowering individuals (Stephenson, 2003).

Methodology

The research method was that of a social survey to perform, by interpreting the results obtained, an analysis (having a comparative component) of the use of Internet services by the population in the socio-economic situation characteristic of the coronavirus pandemic.

In order to highlight the importance of the online environment in people's lives, we created a questionnaire, as working instrument, distributed online through social networks (Facebook, Twitter), with the possibility of distribution. The questionnaire included 5 questions (three closed and two open questions) along with those targeting the respondent's profile, to highlight people's dependence on the online environment both during and after the pandemic. The questions were asked so that we could validate the assumptions made.

Thus, we sent the questionnaire after mid-April (the state of emergency caused by the pandemic was in force in Romania), and the time allotted to respond to the questionnaire was two weeks (during the alert state).

During the state of emergency, we created a questionnaire using the same matrix, in order to make a comparison between the interest of Internet users for news in the online environment and the willingness to respond to them. We used the same way of launching the questionnaire, and the period in which it was opened (could be answered) was also two weeks. In the state of emergency, the questionnaire was distributed by 1864 people, and 1700 people answered it, with the distribution of the answers as follows: In the first week, 952 respondents answered, and in the second week 748. During the alert period, the questionnaire was distributed by 500 people, and 378 people answered it, with the distribution of answers as follows: In the first week, 270 respondents answered, and in the second week 108. It can be seen that in the first week of the state of emergency the highest number of respondents was registered, which was continuously decreasing until the last week (figure no. 1).

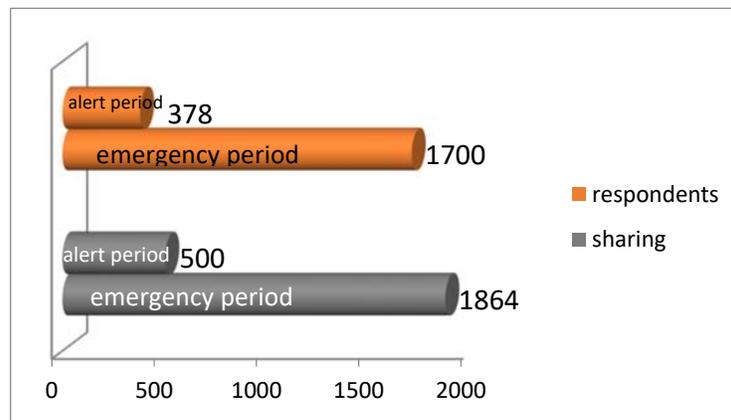


Figure no 1. Comparison on respondents' interest on questionnaires during COVID

Source: authors

Results and discussions

The profile of the respondent was important for drawing the main directions of interpretation. 42% of women and 58% of men answered the questionnaire. They were distributed by age as follows: between 13-18 years-19%, between 19-30 - 35%, 30-50 years - 29%, 50-70 years - 17%. Employees accounted for 39%, those who did not have a job at that time - 43%, pupils and students - 17%. For both periods analyzed, it was interesting to note that women used the internet less, probably the time being occupied with household activities or childcare that remained at home during the restrictions. I also noticed that the number of seniors using the internet has increased (even for paying for some services).

Through the completed questionnaire we found that all respondents used the Internet daily, 88.2% at least 5 times a day online, and 11.2% fewer times a day. During the alert state, all respondents used the internet daily, 82.4% at least 5 times a day online, and 17.6% fewer times a day. The online environment was used for social networks (70.6%), payment of bills (52.9%), information related to the pandemic (47.1%), entertainment (41.2%), household shopping (23.5%), catering services (11.8%), and payment of taxes (5.9%).

One of the activities carried out at a high level was to carry out online transactions (eg taxes, purchases, fines). These confirm those published in other statistics such as that presented by Statista.com, issued in April 2020, on the payments made by people in Romania in April 2020 compared to the period before COVID. It based on online interviews, which took place April 13-17, 2020, and involved 500 respondents aged between 18 and 65. The question was "Thinking about the period before the Coronavirus outbreak, how do you usually make the following payments? How have you made the following payments since the Coronavirus epidemic started?" The answers were that 80% of respondents pay their bills online (compared to 69% in the previous COVID period), 55% rates and loans (46% previously), 52% taxes (compared to 37%), 46% insurance (35%), 38% maintenance costs (27%), 25 % fines (20%), 21% buy food (12%) and 15% drugs (10%) (Sava, 2020) (figure no. 2).

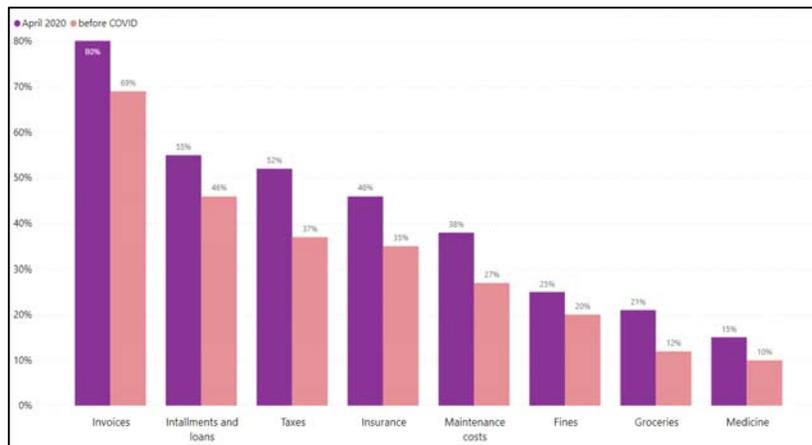


Figure no 2. Online payments in Romania before and during COVID period

Source: authors' processing, STATISTA data

The month in which respondents made the most transactions was May, compared to April identified at the European level. However, during all these months, online transactions fluctuated. There have been declines in Europe since May, with the adoption of relaxation measures.

The increases of the users' number, the widening of the age range, as well as the long time spent at home have increased the number of targeted sites and their applications. The results of our study showed the following hierarchy google.com (1), facebook.com (2), youtube.com (3), instagram.com (4), yahoo.com (5), google.ro (6), emag.ro (7), and among the applications WhatsApp (1), Messenger (2), Zoom (3), Skype (4), Google Classroom (5), Edmodo (6), Microsoft Teams (7). This hierarchy is justified by the popularity of some of the applications and by the online teaching / online school.

To observe the most searched topics on the web in Romania we used Google Trends from January 1 to July 13, 2020, and the main 10 topics of interest were: coronavirus, Cubit, Worldometers, Google Classroom, Virus, Case, Easter, Mask, Coin Master, and Yahoo.com.

Regarding the quality of internet services, the results are similar between the two surveys (dissatisfied - 47%, satisfied - 49%, do not know - 4%). These results can be interpreted by the situation found at the regional and national levels.

At the European level, the European Commission has called (March 2020) for the responsibility of streaming services, operators, and users. Thus, it was recommended that streaming platforms rather provide a standard transmission quality and cooperate with telecommunications operators. The latter should take preventive and mitigating measures, encouraging users to apply settings that reduce data consumption, including using the Wi-Fi network or reducing the resolution for content (ec.europa.eu, 2020). In response, Netflix said it would cut traffic in Europe by 25% to keep the Internet infrastructure running smoothly (digi24.ro, 2020). As expected, the level of Internet use has increased significantly in European countries as well. According to the Organization for Economic Co-operation and Development (OECD), there has been an increase in the UK between 35% and 60% for fixed data used during the week. In Spain, the increase was 40%, with mobile traffic increasing by 50% and voice traffic by 25%. Italy saw a 63% increase in online traffic, and in France, mobile data operators reported an 80% increase in traffic generated by users in France traveling to the United States (OECD, 2020).

Packet Clearing House (the international organization responsible for providing operational support and security to critical Internet infrastructure) informed that Internet bandwidth has increased in 23 EU member states (from 5% in Belgium to 224% in Luxembourg) (PCH, 2020) (figure no. 3).



Figure no. 3. EU countries Domestic Band with Production

Source: Packet Clearing House data

Between January and June 2020, online transactions fluctuated at the European level, with April being the month in which the highest percentages were registered. For example, statista.com conducted a study with these increases for Italy, Spain, and Germany. If in January 2020 in Italy online transactions accounted for 8%, in June they reached 66%, and in April 187% (Sabanoglu, 2020) (figure no. 4). Of the three states, Spain recorded the highest percentage in April (200%) and Germany the lowest (63%). There have been decreases since May, with the adoption of relaxation measures.

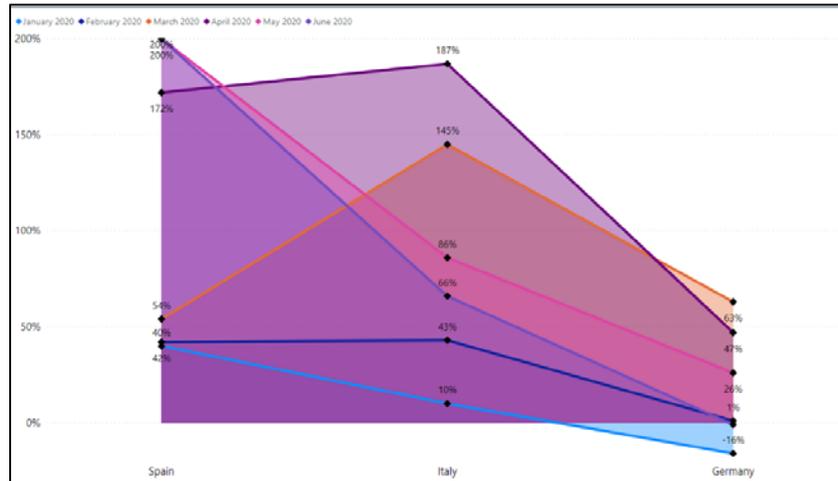


Figure no.4. January-June 2020 online payments in Italy, Spain and Germany

Source: authors' processing, STATISTA data

In Romania, according to a survey requested by the National Authority for Administration and Regulation in Communications and published (April 8, 2020) by the hotnews.ro website, the following data emerged:

Between 26 February and 1 April 2020, the total interconnection traffic increased, on average, by 21% in mobile networks and by 19% in fixed networks. In mobile networks, **data traffic** recorded average increases of 12% (with increases of between 7% and 20%). In fixed networks, data traffic increased on average by 20.9%, with providers reporting increases of between 18% and 27%. **Voice traffic** increased on average by 22% (with increases of between 18.2% and 24%), and in fixed networks, by 22.7%, with providers reporting increases between 8.5% and 44.7%. **The total interconnection traffic** reported by electronic communications providers recorded an average increase of 21% in mobile networks, with increases between 17.7% and 24%. In fixed networks, total interconnection traffic increased on average by 19%, with increases reported between 6.3% and 41%. On the other hand, providers have experienced an increasing number of congestion situations on mobile access networks (over 80% loads of used ports and access radio resources) (Vasilache, 2020). All these increases were registered in the context of the development of school and university courses, of the professional activity in the online environment, as well as of the growth of the online entertainment component.

In Romania, according to the site similarweb.com, the first 10 sites accessed in the first half of the year were: google.com, facebook.com, youtube.com, google.ro, emag.ro, yahoo.com, olx.ro, xnxx.com, instagram.com and wikipedia.org (SimilarWeb, 2020). To conduct online courses, applications and platforms were used such as: Whatsapp, Messenger, Skype, Zoom, Google Meet, Google Classroom, Edmodo, Easy Class, ClassDojo, Microsoft Teams, 24edu.ro, JAInspire.

According to the same data published by Packet Clearing House, the speed of internet use in Romania increased from 222 G (in July 2019) to 277 G (July 2020), which means an increase of 25% (PCH, 2020).

From an economic point of view, the Romanian authorities adopted the law for granting facilities to taxpayers economic operators, a law that displeased Internet operators' members of the National Association of Internet Service Providers (ANISP) on the grounds that the normative act would close some operators.

Among the main risks and vulnerabilities that we can find are:

- **Internet collapse** (31%), choice justified by the large number of accesses in the online environment and the increase of data traffic. Although internet providers have taken steps to

ensure quality services, to more effectively monitor the available capacity of the network and to intervene where necessary, as well as measures to modernize network equipment and simplify and streamline the procurement process, it is perceived as the greatest risk.

- **fake news (5%)** – related to the topic of COVID-19 globally, a series of misinformation appeared, distributed mainly on social networks. They are used either to make a profit, to support certain geopolitical interests, or to discredit official sources. In order to combat this phenomenon, the main measure taken by the authorities was to publicly inform the real situation, to provide secure methods of information (official pages), and to take action against those who carry out such activities. For example, on March 16, 2020, the President of Romania signed a decree offering the possibility for the National Authority for Administration and Regulation in Communications to close the sites containing fake news related to the pandemic (presidency.ro, 2020).
- **exposure of children (37%)**– which has been argued by conducting online schooling / online leisure which affects health and safety, as it increases the possibility of young people being more exposed to risks of sexual exploitation, harassment and seduction in the online space. UNICEF published a technical note in April 2020 drawing attention to the possibility of young people being more exposed to increased risks of sexual exploitation, harassment, and seduction online (UNICEF, 2020).
- **data security (27%)** – in the context of the pandemic, state authorities are taking measures that can affect data security by implementing digital solutions. Digital solutions provide information and analysis on information on geolocation, facial recognition, etc. Improper use of these solutions can lead to a violation of the individual's right to liberty. Recently, countries such as Italy, Germany, and France have adopted laws empowering certain organizations to request personal data from people considered to be infected with the COVID-19 virus. There are also countries (eg the Republic of Korea, Singapore, and Israel) that have collected geolocation data without adopting new legislation. Authorities in Argentina, Australia, Canada, Finland, France, Germany, Ireland, New Zealand, Poland, Slovakia, Switzerland, and the United Kingdom have also published guidelines for data processors to comply with legal regulations. In this context, the European Union also published a declaration signed by Alessandra Pierucci (Chair of the Convention Committee 108) and Jean-Philippe Walter (Data Protection Commissioner of the Council of Europe) guiding European states to comply with data protection legislation (Pierucci and Walter, 2020). Internet users have a duty to protect their devices through which they access various sites so as not to fall victim to hackers.

Conclusions

The analysis of the results validated the assumed hypotheses. There has been a change in the profile of the consumer (most men compared to the previous period; seniors use online tools to pay for utilities and various services; the user becomes more inattentive to fake news or data security).

As we have shown, the activity in the online environment has intensified considerably in 2020 as a result of the isolation measures imposed by the authorities from all states, which made the fixed and mobile data operators intensify their activity in order to prevent possible failure of online access. However, there were no major issues with online operations or site access.

Perceived one of the main risks, however, there were no major problems in this segment related to online operations or access to sites. The diversification of topics of interest has led to the change of hierarchy within the same sites, and e-work and online school to the use of new applications. The abuse of technology, justified or not during this period, has led to awareness of the negative effects of increased exposure of children to the online environment (risk at the top of the hierarchy), as well as the social implications, interpersonal relationships that degrade in these conditions.

These problems, temporary or not, can be solved through the intervention of the authorities, civil society and each individual.

The results of the study must be seen in terms of the limitations imposed by this research - relatively small number of respondents, small number of data and information to present detailed analyzes on this issue by service providers - lack of national and regional benchmarks for comparison, time decreases as a percentage of the pandemic period - the approach of the beginning period, respondents still under the umbrella of pandemic effects.

From an economic point of view, there were many more online transactions compared to the period before the pandemic, which could become a habit for every person. The increasing use of online or card payments could raise some questions about the future of cash. Should this period be an end to cash transactions?

Socially, spending a long time on the internet can lead to social isolation, the loss of interpersonal connections. Also, exposing children to the online environment as well as the poor security of personal data is a danger to anyone.

Overall, the current crises, and especially the restrictive measures, have a major impact on the labor market. The European Commission and national governments already implemented several financial measures to support workers and companies that are struggling to survive. However, expectations are that the labor market and the way we work will change permanently.

High unemployment should worry everybody even if the economic recovery were quick, the consequences could be long-term. Job losses affect earnings and may damage workers' long-term mental and physical health.

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The Role of Social Media in Promoting Sustainability of the Healthcare System

Andreea M. Stoica¹, Aurora Ş. Cosma², Andreea Daniela Tudor³ and Alina Georgiana Petre⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania*

Email: andreeastoica09@gmail.com; Email: preda_auro@yahoo.com

Email: tudorandread@yahoo.com; Email: alina.petre1010@gmail.com

Please cite this paper as:

Stoica, A.M., Cosma, A.S., Tudor, A.D. and Petre, A.G., 2021. The Role of Social Media in Promoting Sustainability of the Healthcare System. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleşea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 387-393
DOI: 10.24818/BASIQ/2021/07/050

Abstract

There is no unique definition for sustainability. Nowadays, because of the social and environmental problems, societies are using sustainability in a specific way. Sustainability is defined as the actions and processes through which humans avoid the depletion of the natural resources to keep an ecological balance. Implementing sustainability is one of the most important processes in the services sector. When we think of sustainable development, we think of how we can help future generations by providing them with what they will need. One of the most important systems whose future depends on a current sustainable development is the medical system, the well-being of the people being fundamental to a productive and healthy society as well as a solid economy. This article complements the specialized studies on sustainability in the medical system, offering new solutions, applicable mainly in the human resources management area. We used a comprehensive search into numerous sources of secondary data, such as articles, reports and books from the domains of sustainability in the medical system and we used also electronic databases, the method used is a descriptive, given the fact that the subject is very widely discussed.

Keywords: sustainability, management, human resources, social network, medical system.

DOI: 10.24818/BASIQ/2021/07/050

Introduction

Agenda 21 - the United Nations Program of Action on Sustainable Development¹ - highlighted the role of economic, environmental, socio-demographic and health factors for sustainable development. The opening paragraph of this UN meeting in 1992 was: "Health ultimately depends on the ability to successfully lead the interrelationship between the physical, spiritual, biological and economic and social environment. Social development is not possible without a healthy population; however, most development-related activities affect the environment to a large extent, which in turn causes or exacerbates many health problems" (Poenaru, 2007). The medical system is among the first systems that embrace sustainability in order to obtain a better quality of life for future generations.

Health care causes global environmental impacts that, depending on which indicator is considered, range between 1% and 5% of total global impacts and are more than 5% for some national impacts (Lenzen, et al., 2020).

For the near future, we can anticipate increased cardiovascular and pulmonary diseases, as well as mental ill health, besides the health consequences of food insecurity, water shortage, climate migration or territorial conflict (Ossebaard and Lachman, 2021).

The high importance we find in the various issues related to sustainability determines the implementation of sustainability both within organizations and in important sectors of society, as well as in the medical system. Development process is becoming a common global desire.

Human resources management is one of the essential conditions for increasing the performance of the medical system, by promoting efficient employee recruitment and selection strategies and continuing with strategies focused on the maintenance and continuous improvement of the hired candidates.

The online environment and the social network are one of the most specific factors that have an influence on human resource management. In the specialized literature, this interaction between the online environment and human resources management has been intensely studied.

Social media, through its importance, usefulness and applicability, has become one of the tools intensely used to promote a healthy management in the medical sector.

The Importance of a Sustainable Healthcare System

The current health system is facing a steady and alarming increase in spending. This is due to the aging population, the increase of chronic diseases, the increase in the number of patients with multimorbidity, the emergence of new technologies, the increase in the costs of materials and services. All these things lead to a waste of resources and a decrease in the quality of health care.

The paradox is that human health depends on the health of the environment, our lives depend on natural resources, water quality, air. One of the very important roles of medicine is to promote a healthy lifestyle, exercise and eat right. Medicine should promote the same measure and care for the environment, because according to the WHO about 1.3 million people die every year because of environmental pollution (Anon., 2020).

The operation of the medical system requires many medical equipment, high-tech facility, well-trained medical staff to provide medical care but it's responsible for producing negative effects on the environment, greenhouse gas emissions, polluted air, waste of plastics, pharmaceutical pollution.

Within the medical community, awareness of the negative effects of healthcare on the environment is only beginning to be considered, although the damage to public health caused by pollution caused by medical activities is a safety issue for patients.

The field of health sustainability wants to quantify the consumption of resources and greenhouse gas emissions and to provide solutions to reduce their effects, thus increasing patient safety while protecting public health.

According to the WHO, modern medical techniques generate large amounts of medical waste such as disposable and electronic medical devices, plastics, bandages, furniture, etc. between 15% and 25% of the amount of medical waste is hazardous waste being made up of radiological, biological, and chemical waste. But the biggest problem of this medical waste is that its disposal is harmful for the environment but also harmful from an economic point of view. Discarded products mean discarded resources (Martin and Schouten, 2014).

Healthcare providers can be more sustainable by focusing on the following (TRIVITRON, 2020):

1. Minimize and adequately manage the waste of hazardous chemicals

Healthcare waste is comparable to domestic waste: chemicals, sharps, pharmaceuticals, radioactive or genotoxic waste and heavy metals.

Also, LCD displays, CRT monitors, fluorescent lamps, wheelchair cushions, flame-retardant mattresses or baby bottles can be hazardous. Hospitals must focus on making conscious purchasing decisions and make a purpose to recycle toxic products more often.

A poor management of the healthcare waste can lead to serious infections, injuries of the health care workers or increase the toxic effects and pollution in the community.

2. Implement Waste Disposal Protocols

Disinfecting medical waste is known as a process that releases noxious fumes. The representatives of the companies that are part of the Healthcare system must find greener ways to waste disposal. Some examples can be autoclaving, chemical treatment or microwaving.

Autoclaving	Chemical treatment	Microwave treatment
<ul style="list-style-type: none"> • Steam sterilization of the medical waste in chambers that apply heat, pressure and steam 	<ul style="list-style-type: none"> • Use of chlorine compounds that kills microorganisms from the medical waste 	<ul style="list-style-type: none"> • Sterilizes the medical waste respecting the environment with minimal handling of hazardous material

Figure no. 1. Green methods to dispose the medical waste

Source: Adapted from (TRIVITRON, 2020)

3. Promote a sustainable procurement

The healthcare systems are procuring and using a significant amount of goods and services. from the source of the raw materials to manufacturing, distribution, use and, finally, to the end of the cycle (WHO, 2017).

A sustainable procurement in the healthcare system can lead to:

- Cost reductions through more efficient use of the resources, processes and labor management
- Continuous business even during challenging times like crisis
- Attracting, hiring and retaining skilled employees for a long-term
- Driving to collaborative innovation with the supplier

4. Save energy

In order to save energy, hospitals can start by reprogramming the cooling and heating plants, re-engineering the air handling system or upgrade the lighting system. Saving both energy and carbon output can be a complicated mission but it's doable.

5. Preserve water

Every effort meant to preserve water can strengthen environmental sustainability in the healthcare system. Of course, the system needs to actively implement measures and engage the health care workers, while inducing a sense of responsibility in them.

The role of social networks in increasing the sustainability of the medical system

The advent of the Internet has produced, one by one, paradigm shifts. Among them, the use of social networks in terms of public health education removed physical and geographical barriers that prevented access to resources, information, and care. It is undeniable that today, social networks have become a tool for promoting health and the principles of health education among the public (Stellefson, et.all., 2020).

At the same time, the explosion of the use of social networks has a great potential in the widespread awareness regarding the sustainable development of the environment. Mankind has evolved and this evolution has improved the quality of life as well as its longevity. Current generations live longer and better than previous generations and this has led to exponential population growth.

An impossible consequence to ignore is one that leads to an imbalance of the environment. Nature has always had its means of self-regulation, means that man, in the lead, has managed to overcome by artificial means, thus causing not only benefits but also inevitable long-term harms such as: overpopulation, pollution, climate change, mass extinctions of different species, waste of natural resources, global warming. The human species is today facing the greatest challenge of its history. Taking control of the unstoppable upward trend of evolution in harmony with the nature resources must be impossible now but possible from a long-time perspective.

Education, awareness and responsibility are factors that help us shape our future and ensure a healthy and clean-living environment for future generations.

Sustainable development describes the processes of improving the quality of human life today without depleting the resources of future generations. This is an important key to the survival of our species through sustainability.

Sustainability is often defined as the ability to meet current needs without compromising the ability of future generations to meet their own needs and the medical system is also a domain that needs to be maintained sustainable (Blankestijn, 2021).

The United Nations Sustainable Development Goals cover a wide range of global issues and achieving these goals will require effort and education.

The aim of the 2030 Agenda for Sustainable Development, adopted by all Member States of the United Nations in 2015, is to provide "a common plan for peace and prosperity for people and the planet, now and in the future".

The interaction between climate change and health is two-way. There is clear evidence that climate change (extreme weather events, global warming and rising sea levels) can have detrimental effects on human health. The World Health Organization (WHO) estimates that 23% of deaths worldwide are related to environmental factors. Climate change and pollution can lead, through various means, to malnutrition, mental disorders, cancers and cardiovascular, renal, respiratory and infectious diseases (Watts, et al, 2018).

Lifelong learning is a process that has become an essential part of modern life but also a force and support in terms of rapid changes in technology, increased urbanization, globalization, and environmental changes and the evolution of the health care system (Lander and Stever, 2017).

Today, humanity has taken refuge entirely in the online environment due to the largest pandemic it has faced in the last hundred years, the one caused by COVID 19. In this context, social networks can become the most powerful tool of communication, education, global literacy in areas such as health, science, sustainable development as part of the lifelong learning process over the concerns, challenges and priorities related of man's coexistence with the nature from which he derives.

People use these technologies with the help of computers or mobile devices. Social networks now allow a single person to communicate with hundreds or even thousands of other people around the world about ideas, opinions, products, services and culture, politics and religion. At the same time, both sustainable development and health education are topics that require integrated and holistic approaches through the participation of individuals, groups, organizations, the public and governments at the individual, local, regional, national, and global levels and thus lead to the idea of sustainable education.

Programs for the development of these concepts can reach their potential by including an efficient use of social networks such as Facebook, YouTube, Instagram, Twitter (Balaswamy and Palvai, 2017).

In the health field, doctors are often involved in the care, research and/or education of the patient. Sustainable health education can be described as a teaching and learning process that prepares future health professionals to promote sustainable health and provide sustainable healthcare. And this is how, in this way, global institutions emphasize the importance of the transition to a sustainable society (Blankestijn, 2021).

Redefining the role of human resource management in the medical sector is necessary given the increasingly accelerated globalization and the need for sustainability of the medical sector. That is why

an adaptation of human resources management to an environment in full transformation is necessary in order to ensure the quality of medical services.

Traditional recruitment methods involve launching the announcement, receiving applications, selecting candidates, holding the interview and hiring the chosen candidates (Dessler and Varkkey, 2005). These methods can be moved into the online environment. Therefore, the needs of human resources management can be satisfied while offering more flexibility and sustainability to the process itself. Companies can be more productive and efficient by holding online interviews.

All these recruitment methods can be achieved through online recruitment platforms and social media platforms, thus facilitating the process of evaluating and selecting the candidates (Zide, et al., 2014).

Through the online environment, in the human resources management, the following operations can be done (Ruparel, et al., 2020):

- The use of online platforms to facilitate the application and the selection process.
- The possibility of performing analyzes using online platforms that allow the evaluation of employees' potential.
- Reducing the possibilities of favoritism during the recruitment process by using online platforms.

Numerous researches have been conducted in the field of human resource management to analyze to what extent a sustainable human resource management style can help employees to reduce the negative impact of traditional business practices on employees, society and environment (Randev and Jha, 2019). Further research is needed to determine the extent to which social media and the online environment influence human resource management in the health sector.

In this equation, social networks are important vectors both in terms of the means of communication of sustainable education and the transformation of society into a sustainable one. Ultimately, they can make a difference in terms of health, well-being, quality education, responsible consumption and production, and climate action.

Methodology

The present article includes an analysis of the documentation found in various publications and scientific articles to illustrate the advantages of sustainability in the medical system. Therefore, we used a comprehensive search into numerous sources of secondary data, such as articles, reports, and books from the domains sustainability in the medical system,

For the research, we used also electronic databases, such as PubMed, Academia. EDU, BRILL and Wiley Online Library.

The method used is a descriptive, given the fact that the subject is very widely discussed.

Results and discussions

The health system has adopted over time various strategies to obtain a high quality of health services. One of the departments with an essential role in implementing these strategies is the management of human resources due to its factors influencing the quality of health services. Among the most important current strategies that offer a global boost in human resources management in the medical sector is the sustainability strategy.

Sustainability, through social networks, through the online environment, has become an important tool in the distribution of quality services in the medical sector.

The results of this study highlight the significance and importance of sustainability in the medical sector by providing tools that can be used by human resources management to increase the quality of medical services.

The solutions applicable in the medical sector that we propose following this study are the following:

- Introduction of new procedures for waste collection to reduce the negative impact on the environment.
- The use of social networking for: Attracting, hiring, and retaining skilled employees for a long-term.
- Introduction of new procedures regarding the efficient use of energy by implementing systems to reduce energy consumption and by training medical staff on the optimal use of energy.
- Using online platforms to measure employee performance.

The present study aims to improve the literature by providing support in understanding the role of sustainability in the medical sector.

Our results come to complement to current studies and as a debut for future research on the importance of sustainability in society and the influence it has on the quality of health services.

Conclusions

This paper contributes to the relatively recent body of knowledge linking healthcare system with sustainability and highlights the relationship between those two concepts and social media environment.

The findings reflect upon the use of social media networks in promoting sustainability of the healthcare system.

Social networks offer new opportunities in promoting communication strategies both in the field of health and in terms of sustainable development program. Their use effectively and at low cost covers a wide spectrum of audience in a context in which the current health system is facing a steady and alarming increase in spending due to an aging population, increasing chronic diseases, increasing the number of patients with multimorbidity, the emergence of new technologies, increasing the costs of materials and services

However, we cannot ignore the management of the challenges that social networks bring along with opportunities, such as: propaganda, misinformation, fake-news, discrimination (there are small categories of people who do not have access to information through technology), respect for the protection of privacy.

Some social platforms have initiated, albeit belatedly, measures to limit such situations (for example, Facebook with anti-vaccination groups).

We signal both the importance of the way in which the communication and promotion campaigns are designed to be carried out through the right message for the compatible audience, through its communication channel and the monitoring and evaluation of public health promotion and communication activities that appear on different social media websites.

This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.

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Internet Fraud and Phishing Attacks - a European Perspective

Dorel Paraschiv¹, Liviu Toader², Maria Nițu³ and Ștefan Negrea⁴
¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*
E-mail: dorel.paraschiv@ase.ro; E-mail: liviutoader2005@yahoo.com
E-mail: maria.nitu@rei.ase.ro; E-mail: stefannegrea@outlook.com

Please cite this paper as:

Paraschiv, D., Toader, L., Nitu, M. and Negrea, S., 2021. Internet Fraud and Phishing Attacks - a European Perspective. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 394-400
DOI: 10.24818/BASIQ/2021/07/051

Abstract

The IT developments and the expansion of e-commerce in recent years have generated a number of advantages for consumers, companies, but at the same time and with the same rapidity have developed online fraud which represents a real problem not only for the European countries, but also for the rest of the world. As a result of the restrictions imposed on the Covid-19 Pandemic and the relocation of the activity, mainly in the online environment, most payments were made through e-banking platforms and many employees worked from home, which contributed to the increase in the number of cyber-attacks, online fraud, especially phishing messages.

The objective of the paper is to present the cybersecurity environment along side its main threat - phishing, using the qualitative research method. And, using the quantitative research method, we can provide an overview of the correlation between individuals who are able to identify phishing messages, by possessing different degrees of internet literacy skills and those who possess lower internet literacy skills, thus unable to recognize phishing messages. Although there are methods that can reduce these threats, such as computer literacy and user education, criminals are able to constantly adapt and evolve bypassing them, in some cases succeeding in carrying out their illegal activities.

Keywords

Phishing, European Union, cyberspace, internet literacy, user education.

DOI: 10.24818/BASIQ/2021/07/051

Introduction

Along with the rapid expansion of e-commerce in the last couple of years, online frauds- phishing, email compromise, investment scam (Norris, Brookes and Dowell, 2019), committed through social engineering or online payment systems (Europol, 2020), have become a major problem in many European countries. Fraud covers a wide range of criminal activities united by some form of misrepresentation by a party to secure an advantage for that party or cause a disadvantage to others (Button and Cross, 2017). Different types of frauds have occurred long before the Internet and the evolution of the technology, especially related to digital communication, e-commerce and on-line payments, has only changed the means through which these offences are executed, not the desire and willingness of the offenders to engage in fraudulent activities. Technology and the widespread of Internet and social networking opened up new ways to perpetrate frauds and to industrialize old ones (Button and Cross, 2017), Phishing being a popular method used to steal sensitive information and personal data of users, through email or malicious websites (Alkhalil, et al., 2021).

Access to Internet expanded from traditional desktop computers to a wide range of mobile devices, including mobile phones and tablets, via mobile data networks that are able to achieve very fast connection speeds via 5G technology, as well as reliability, which outperforms the previous

technologies (Singh, Casson and Chan, 2021). Also, new forms of social interaction, that were almost non-existent before the widespread of mobile computing, emerged through the wide range of social media platforms available today, thus people expose their personal data (Sahoo and Gupta, 2019), becoming vulnerable to various attacks. Technology substantially changed the way people buy goods and services and manage their finance through on-line banking systems.

Review of the scientific literature: Cybersecurity and Opportunities for on-line fraud

Technological progress in recent years has allowed communication and information technologies to create new opportunities for companies, consumers, governments, but also to generate a number of risks and vulnerabilities that can cause major harm to the actors involved (Nam, 2019). Cybersecurity is a combination of “computer security and securitization” (Lee and Kim, 2020, p.2), the ability to defend and protect cyberspace from possible attacks (NIST IR, 2011), in order to preserve the integrity of information, its availability and confidentiality (Lezzi, et al, 2018). At European level, attention has been focused on cybersecurity, and the EU NIS Directive 2016/1148 on the security of information and networks aimed at protecting digital and essential services, needs domestic capacity in the field of cybersecurity and an intensification of cooperation within the EU (Iaiani, et al., 2021). The criminals behind the attacks can be: activists, terrorists, criminals or dissatisfied employees (Iaiani, et al., 2021), and the means of attack are various: phishing, disruptive malware, online scams, data-harvesting malware (Interpol, 2020).

Phishing is a form of cyber attack, which creates an apparently legitimate website, but tries to illegally take sensitive personal data/information (Yang, et al., 2021), being an “automated configuration of social engineering” (Ghanzi-Tehrani and Pontell, 2021, pp.316) by which attackers use the internet in an illegal and fraudulent manner. Phishing websites can be of two types: concocted (fictitious sites for monetary gains) and spoof (imitating sites to transmit malware or identity theft) (Chen, et al., 2020).

Illegitimate on-line activities are correlated with their legitimate counterparts. Yar, et al. (2019) consider the Internet as a set of “social practices” through which some people will create distinct opportunities for offending. One of the main characteristics of many cyber related frauds is the geographical distance between the offender and the victim, which makes it easier for the offender to commit the fraud and harder to be detected by the victim (Duffield and Grabosky, 2001). A relevant example is phishing, in which case the potential victims receive an e-mail or message that looks like it's issued by a legitimate organization, such as a bank or other service provider, and requires a certain security sensitive action from the user, such as a password reset or disclosure of other private information. This example illustrates how the new technologies generate opportunities for fraud, as phishing probably would not have been possible at a large scale before the e-mail because it would have required a lot of effort and resources from the offender.

Just as businesses can use the technology to penetrate new markets or reach new consumers more cheaply, this is also true for cyber criminals (Button and Cross, 2017). The fraudsters moved from paper letters to e-mail, as now they can send out millions of e-mails at little or no costs. Such mass e-mail scams often include a scenario where the potential victim is asked to pay a small amount of money up-front in return for a promised large amount in the future (Smith, et al., 1999). Globalization is another important aspect of cyber-crime, as offenders will try to avoid detection and prosecution by exploiting the geographical jurisdictional boundaries, while expanding their cyber-crime horizons by targeting potential victims all around the world.

Phishing is the most common form of identity fraud

Identity Fraud is one of the most common form of fraud, as the victims are deceived into disclosing personal, sensitive information or participating in a fraudulent transaction rather than being persuaded to do so based on the belief that they will receive something valuable in return. Another form of identity fraud is represented by phishing scams, where the offenders impersonate an official body, such as a bank, government agency or service providers, in order to trick the victim into disclosing personal information, such as passwords, credit card numbers (Yang, et al., 2021), date of birth, pin codes and

so on. Phishing attacks are generally initiated via an e-mail of an instant message which include a hyperlink to a deceptive internet website, which reproduces into detail the original website and appears to be legitimate but is in fact controlled by the offender. (Chaudhry, et al., 2016). Although phishing is one of the oldest types of cyber attack, originating in the early 1990s, it is still one of the most damaging and widespread type of attack, which can lead to major financial losses.

According to Deloitte (2019), 90% of data breaches in businesses are caused by phishing, with a 3.92 million USD average total cost of a data breach. A *Phishing and Email Fraud Statistics 2019*, presented by Retruster.com (2019) shows that 76% of businesses reported being a victim of phishing attacks in 2018, while 30% of the phishing messages get opened by the targeted users. According to the same report (Retruster, 2019), the total number of phishing attempts registered an increase with 65% in 2018, compared to the previous years. Technological advances and newly found vulnerabilities, combined with frequency of attack and the diversification of attack techniques increase the chances of a successful phishing attack. Even experienced users fail to detect around 29% of phishing attacks, while untrained ones are expected to successfully detect even less (Chaudhry, et al., 2016).

A phishing attack consists of three components (Chaudhry, et al., 2016):

- **The lure** represents the first step of a phishing attack and most commonly takes the form of a message that appears to be sent by a legitimate source, such as a bank, a government authority or a service provider. This message contains a hyperlink to the hook, which is the second component of a phishing attack. Link manipulation is done by fraudulently redirecting the potential victim to a fake website through different channels like e-mails, text messages and social media, described hereby as a hook. The usage of subdomains, hidden or misspelled URLs are some of the techniques used to trick the potential victims into accessing a fake website (Deloitte, 2019);

- **The hook** represents a malicious website that mimics the original website of a legitimate institution. The user is therefore tricked into disclosing confidential or personal information to this website as if the information was requested by the legitimate institution;

- **The catch** is the last phase, referring to the actual usage of the fraudulently collected information by the attackers. (Jakobsson and Myers, 2006).

All three components of a phishing attack typically include a series of technical tricks to make it more convincing for the potential victim, such as: modifying the apparent sender of the message or making it look like the message originates from a person the victim is familiar with, using logo, images and a visual style inspired by or copied from the original source, hiding and encoding the URL or making the message look more authentic by including security advice (Chaudhry, et al., 2016).

Research methodology

The article aims to provide an overview of the correlation between the population who identifies phishing messages by possessing various degrees of the internet literacy skills and the population who possesses lower internet literacy skills, thus being unable to recognise phishing messages. To achieve this objective, the first part of the article presents a qualitative research regarding cybersecurity and the main threat – *phishing* and its steps.

Next, a perspective on the phishing attacks in the European countries, is presented, as well as a quantitative method by combining data from Eurostat regarding the correlation between individuals who received “phishing” messages and individuals who have never used the internet in order to validate the hypothesis that a higher degree of internet literacy skills leads to identifying phishing messages.

Results and discussions - Phishing attacks in the European Union

According to Eurostat (2021), in the European Union, 25% of all individuals reported receiving fraudulent phishing messages. Denmark was the most affected by phishing attacks, as 45% of its' citizens declared they received fraudulent messages in 2019, followed by France and Sweden, both

with 39% of individuals and Netherlands, with 38% of individuals. On the other hand, in Lithuania only 3% of the population was affected by phishing attacks via fraudulent messages. Latvia and Poland were also less affected by phishing attacks, with 6%, followed by Bulgaria and Greece, where 8% of population declared they received fraudulent phishing messages in 2019 (Eurostat, 2021).

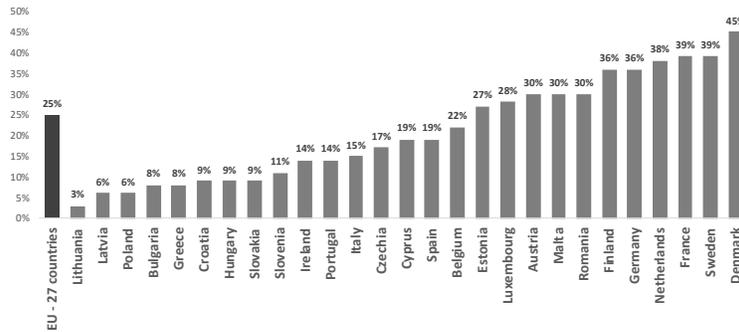


Figure no. 1. Individuals who received fraudulent phishing messages (%), 2019

Source: Eurostat, Security related problems experienced when using the internet, 2021

The data presented in Figure no. 1 are based on general population surveys, therefore it is reasonable to assume that it mainly reflects the ability of the general population of a specific country to identify and detect a potentially malicious internet message, either by human or machine detection, rather than the total number of actual phishing attacks registered in a specific country. The ability of a country's general population to identify a potentially malicious internet message is directly proportional to its' internet literacy skills, so a higher rate of detection of phishing attack corresponds to higher rate of internet literacy skills and vice versa. In order to validate this assumption, it is first necessary to make an assessment of each country's general population internet literacy skills. One main indicator used to make this assessment is the relative number of individuals who have never used the internet in each European country. A higher percentage of this population will suggest a lower degree of internet literacy skills nationwide. According to Eurostat (2021), in the entire European Union, an average of 10% of total individuals have never used the internet, while the remaining 90% of the population possess different degrees of computer skills and knowledge about the internet usage. While there are still a few exceptions, the most developed countries have lower internet illiteracy rates. Countries like Netherlands, Sweden and Denmark registered the lowest internet illiteracy rates, of 2% of the total population, while Bulgaria (24%) has the highest percentage of people who have never used the internet, more than double of the European Union average of 10%.

The Figure no. 2, referring to the percentage of individuals who have never used the internet (Eurostat, 2021), actually illustrates each country's internet illiteracy rate.

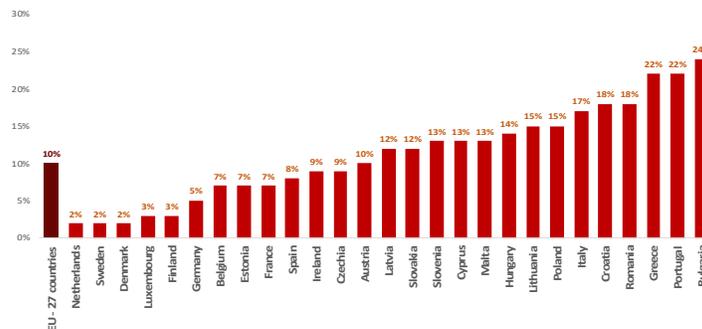


Figure no. 2. Individuals who have never used the internet (%), 2019

Source: Eurostat, Individuals - Internet use, 2021

The next step towards validating the hypothesis is to combine the information regarding the percentage of individuals who received fraudulent phishing messages and the percentage of individuals who have never used the internet in all the European countries and search for a statistically relevant correlation.

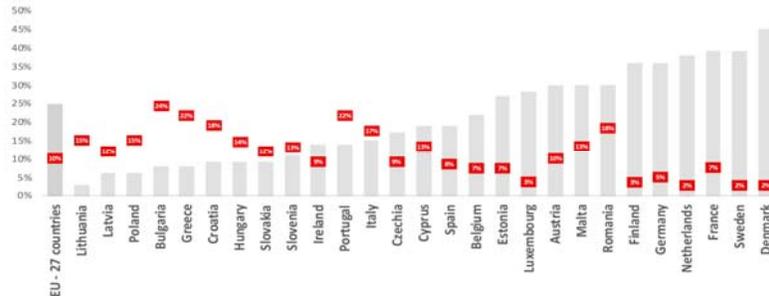


Figure no. 3. Individuals who received fraudulent "phishing" messages and individuals who have never used the internet (%), 2019

Sources: Eurostat, Security related problems experienced when using the internet and Eurostat, Individuals - Internet use, 2021

The combined data depicted in Figure no. 3 suggest a negative correlation between the two datasets: countries that registered a lower percentage of the population who declared receiving phishing messages, generally have a higher internet illiteracy rate among the general population, while most of the countries registering a higher percentage of malicious phishing attacks among the general population, have a lower internet illiteracy rate, therefore a large percentage of the population possess the necessary knowledge, abilities and technical means to access the internet with various degrees of digital and IT proficiencies.

Table no. 1. Individuals who received fraudulent phishing messages and individuals who have never used the internet (%), 2019

	Lithuania	Latvia	Poland	Bulgaria	Greece	Croatia	Hungary	Slovakia	Slovenia	Ireland	Portugal	Italy	Czechia	Cyprus	Spain	Belgium	Estonia	Luxembourg	Austria	Malta	Romania	Finland	Germany	Netherlands	France	Sweden	Denmark
Individuals who have never used the Internet (%)	15%	12%	15%	24%	22%	18%	14%	12%	13%	9%	22%	17%	9%	13%	8%	7%	7%	3%	10%	13%	18%	3%	5%	2%	7%	2%	2%
Individuals receiving fraudulent messages (%)	3%	6%	6%	8%	8%	9%	9%	9%	11%	14%	14%	15%	17%	19%	19%	22%	27%	28%	30%	30%	30%	36%	36%	38%	39%	39%	45%

Sources: Eurostat, Security related problems experienced when using the internet and Eurostat, Individuals - Internet use, 2021

Correlation is a measure of a monotonic relationship between two variables, either positive or negative. Therefore, in correlated data, a change in the magnitude of one variable is associated with a change in the magnitude of the other variable, either in the same direction, for positive correlation, or in the opposite direction for negative correlation. The Pearson correlation, commonly abbreviated as r , describes a linear relationship between two continuous, random variables, ranging from -1 to +1 (Schober, et al., 2018).

The Pearson correlation coefficient for the datasets shown in Table no. 1, for a total number of 27 countries is -0.73. According to Schober et al. (2018), in a conventional approach to interpreting a correlation coefficient, the observed value of -0.73 indicates a strong negative correlation, as it's absolute magnitude ranges between 0.70 and 0.89. The t-test absolute value is 5.308, with a corresponding p-value of 0.0000168. The p-value is considerably smaller than the significance level ($\alpha = 0.05$), indicating that the determined correlation coefficient is statistically relevant. Therefore, we can conclude that there is a strong negative correlation between the number of individuals who received fraudulent phishing messages and the number of individuals who have never used the internet, expressed as percentages of the total population, in the European Union countries.

Conclusion

The strong negative correlation between the percentage of the population who received phishing messages and the percentage of population who have never used the internet in all the European Union member states validates the hypothesis that the ability of the general population of a European country to identify a potentially malicious internet message, either by human or machine detection is strongly correlated with the degree of internet literacy skills among its citizens. Computer literacy and user education represent some of the most efficient methods to prevent phishing attacks. In most of the cases, the victims do not realize that they have been scammed, therefore the first step in defending oneself is the detection of the attack itself. The individuals' ability of using electronic communication, combined with basic analytical skills play a major role in successfully identifying phishing attacks. Some individuals may be more knowledgeable about internet security issues, either from previous experience or due to specific trainings, and possess the ability to identify a suspicious message or link faster or more accurate than other less experienced users. But most individuals do not have a good knowledge regarding the user interaction models of the systems they generally use, so it becomes easier for attackers to mimic the interface of some familiar web pages or internet applications and trick the users into transmit their personal information to the offenders (Chaudhry, et al., 2016). In addition to human detection of potential malicious messages, software tools and algorithms became increasingly efficient in detecting and neutralizing phishing attacks. Internet fraud will never be eradicated, and the methods used by the offenders will continue to evolve and adapt to the new technologies. Still, the threats can be minimized through computer and internet literacy and technological education for the general public, combined with widespread usage of end-user safeguard software solutions and up-to-date server-side security measures.

Acknowledgment

This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.

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Changes in Trends During COVID-19 Pandemic: A Focus on Tourism and Plastic Industries

Andrea Pontrandolfo¹, Annarita Paiano², Tiziana Crovella³ and Miraj Ahmed Bhuiyan⁴

¹⁾²⁾³⁾ *University of Bari Aldo Moro, Department of Economics, Management and Business Law, Bari, Italy.*

⁴⁾ *Guangdong University of Finance & Economics, Guangzhou, China.*

E-mail: andrea.pontrandolfo@uniba.it; E-mail: annarita.paiano@uniba.it E-mail: tiziana.crovella@uniba.it; E-mail: ahmed.miraz@qq.com

Please cite this paper as:

Pontrandolfo, A., Paiano, A., Crovella, T. and Bhuiyan, M.A., 2021. Changes in Trends During COVID-19 Pandemic: A Focus on Tourism and Plastic Industries. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 401-409 DOI: 10.24818/BASIQ/2021/07/052

Abstract

Since February 2020, the Covid-19 pandemic has created a significant disruption of global markets with important effects on the personal, social, economic and professional lives of the people. The uncertainty and fear of the society, together with the severe limitations imposed on a global level, has made tourism one of the sectors most affected by the crisis, contributing significantly to the decrease in the consumption of products packaged in Polyethylene Terephthalate (PET), which is widely used in the tourism-related activities. These issues, jointly with the heavy reduction of industrial production, led to an inevitable collapse in oil demand, which made virgin plastics cheaper than recycled ones.

The purpose of the paper is to evaluate the impact of the Covid-19 pandemic on the tourism sector, examining the consequences of this impact on the consumption of PET and R-PET (Recycled PET).

The research methodology firstly involves an investigation of the scientific literature and data sector, comparing 2019 and 2020, in order to highlight the significant issues and changes, both in international arrivals and environmental effects, occurred in the global tourism during the pandemic period. Secondly, by analysing the trends of oil prices, an economic focus on PET and R-PET industry was carried out.

A strong correlation was found between the collapse of the tourism market, a decrease in the price of oil, and consequently an increase in the use of virgin PET. This paper adds new insights on the distortive effects on the economics and environment, due to pandemic.

Finally, the public health crisis represents a great opportunity to consider tourism holistically in terms of its effects on the environment and climate, but also on consumer and producer behaviours.

Keywords

Covid-19, Tourism, Plastics, Oil price.

DOI: 10.24818/BASIQ/2021/07/052

Introduction

The pandemic has raised concern on various issues. Particularly, there is a strong apprehension about the personal and psychological aspect of the population, due to economic factors and health, but also to the environmental issues.

Among the most important economic effects that occurred following the world crisis associated with Covid- 19 was the breakdown of tourist flows (Škare, Soriano and Porada-Rochoń, 2021). Despite the first effects have already emerged in February 2020, the collapse of tourism activities has occurred at the beginning of March, because the social distancing measures as well as national and international measures adopted to prevent the virus spread, began.

Nowadays the return to travelling seems to be a still remote possibility in these phases of recovery from the crisis caused by the coronavirus. The security measures implemented worldwide, such as confinement and various forms of social distancing, with the correct safety precautions, are beginning to be relaxed and tourism will play a decisive role in the economy's recovery. Moreover, it will also provide important information on the state of health and safety of the different countries. Obviously, the revival of tourism will have different timing in various parts of the world, so it is difficult to predict how domestic tourism will recover, indeed, while some nations may get back rather quickly, others may struggle and need more time (Zhang, et al., 2021).

The uncertainty that characterized 2020 led to a significant reduction in holidays, a drastic reduction in catering and air travel, the cancellation of numerous sporting, cultural, musical and theatrical events. All these activities have contributed significantly to the decrease in the consumption of products packaged in Polyethylene Terephthalate. PET is widely used in all tourism-related activities because it is the most common plastic to package bottled water, soft drinks and food. Despite the sharp drop in PET packaging in all activities related to the tourism sector, plastics have sharply increased by the emergency linked to the Coronavirus, but also for food safety and compliance with high-quality standards.

During the pandemic, the closure of production plants and the collapse of transports caused a significant reduction in the global demand for oil (Bourghelle, Jawadi and Rozin, 2021). Consequently, the collapse in the price of crude oil has made it more profitable to produce virgin plastics from fossil resources rather than using recycled plastics.

To help raise awareness of the impact generated by Covid-19 on production and consumption, this paper analysed the consequences of the Covid-19 impact on tourism and plastics markets, with a focus on polyethylene terephthalate, one of the most consumed plastic materials.

Review of the scientific literature

In the last year, the scientific publications regarding the effects of Covid-19 on tourism have been numerous (Persson-Fischer and Liu, 2021).

The objective of the study by Collins-Kreiner and Ram (2020) was to evaluate the impact that the pandemic has generated on the tourism system in different countries, but at the same time to analyse the national and global policies adopted to fight the crisis. The authors underlined that there are deep differences in the tourism industries of the different countries, and although it is very complex, common guidelines for the rehabilitation of the sector needed.

The Australian tourism sector was analysed by Pham et al. (2021); the authors stressed the relevance of tourism on the national GDP and the employment levels too, underlining that the effects of the reduction of tourism activities negatively affected many closely connected sectors, consequently, the increase of the Australian tourism allow the economic results of related industries to be increased. Wen et al. (2020) have elaborated key insights useful to create strategies for the entire tourism sector, to increase the confidence of tourists following the Covid-19 crisis. In their paper, the authors analysed the new trends, behaviours, and travel preferences of post-pandemic Chinese tourists. It emerged that slow tourism is highly appreciated, and tourists will prefer increasing the time spent in a single place preferring the quality of the experience rather than the number of places visited.

Brizek, et al. (2021) focused on the economic consequences of the pandemic through the use of a survey to the South Carolina restaurant managers. The analysis revealed that, after around 60 days of restaurant closure, 25% of managers were unable to reopen their activities, confirming the suffering of the restaurant business.

In their article, Cavallo, Sacchi, and Carfora (2020) analysed the change in daily habits and the new needs of the Italian population due to new behaviours resulting from the pandemic. In addition, the authors examined the exponential growth of e-commerce, which in the lockdown period, allowed a significant increase in the familiarity of the population with new communication devices. Panzone, Larcom and She (2021) investigated the impact of the pandemic on the retail sector, highlighting significant losses for the catering sector, unlike supermarkets which increased their sales.

The air transport sector has been deeply affected by the pandemic. Many airlines are lobbying for government subsidies and aid. Other airlines have fired employees, so the unemployment rate against the related workforce would be 7% -13% (Sobieralski, 2020).

Sharma, Thomas and Paul (2021) propose a resilience-based framework composed of four key factors for the tourism sector to overcome the Covid-19 crisis. The authors identified four factors that need working together to make the entire sector resilient enough to deal with the crisis: government response, technology innovation, local belongingness, and consumer and employee confidence.

During the pandemic, the huge use of single-use plastic products inevitably increased the complexity of managing this waste. Vanapalli, et al. (2021) analysed the plastic waste sector by providing important recommendations for policymakers to avoid the increased use and consequent disposal of single-use plastics. Among the most important recommendations, there is certainly that of making citizens aware mainly during the school period, guaranteeing part of the education to environmental science. The issue of plastic during the pandemic was also discussed by Silva, et al. (2021). The authors highlighted the need to increase the studies and the use of biobased plastics to improve their environmental compatibility in a circular economy perspective. Furthermore, in their study, they stressed the importance of producer responsibility throughout the life cycle of plastic products in order to minimize plastic losses and pollution.

Research methodology

The research methodology involves an investigation of the scientific literature in order to highlight the significant issues and changes occurred during the period of health emergency. The analysis has undertaken according to the comparison between different years (2019 and 2020). Specifically, the collection and analysis of the global data allowed to assess the consequences of the Covid-19 pandemic on the tourism industry. Moreover, a further analysis was carried out through the study of the prices of PET and R-PET following the closures of the main consumer activities of bottles for beverages, water, food, such as universities, tourist attractions, restaurants, events of various kinds. In this regard, a further analysis on the relationship between the demand and supply of oil has been conducted. Finally, based on the change in the oil price during the pandemic crisis, the economic and environmental implications of the use of virgin raw materials instead of the use of recycled ones were analysed and referred to the first months of the pandemic.

Results and discussion

Effects of Covid-19 on the tourism industry

Starting from the first quarter of 2020 following the Covid-19 pandemic, the whole world has been characterized by significant travel restrictions which have strongly affected the tourist flows (Gössling, Scott and Hall, 2021).

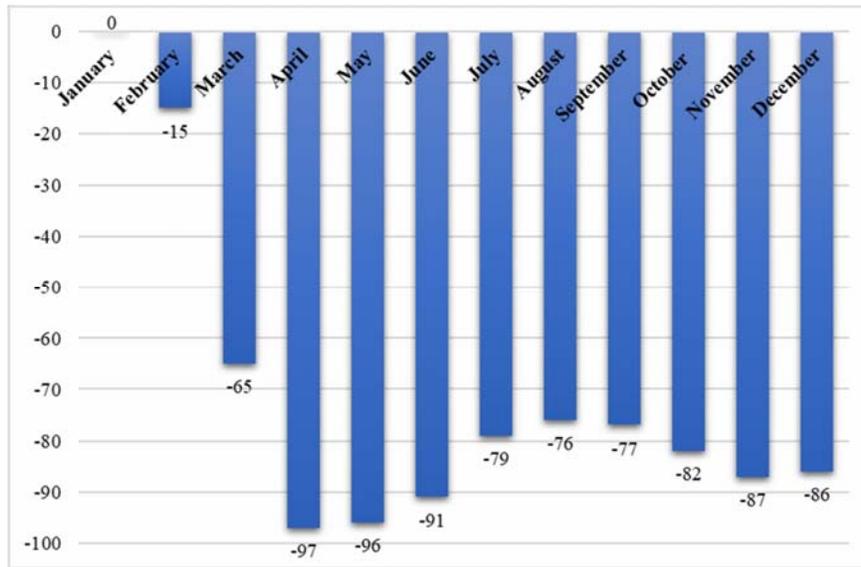


Figure no. 1. Global international tourist arrivals in 2020 compared with 2019

Source: UNWTO, 2021b

The tourism system has always been one of the pillars of the country's economy. A significant part of the national GDP is linked to tourism, with the involvement of many different sectors. According to Wang et al. 2020, pandemic is deeply influencing the development of the global economy and threatening the survival of businesses around the world. Tourism has always played an important role in the economic growth of a country: globally, it represents 10% of GDP (WTTC, 2020). It represents a strong accelerator both from an economic and social level; it creates job opportunities, increases productivity, encourages investments, allowing an improvement of the entire national context. According to the latest data from the UNWTO (United Nations World Tourism Organization, 2021a), due to the pandemic, international arrivals globally decreased by 73% compared to 2019.

In Europe, the reduction by 70% in arrivals, compared to 2019, resulted in the loss of 500 million tourists, while in Asia and the Pacific there was a decrease by 84% in arrivals, equal to 300 million fewer tourists. As shown in fig.no. 1, globally, the international arrivals in the year 2020 have drastically reduced in comparison with 2019. Only in the summer season, they have improved. The tourism figures during the pandemic were dramatic and, above all, due to the uncertainty of the current situation, few years need before international tourism could return to the levels of 2019.

Environmental effects of Covid-19

As noted by Lokhandwala and Gautam (2020), nature and the environment have certainly benefited from the shortage of industrial activities, road traffic and tourism.

Considering data reported by IEA (2020), due to reductions in oil, natural gas and coal during the first quarter of 2020, compared with the same period of 2019, the Global CO₂ emissions decreased by over 5% particularly in the regions most affected by the initial and largest impacts of a pandemic such as China (- 8%) and the European Union (-8%). In the same period, the global energy demand decreased by 3.8%. Nagaj and Žuromskaite (2021) investigated the effect of the Covid-19 on the impact of tourism sector on the level of the Greenhouse Gas (GHG) emissions. The study focused on 10 EU countries. The authors pointed out a positive correlation between the tourism sector development and the GHG emissions generated by this sector. Moreover, has been noted that, following a strong reduction in arrivals and in business turnover, as compared to 2019, GHG emissions in all European countries have fallen. In 2014 Katircioglu, Feridun, and Kilinc, investigated the long-term relationship between international tourism, energy consumption, and climate change in Cyprus. They observe that

the negative environmental impact is not caused by all kinds of tourism activity, but overall, by international tourism.

One of the most important sources of GHG emission has been particularly affected by the crisis. The global demand for passenger transport significantly reduced due to national and international tourism travel restrictions. The Covid-19 pandemic has certainly generated a negative impact on the growth of the tourism industry, but, at the same time, it brought to a significant decreasing in energy consumption. (Chu et al., 2020). In the period March-April 2020, compared to the previous year, there was a 90% decrease in flights operated (European Commission, 2020); consequently, these figures pointed out a significant decline in GHG emissions from the aviation industry in 2020.

The positive effects of tourism reduction in one of the most visited cities of the world have been analysed by Braga et al. (2020). Thanks to satellite imagery the authors, comparing data of 2019 and 2020, stressed the significant improvement of water quality in the Venice canals and the lagoon.

Moreover, one of the most short-term positive effects of lockdowns has been the remarkable improvement in air quality. Especially in the world's most polluted cities the concentrations of NO₂, mainly due to the road transport reductions, have been reduced in many countries, where lockdown measures were implemented (EEA, 2021).

Muhammad, Long, and Salman (2020) based on data from European Space Agency (ESA) and National Aeronautics and Space Administration (NASA) highlighted how, in the countries most affected by Covid-19 such as Wuhan, Italy, Spain, USA, France, during the period between January and March 2020, pollution has reduced up to 30%, due to the suspension of many economic activities.

Pandemic has certainly benefited nature and the environment by reducing energy consumption, pollution, and air and water quality; on the other hand, it has generated a sharp increase in waste, especially plastic waste generated by the personal protective equipment needed during pandemic.

The desperate fight to limit the spread of the virus led to taking a break from the recent progress made in sustainability and waste management. In 2018, the European Union had banned the ten most popular single-use plastic products by 2021, but due to the current crisis, in many cases, the fear of spreading the virus forced policymakers to a step back, indeed, some countries have withdrawn the bans on the use of single-use plastic and restricted the use of reusable products.

This situation has dangerous long-term repercussions on the environment, in addition there is the real risk of losing years of progress in reducing single-use plastics and encouraging the use of more recyclable plastics.

Effects of Covid-19 on the packaging and oil prices. A focus on PET supply chain

The restrictions worldwide imposed, have forced the suspension for a long period of a wide range of tourism-related activities, such as travel, transport, accommodation, catering, cultural activities, festivals, events and concerts. Notwithstanding the strong standstill of all these activities, which generally have a very high consumption of materials and great environmental impacts in terms of waste (e.g., restaurants) and consumption of resources, the use of some materials such as plastic, did not decrease during the pandemic. Indeed, we have seen a reduction in the consumption of bottles and plastic packaging commonly used in restaurants and bars, but at the same time, a constant increase of a wide range of disposable plastic products related to the fight against the pandemic.

There is a strong relationship between PET packaging and tourism, as travelers typically avoid tap water when abroad, with a high increase in bottled water and soft drinks sales in holiday destinations. Tourism is a key sector in the production of plastic waste; it has been estimated that 200 million tourists who visit the Mediterranean every year, generate a 40% increase in summer plastic pollution (WWF, 2018). Moreover, in 2016, 53,000 tons of plastic waste were dispersed in the Mediterranean Sea, for this reason, the Italian coastal areas, there are among the highest concentrations of plastic waste largely due to invasions by tourists (WWF, 2019).

The impact on the packaging market during pandemic, was not homogeneous among different areas of applications. Some packaging uses, such as food and health, performed relatively well, whereas others like the packaging for non-essential goods suffered large economic losses due to the pandemic. The

global shock has led within the global plastics industry a strong uncertainty, due to the disruptions in raw material supply and distribution logistics. In this context, the market had to adapt very quickly to satisfy changing demand models.

In addition to the reduction of plastic consumption in the tourism industry, the stop of this sector has brought to a strongly reduction in the fuel consumption due to the cancelled flights, cruises and travels. These issues, jointly to the heavy reduction of the industrial production, led to an inevitable collapse in oil demand. Since the price of oil affects the entire petrochemical chain including thermoplastics, the consumption of virgin plastic products has grown dramatically (Adyel, 2020) due to the collapse in oil prices. Conversely, the use of recycled plastic decreased since it became more expensive.

Taking into account the close relationship between the price of oil and the price of virgin plastic products, this paper analysed the consequences in the R-PET sector during the pandemic. The collapse in oil prices during the first months of 2020 led to a reduction in the prices of virgin oil-derived plastics, exerting strong pressure on the prices of recycled plastics. The price of oil went from \$ 72 in May 2019 to \$ 20 in April 2020 (fig.no. 2), making petroleum-based virgin materials, such as plastics, more attractive than their sustainable and more expensive alternatives.

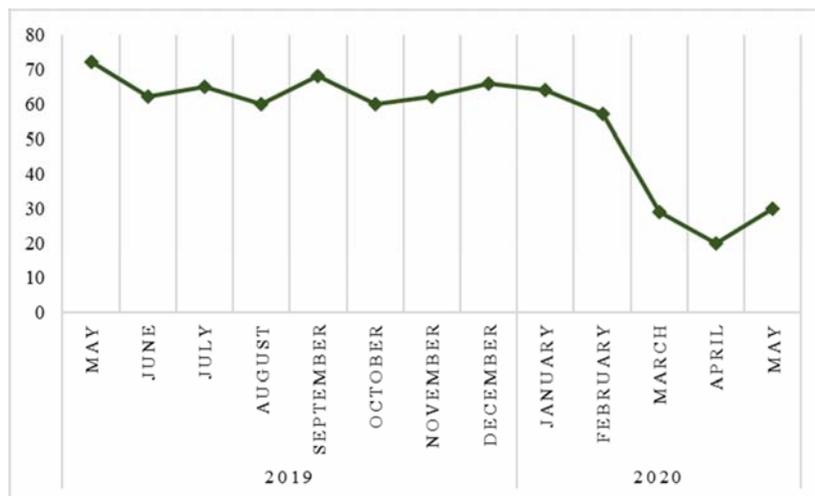


Figure no. 2. Oil price trend during pandemic (\$ per barrel)

Source: Il Sole 24 Ore, 2021

During a period in which the attention on low environmental impact materials - especially recycled ones - was decisively taking off, due to the pandemic the R-PET market suffered a strong slowdown. The prices of recycled plastics are no longer competitive and profitable, and inevitably many companies in the sector have been excluded from the market.

The demand for R-PET has significantly fallen, mainly due to the availability of significantly cheaper virgin PET on the market. The decrease in demand for recycled material has made collection, storage and delivery more complex; moreover, the closure of a lot of manufacturing plants, and the simultaneous collapse in the price of virgin raw materials, have encouraged some companies to quit the use of R-PET.

The fig.no. 3 shows the trend in the price of virgin PET and R-PET during the initial period of the pandemic. As we can see from the figure, the price of virgin PET and R-PET in May 2019 were very similar, with a slight convenience of recycled material. The price of R-PET has been fairly constant over time, unlike virgin PET; compared to the same period of the previous year, the price of virgin PET decreased by roughly 34%, whereas R-PET has been dropped about 4%.

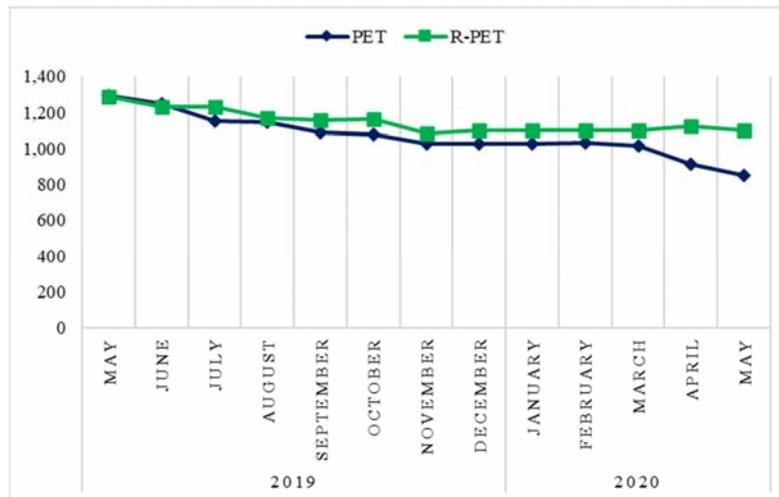


Figure no. 3. PET and R-PET price trend during pandemic (\$/ton)

Source: ICIS, 2020

Additionally, the difference between the two prices needs to be investigated. Starting from the first months of the pandemic, and following the collapse in the price of oil, the price difference between the two materials has significantly increased. In particular, initially, the choice between virgin PET and R-PET was not strongly affected by the price. Indeed, up to March 2020, the average gap between the prices of the two materials was about \$53.80/ton, whereas, between April and May the gap has grown significantly to roughly \$230.76/ton, making the purchase of virgin PET significantly more advantageous than R-PET. The price issue is not the only significant variable, indeed, many producers worried about the difficulties in the procurement of recycled material, have turned to virgin raw materials for the reliability of the supply chain.

Consequently, following the low availability of R-PET, due to the closures of numerous production plants for recycled plastics, many companies involved in the last years in the transition process from PET to R- PET, have been forced to slow down this process. Additionally, due to the lack of tourism and sport, music, cultural events, and limitation for the Horeca sector in 2021, which heavily affected the consumption of bottled beverages, a limited quantity of raw materials for PET recycling occurring.

Conclusions

The present research assessed the impact of the Covid-19 pandemic on the tourism sector, evaluating the influences on packaging sector and the fall in the oil prices. Particularly, it provided new insights on the distortive effects due to the pandemic on the economics and environment, focusing on tourism and plastics sectors.

As we know, the tourism industry includes many closely related activities such as transport, catering, hotels, musical events, etc. In 2020, the worldwide price of oil was strongly affected by the Covid-19; in this context, as result of the collapse of all these activities has led to a drastic reduction of commonly used PET products, such as beverage bottles and food packaging. The oil price affects the entire petrochemical chain and especially thermoplastics. This situation has generated high uncertainty in the recycled plastics market. In addition to the economic convenience of purchasing virgin PET compared to R-PET, the risks in the supply of R-PET encouraged many producers to use virgin material instead of recycled one. To prevent these issues will recur in the future, in order to stimulate the use of recycled materials in a circular economy perspective, the need for important targeted measures by policymakers through incentive policies will be crucial.

Since currently, available data is limited, due to the continuous changing of the health crisis, the authors' future perspective aims to increase knowledge about the effect it had on the consumption of virgin and recycled PET by companies, also quantifying the environmental impacts generated by the pandemic.

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Increasing the International Competitiveness of the Romanian Horticultural Chain

Raluca Andreea Ion¹, Irina-Elena Petrescu², Ionuț-Laurențiu Petre³, Mihai Istudor⁴
and Adriana Georgiana Tărășilă (Ivan)⁵

¹⁾²⁾³⁾⁴⁾⁵⁾ Bucharest University of Economic Studies, Bucharest, Romania.

E-mail: raluca.ion@eam.ase.ro; irina.petrescu@eam.ase.ro; laurentiu.petre@eam.ase.ro;
istudor_mihai@yahoo.com, adriana_gt84@yahoo.com

Please cite this paper as:

Ion, R.A., Petrescu, I.E., Petre, I.L., Istudor, M. and Tărășilă (Ivan), A.G., 2021. Increasing the International Competitiveness of the Romanian Horticultural Chain. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 410-419 DOI: 10.24818/BASIQ/2021/07/053

Abstract

The paper aims to determine the level of competitiveness in horticultural sectors. Determining the existing level of competitiveness in Romania on international trade and identifying methods to increase the competitiveness of international trade in horticulture, a quantitative analysis of the volume of exports and imports of Romania for the main chapters and sections of the Nomenclature found on the website of the National Institute of Statistics, the basis from which information used in this research was taken. At the same time, taking into account the structure of products by chapters and sections, the opportunity to determine the degree of concentration of exports and imports according to the structure produced, respectively for each section of the agri-food sector, was taken into account. The Gini coefficient was used to determine the degree of concentration.

Keywords

Agri-food chain, competitiveness, trade balance, Romanian horticultural chain.

DOI: 10.24818/BASIQ/2021/07/053

Introduction

The agri-food chain is a component of the agri-food system and can be defined as all the actors involved in order to meet the needs of certain markets. According to Garcia-Wilder, et al. (2007), the agri-food chain is used in several contexts, namely: in the socio-economic context, the chain comprising all raw material suppliers, processors, distributors, carriers; in an analytical context, the supply chain representing a set of contractual or commercial relations from the raw material supplier to the final consumer and in the operational context, the supply chain representing an institutional commitment for strategic planning, management policy, dialogue and consensus among stakeholders or as a social contract where the state, the private sector and civil society establish medium or long-term arrangements for its development.

Trade in agri-food products is a component of the agri-food supply chain, occupies an important place in the world economy and has a number of peculiarities related to the seasonality of agri-food production and their perishability which requires compliance with certain microclimate requirements. According to Ion (2017), international trade in agri-food products has intensified due to the following factors: population growth, which determines the increase in food demand; the increase of the income level of some categories of population, which determines the increase of the solvent demand; increasing world agricultural production and, therefore, supply and stocks; improving the means of transport,

storage and preservation of agricultural products; development of new online sales and distribution methods; development of agricultural scholarships.

Thus, international trade has an important role to play in ensuring the food security of the population and increasing competitiveness in third markets.

According to the National Strategic Framework for Sustainable Development of the Agri-Food Sector and the rural area in the period 2014 - 2020 - 2030, the area occupied by vegetables represents approximately 3.25% of the total cultivated area, a percentage close to that of the European Union, but Romania cannot ensure the consumption needs of domestic resources, due to much lower average yields per hectare than the EU average. In this respect, the fruit and vegetable sector requires special attention from the national authorities, which is why there was additional funding, through the Orchard Program for the period 2014-2020, designed to help increase the competitiveness of the horticultural sector.

Material and method

In order to determine the existing level of competitiveness in Romania on international trade and to identify methods to increase the competitiveness of international trade in horticulture, a quantitative analysis of the volume of exports and imports of Romania for the main chapters and sections of the Nomenclature found on the website The National Institute of Statistics, the basis from which the data used in this research were taken.

At the same time, taking into account the structure of products by chapters and sections, it was considered appropriate to determine the degree of concentration of exports and imports according to the structure of products, respectively for each section of the agri-food sector. In order to determine the degree of concentration, the Gini coefficient was used, the formula of which is presented below (Săvoiu, et al., 2012):

$$G = \sqrt{\frac{n \sum_{i=1}^n g_i^2 - 1}{n-1}}, \text{ where} \tag{1}$$

- G – Gini coefficient
- n – number of observations
- gi – the weight of each element (observable unit) in total

Results and discussions

Value of exports

By analyzing the data available in the statistics, respectively the export value (FOB) according to the combined nomenclature of the NIS, we can analyze the dynamics of exports by sections and chapters. The related sections and chapters that can be included in the agri-food sector were taken into account.

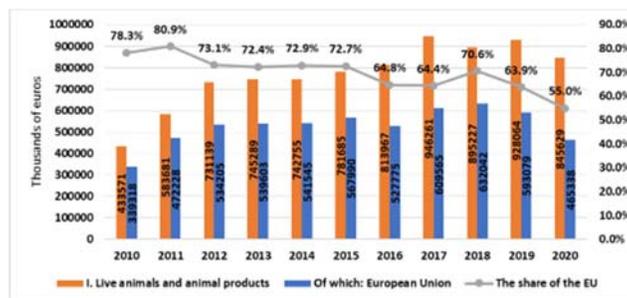


Figure no. 1. Analysis of export value dynamics for the Live animals and animal products section

Source: processing based on NIS data

The first section is on live animals and animal products. The total value of exports under this section ranged from EUR 433 million to EUR 946 million, averaging EUR 768 million. The deviation registered from this average is of 19.8%, observing an ascending slope, the average growth rate being of 6.9% annually. This section has an average share, in total Romanian exports, of 1.4%.

Of this total value of exports of live animals, on average, 530 million euros are made to European Union member countries, respectively 70%. As can be seen, this percentage decreased in the period analyzed, to 55% (in the last year) which means that exports to other non-EU countries have intensified given that the growth rate of the value of exports to the EU is lower than the trend general.

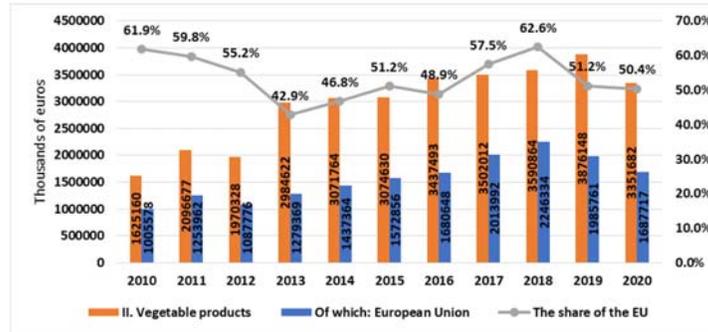


Figure no. 2. Analysis of export value dynamics for the Vegetable Products section

Source: processing based on NIS data

The second section is on vegetable products. The total value of exports under this section ranged from EUR 1.625 billion to EUR 3.88 billion, averaging EUR 2.96 billion. The deviation registered from this average is of 24.9%, observing an ascending slope, the average growth rate being of 7.5% annually. This section has an average share, in total Romanian exports, of 5.4%.

Of this total value of exports of plant products, on average, 1.57 billion euros are made to European Union member countries, respectively 53.5%. As can be seen, this percentage decreased during the analyzed period, to 50% (in the last year) which means that exports to other non-EU countries decreased due to the fact that the growth rate of exports to the EU is higher than the general trend.

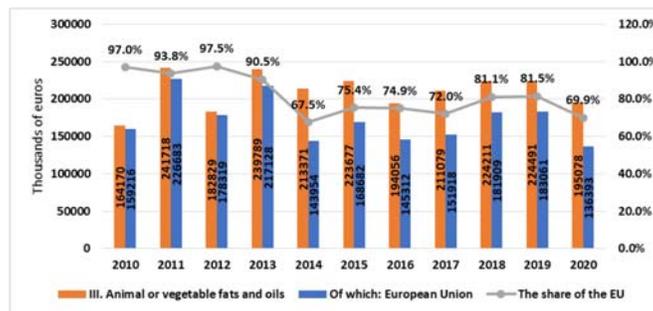


Figure no. 3. Analysis of export value dynamics for the Animal or vegetable fats and oils section

Source: processing based on NIS data

The third section is on fats and oils, both animal and vegetable. The total value of exports under this section ranged from EUR 164 million to EUR 241 million, averaging EUR 210 million. The deviation registered from this average is 11.5%, observing an ascending slope, the average growth rate being 1.74% annually. This section has an average share, in total Romanian exports, of 0.4%.

Of this total value of exports of fats and oils, on average, 172 million euros are made to European Union member countries, respectively 81.9%. As can be seen, this percentage decreased in the period analyzed, to 70% (in the last year) which means that exports to other non-EU countries have intensified given that the growth rate of exports to the EU is lower than the trend general.

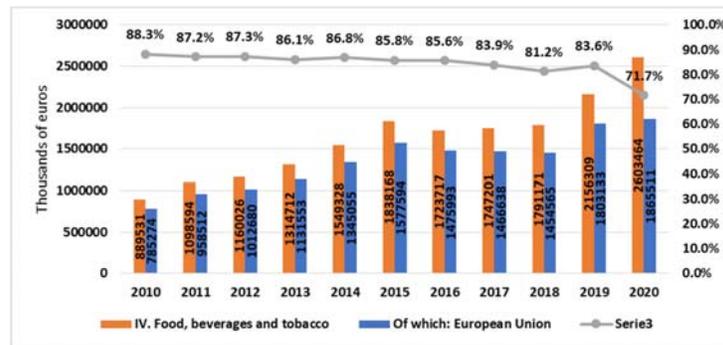


Figure no. 4. Analysis of export value dynamics for the Food, Beverages and Tobacco section

Source: processing based on NIS data

The fourth section is on food, beverages and tobacco. The total value of exports under this section ranged from EUR 890 million to EUR 2.6 billion, averaging EUR 1.625 billion. The deviation registered from this average is of 30.6%, observing an ascending slope, the average growth rate being of 11.3% annually. This section has an average share, in total Romanian exports, of 3%.

Of this total value of exports of food, beverages and tobacco, on average, 1.35 billion euros are made to member countries of the European Union, respectively 84.3%. As can be seen, this percentage decreased in the period analyzed, to 72% (in the last year) which means that exports to other non-EU countries have intensified given that the growth rate of exports to the EU is lower than the general trend.

Value of imports

Similarly, an analysis will be made of the evolution of the import values for the agricultural sector by sections and categories of the Combined Nomenclature.

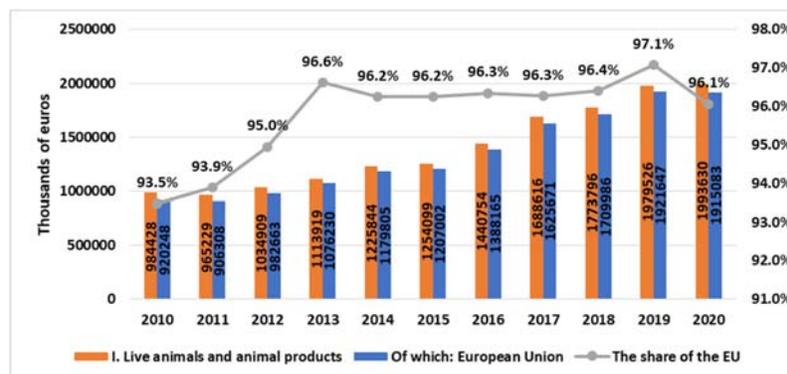


Figure no. 5. Analysis of the dynamics of the value of imports for the section Live animals and animal products

Source: processing based on NIS data

The first section is on live animals and animal products. The total value of imports under this section ranged from EUR 965.2 million to EUR 1.98 billion, averaging EUR 1.4 billion. The deviation registered from this average is of 27.9%, observing an ascending slope, the average growth rate being of 7.3% annually. This section has an average share, in total Romanian imports, of 2.1%.

Of this total value of imports of live animals, on average, 1.35 billion euros are made from European Union member countries, respectively 95.8%. As can be seen, this percentage increased in the period considered, to 96% (in the last year) which means that imports from other non-EU countries decreased due to the fact that the growth rate of the value of EU imports is higher than the general trend.

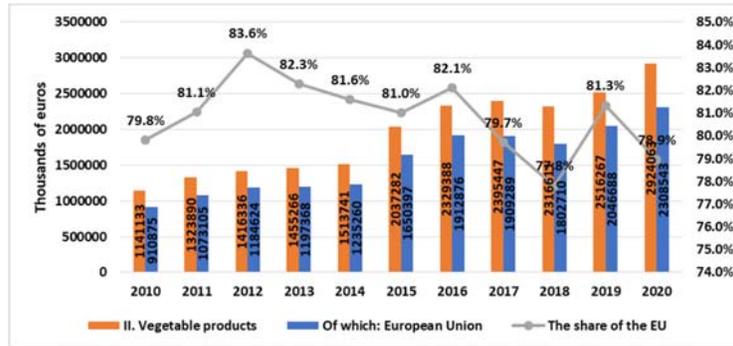


Figure no. 6. Analysis of the dynamics of the value of imports for the section Vegetable products

Source: processing based on NIS data

The second section is on vegetable products. The total value of imports under this section ranged from EUR 1.14 billion to EUR 2.92 billion, averaging EUR 1.94 billion. The deviation registered from this average is of 30.5%, observing an ascending slope, the average growth rate being of 9.8% annually. This section has an average share, in total Romanian imports, of 2.9%.

Of this total value of imports of plant products, on average, 1.56 billion euros are made from European Union member countries, respectively 80.8%. As can be seen, this percentage decreased in the analyzed period to 79% (in the last year) which means that imports from other non-EU countries have developed given that the growth rate of the value of EU imports is higher than the general trend.

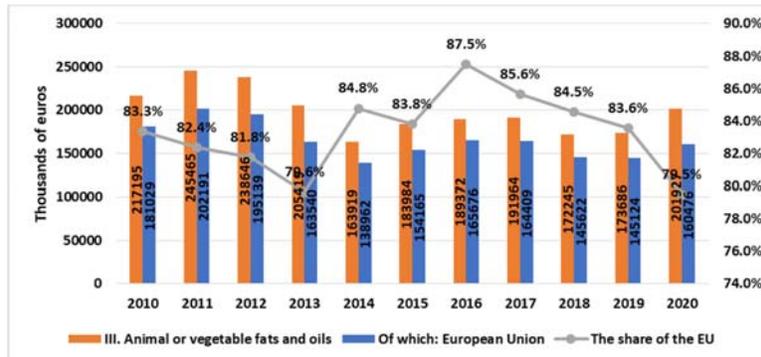


Figure no. 7. Analysis of the dynamics of the value of imports for the section Animal or vegetable fats and oils

Source: processing based on NIS data

The third section is on fats and oils, both animal and vegetable. The total value of imports under this section ranged from EUR 164 million to EUR 245.5 million, averaging EUR 198.5 million. The deviation registered from this average is of 13.4%, observing a descending slope, the average rate of change being -0.7% annually. This section has an average share, in total Romanian imports, of 0.3%.

Of this total value of imports of fats and oils, on average, 165 million euros are made from European Union member countries, respectively 83.3%. As can be seen, this percentage decreased in the analyzed period to 79% (in the last year) which means that imports from other non-EU countries have developed given that the pace of change in the value of EU imports is higher than the trend general.

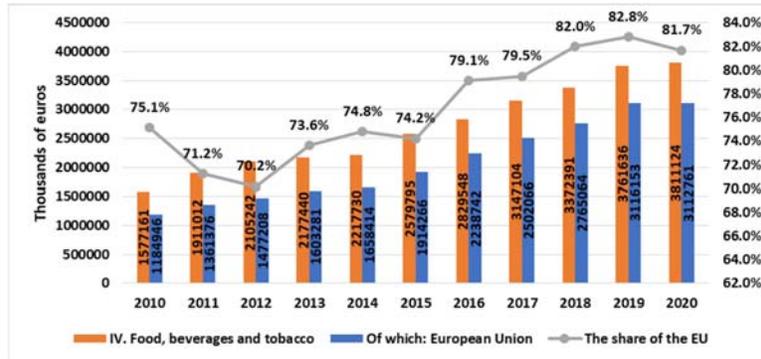


Figure no. 8. Dynamics analysis of the value of imports for the Food, beverages and tobacco section

Source: processing based on NIS data

The fourth section is on food, beverages and tobacco. The total value of imports under this section ranged from EUR 1.57 billion to EUR 3.8 billion, averaging EUR 2.68 billion. The deviation registered from this average is of 28.4%, observing an ascending slope, the average growth rate being of 9.2% annually. This section has an average share, in total Romanian imports, of 4.1%.

Of this total value of imports of food, beverages and tobacco, on average, 2.08 billion euros are made from European Union member countries, respectively 76.8%. As can be seen, this percentage increased during the analyzed period, to 82% (in the last year) which means that imports from other non-EU countries decreased due to the fact that the growth rate of the value of EU imports is higher than the general trend.

Trade balance

In order to determine the competitiveness of domestic products and to establish a strategic direction to increase this international competitiveness of Romania, the balance of payments will be determined for each section and chapter.

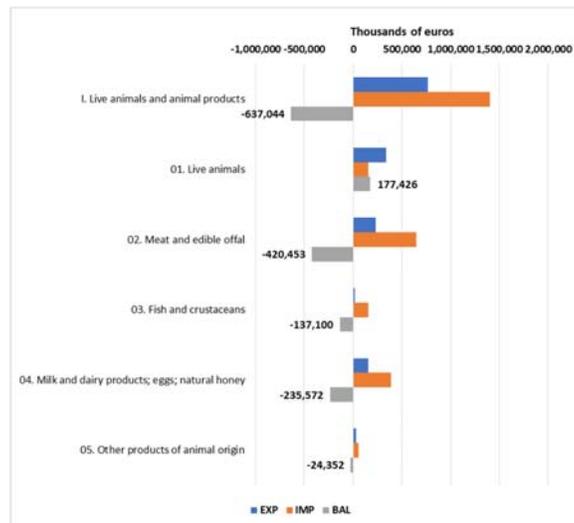


Figure no. 9. Balance of payments for the Live animals and animal products section and for the related chapters

Source: own calculations

Analyzing the first section, that of Live Animals and Animal Products, but also of the chapters that are included in this section, we can see the following. At the level of the whole section, on average, in the period 2010-2020, there is a deficit of 637 million euros per year. Most of the chapters participate in this deficit, with the exception of live animals, a chapter whose balance sheet is positive, respectively 177.4 million euros. At chapter level, the largest deficit is in the category of edible meat and offal, with an average value of 420 million euros per year.

In order to be able to determine whether there is a certain degree of concentration for a certain category (chapter) of products, or not, both at the level of exports and at the level of imports, the Gini coefficient was determined, by means of which this degree of concentration can be determined. . Calculating for this section, respectively for the chapters that are included in it, the following were found: the Gini coefficient for the export values was 0.39, and for the import values it was 0.38. Thus, it can be stated that there is a slight focus on a product category, but not very intensified, both for export and import, from the structure of the products that are included in this section. On export it can be considered that there is a concentration on live animals, and on import on meat and edible offal.

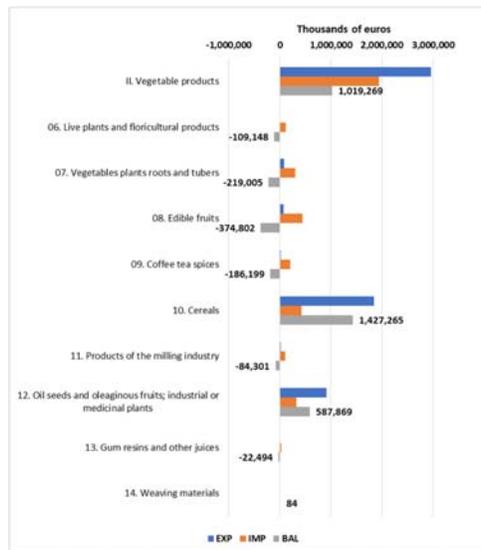


Figure no. 10. Balance of payments for the Vegetable Products section and related chapters

Source: own calculations

Analyzing the second section, that of Plant Products, but also of the chapters that are included in this section, we can see the following. At the level of the whole section, on average, in the period 2010-2020, there is a surplus of 1.02 billion euros per year. The largest contribution to this surplus has the chapter, Cereals whose balance is positive, respectively 1.427 billion euros. There is also a positive balance for the chapter Oilseeds and fruits; industrial or medicinal plants, with an average annual value of 588 million euros. At the chapter level, the largest deficit is registered in the Edible Fruits category, with an average value of 374.8 million euros per year, followed by Vegetables, Plants, Roots and Tubers with a deficit of 219 million euros.

Determining the degree of concentration for export and import, using the Gini coefficient, the following were found. For the export of these products included in this category, a coefficient of 0.64 is registered, which determines a significant degree of concentration on a certain category of products, a phenomenon that could be anticipated considering the high value of the Cereals chapter, the export concentrating -is on this category. Analyzing the import, the situation is different, a concentration coefficient of 0.25 is registered, thus, it can be appreciated that there is no concentration on a certain product.

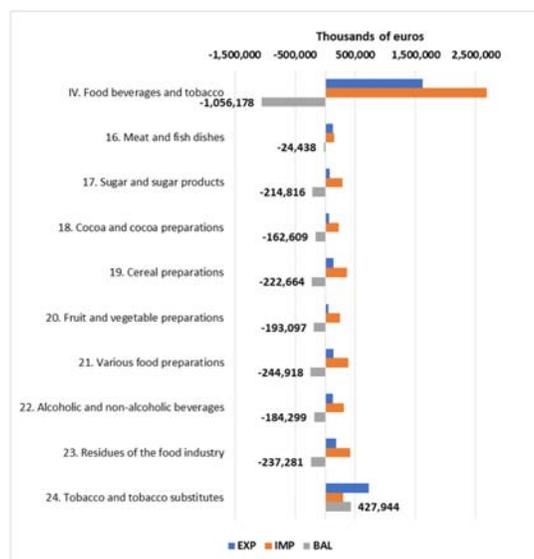


Figure no. 11. Balance of payments for the Food, Beverage and Tobacco section and for the related chapters
Source: own calculations

Analyzing the last section, that of Food, beverages and tobacco, but also of the chapters that are included in this section, we can see the following. At the level of the whole section, on average, in the period 2010-2020, there is a deficit of 1.056 billion euros per year. Most of the chapters participate in this deficit, with the exception of Tobacco and tobacco substitutes, a chapter whose balance is positive, respectively 428 million euros. At the chapter level, the largest deficit is recorded in the category Miscellaneous food preparations, with an average value of 245 million euros per year.

Determining the degree of concentration for export and import, using the Gini coefficient, the following were found. For the export of these products included in this category, there is a coefficient of 0.38, which determines a certain degree of concentration, with an average intensity, on a certain category of products, a phenomenon that could be anticipated given the high value of Tobacco and tobacco substitutes, with exports focusing on this category. Analyzing the import, the situation is different, there is a concentration coefficient of 0.09, very close to zero value, so it can be seen that there is no concentration for these products, as can be seen from the figure, the imports being at similar values between them, evenly distributed for each product category.

Given the final purpose of this research, namely the identification of measures to increase the international competitiveness of the horticultural chain, the situation will be presented below, detailed for each year and the dynamics of exports, imports and balance of payments for the main categories of the chain, respectively fruit. and vegetables.

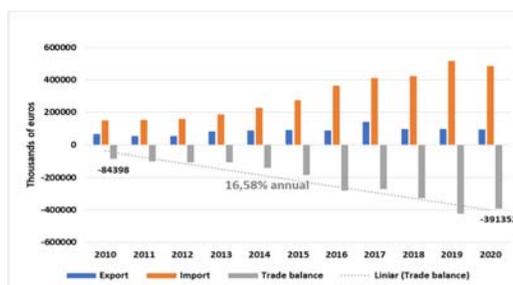


Figure no. 12. Analysis of the dynamics of exports, imports and the balance of the balance for the vegetables chapter
Source: own calculations

With regard to this category of vegetables, it can be seen that the value of exports is much lower than the value of imports, with the seasonality of this sector making its mark the most. The value of vegetable exports varied in the period 2010-2020 between 52 million euros and about 140 million euros. On average, every year, Romania exported vegetables worth 85.5 million euros, with a variation from it of 28%.

Regarding the value of imports, the lowest imports were about 150 million euros, and the highest value was 517 million euros. On average, Romania imported vegetables worth 305 million euros annually, with a variation of 46%. On average, the value of imports was 3.56 times higher than that of exports.

Regarding the evolution of the trade balance, it was increasing, in the sense that the deficit increased constantly, from -84 million euros to -391 million euros, registering an annual increase of 16.58%.

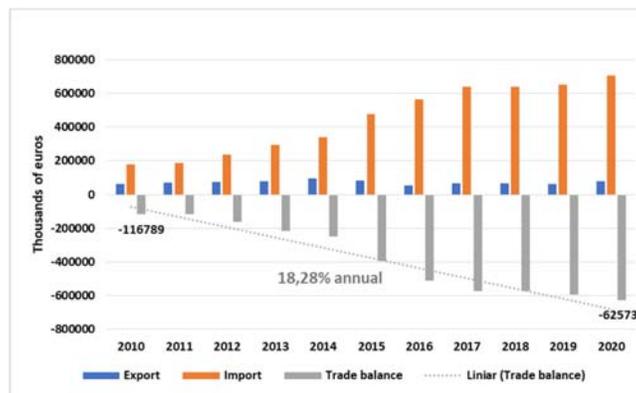


Figure no. 12. Analysis of the dynamics of exports, imports and the balance of the balance for the fruit chapter

Source: own calculations

With regard to this category of fruit, it can be seen that the value of exports is much lower than the value of imports, with the seasonality of this sector making its mark the most. The value of fruit exports varied between EUR 54 million and EUR 95 million between 2010 and 2020. On average, every year, Romania exported fruits worth 71.8 million euros, with a variation from it of 16%.

Regarding the value of imports, the lowest imports were about 179 million euros, and the highest value was 705 million euros. On average, Romania imported fruits worth 446 million euros annually, with a variation of 46%. On average, the value of imports was 6.21 times higher than that of exports.

Regarding the evolution of the trade balance, it was increasing, in the sense that the deficit increased constantly, from the value of -116 million euros to -625 million euros, registering an annual increase of 18.28%.

Conclusions

The vegetable and fruit sector includes the activities of production, harvesting, sorting, storage, transport, processing and sale. The economic agents in the vegetable and fruit chain are agricultural producers, collection units, processors, retailers, consumers.

This sector has a high variability of production due to dependence on the climate factor, low yields, high seasonality and perishability, zoning, as well as problems related to the collection, distribution and sale of products. From the trade balance analysis, there is a marked increase in the deficit, both for vegetables and fruits.

In order to increase fruit yields, public authorities have allocated significant sums, both from European non-reimbursable funds and from the state budget, for the financial support of producers and

processors. The financial support was aimed at restructuring and increasing the competitiveness of this sector, characterized by a significant decline, as well as a dependence on imports to meet the consumption needs of the population. Also, the investments in physical assets, through this program, also aimed at increasing the cultivated area, at the same time as increasing the yields.

Regarding the investments made in the area of processing and marketing of these products, the investments aimed at setting up, expanding or modernizing the processing, collection, storage units, in order to develop short chains for a superior use of these products. Last but not least, a significant financial allocation was intended to encourage the association of agricultural producers. However, the horticultural sector still has significant gaps compared to the other Member States of the European Union, such as a large trade deficit, which still needs special attention.

Acknowledgment

This paper was developed through the institutional project entitled "Necesitate și posibilități de creare și dezvoltare a centrelor de achiziții, prelucrare, ambalare și livrare a produselor agroalimentare", financed by Bucharest University of Economic Studies.

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Analysis on the Influence of Digitization as an Instrument to Leverage Mergers & Acquisitions Processes in the Context of Global Risks

Pablo Valentin Weiss¹, Doru Pleșea², Stelian Mircea Olaru³ and Jörg Bothe⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, România,*

E-mail: pablo.weiss@gmx.de; E-mail: pleseadoru@gmail.com

E-mail: olaru_stelian@yahoo.com; E-mail: joerg.bothe@gmx.de

Please cite this paper as:

Weiss, P., Pleșea, D., Olaru, S.M. and Bothe, J., 2021. Analysis on the influence of digitization as an instrument to leverage Mergers & Acquisitions processes in the context of global risks. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 420-424

DOI: 10.24818/BASIQ/2021/07/054

Abstract

Digitization is enabling many businesses to improve and automate processes in order to both reduce risks such as human errors and save costs and time. In general, digitization is transforming the business landscape in many aspects, including also the pace of processes in combination with the evolving requirements of customers and business partners. In this paper we are exploring the mergers and acquisitions (M&A) processes and how they are influenced by digitization, as well as highlighting the accompanying risks that digitization brings to this field. Therefore, a brief description of the digitizing business processes and the most common digital technologies is presented. In this paper, these digital tools are investigated and assessed in terms of the process steps where they lead to an improvement but also on what associated risks they bring about. In the global context, digitization aims to break boundaries such as different time zones, physical travel times but also to create the ability for rapid decision making based on accurate and reliable data. This new form of business intelligence enables the business leaders to make better decisions based on high quality data but also allows them to focus time and effort on truly value-adding tasks. The challenges for companies implementing digital technologies are investigated upon, highlighting the opportunities and risks that accompany corporations in this process. The paper highlights the most significant risks and opportunities in relation with increasing the level of digitization in mergers and acquisition processes. The research results are part of a comprehensive research project on business management and digitalization developed as part of doctoral research at the Bucharest University of Economic Studies.

Keywords

Digitization, digitalization, mergers and acquisitions, digital business processes, global risks

DOI: 10.24818/BASIQ/2021/07/054

Introduction

In a continuously evolving business environment where the VUCA (volatile, uncertain, complex, ambiguous) framework is dominant and influences the business landscape in numerous ways (Weiss and Grab, 2020), not only are the quality of data and the necessity of deciding faster competitive factors but also the ability to adopt digitization approaches for the business long-term success (Marquardt, et al., 2018). Digitized business processes provide a large number of benefits but also harbor many inherent risks (Grab, et al., 2019 and Fogoros, et al., 2021). Also, as the degree of automation becomes

higher, so do the requirements for the human workforce to monitor these fast processes and data evaluation. (Mingaleva, et al., 2021).

In this paper the focus is on the influence of digitization as an instrument to leverage mergers and acquisition processes (M&A processes) in consideration of the potential risks that can emerge as a result. The key specificity of the M&A business is the enormous discretion required during projects, where no leakage of any information or rumors may occur at all. When information on such a project does leak, the consequences can have a devastating impact on all involved parties. Therefore, the risks of the digitalization of the M&A processes must be observed in detail and assessed. The combination of the significant advantages that digitalization brings to the process and the risks that arise in the application thereof is inherent (Zillmann, 2020).

Research Methodology

The authors used a descriptive research method to summarize their research objective. Information was gathered from numerous sources of secondary literature, mainly specialist books and articles from the field of information technology, management and digital transformation. Furthermore, an inductive approach was applied with the aim to draw a conclusion on the opportunities and risks in implementing digital technologies in the mergers and acquisitions processes. Furthermore, the results of the desk study contain important findings on the influence and effects of digitalized processes to be considered when implementing into fundamental business processes.

The Mergers and Acquisitions Process

In general, there is a wide array of M&A processes that can occur, following varying methodologies. In this paper we are focusing exclusively on the sell-side process, meaning the perspective of a seller of a business using a simplified form of the general process steps in M&A. The following illustration shows the various phases and process steps.

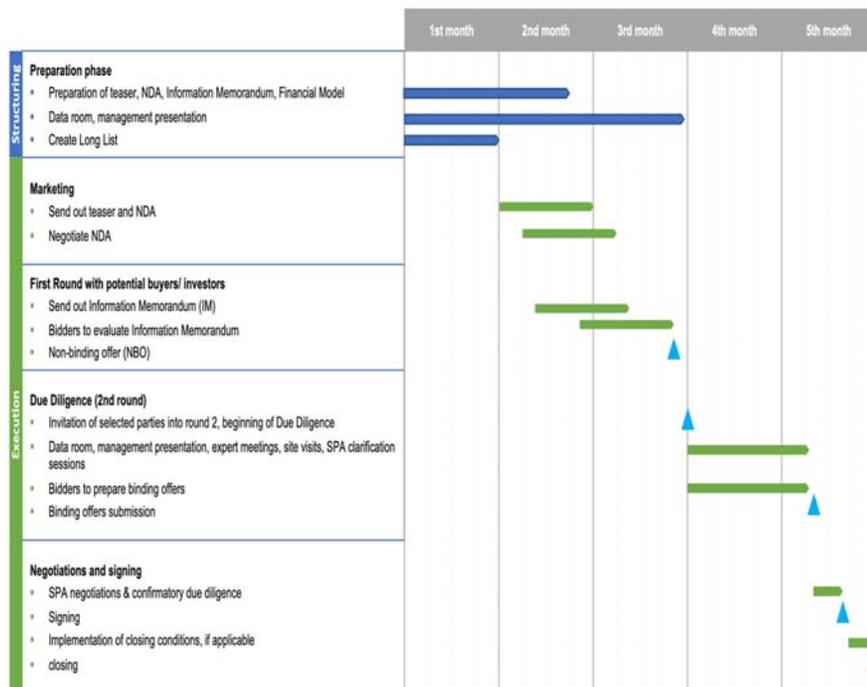


Figure no. 1. Exemplary simplified M&A process (sell-side)

Source: own illustration

In general, the sell-side process is divided into two phases. The first phase is the structuring or preparation phase, and the second phase is the execution phase. The first step in the structuring phase is the preparation of a so-called teaser and its communication to potential buyers and investors. The teaser is a general description of the company to be sold but formulated in such a way that no conclusions can be drawn about the company. Furthermore, a more detailed presentation (information memorandum) is generated where all the financial and business data including SWOT-analysis and market overview are included and potential buyers and investors are identified in what is referred to as the long list.

In the marketing phase all the relevant information on the business is handed over to interested parties, all secured by a signed and negotiated non-disclosure agreement (NDA). This is signed to maintain confidentiality about the sale of the company. Interested buyers and investors are requested to submit an indicative offer. The complexity of the situation makes it necessary to have a firm grasp of the sales process as well. (Bothe, 2019) Afterwards, selected parties are invited to conduct a due diligence. In this phase, the potential buyer or investors have access to all the relevant data in a data room and can ask all the necessary questions in order to get a clearer, overall picture of the target company.

Subsequently, the interested buyers or investors are requested to hand in a binding offer. In the negotiation and signing phase, based on the due diligence, a sales and purchase agreement (SPA) is negotiated and consequently signed. The process ends with the legal and economic transfer of ownership of the company to the new owner.

The influence of digitization on the M&A process and associated risks

Digitization is making inroads into many business areas and business processes with very different opportunities and risks. In this section we are mainly focusing on the risks that go in hand with digitization in relation to M&A. Also due to the size of the paper, only selective areas of digitization are picked out. The due diligence in the M&A process is one of the process steps where digital technologies can be applied in the most efficient way (Feix, 2020). There are various technical tools in the due diligence phase such as the use of machine learning, artificial intelligence or others in order to optimize or automate some process steps. A complete automation of tasks within the due diligence is not yet possible, but there approaches by the usage of big data, special search engines or machine learning to optimize efficiency, time spent and personnel capacities required (Feix, 2020).

Especially the usage and the scope of services with regards to digital data rooms have been expanded to great extent. The concrete improvements are translations from and into different languages which is very important as cross-border transactions are increasing continuously. So far, the risks identified refer to the moments when data is released for download and has been translated by online translation tools from which they may be published in an uncontrolled manner. Therefore, inline translation tools have been developed to protect and ensure the security of data room content (Beckmann, et al., 2019).

Another big contribution is the automated allocation of unsorted data to data space indices (Beckmann, et al., 2019). The advantage is that many documents are correctly assigned without further manual intervention. This only applies in case the data has a high degree of standardization. Furthermore, the financial due diligence requires much more depth in terms of analysis. The retrieved raw data of ERP-systems of the selling company is structured in greater detail and efficiency in order to identify the real value drivers. Nevertheless, the quality of data in many cases is a huge challenge. The use of the new analytical tools and data processing solutions is improving the quality of data and helping to efficiently clean irrelevant data, thus preparing it for the further analysis steps (Beckmann, et al., 2019).

The biggest risk of digitization in the M&A process is data privacy as well as cyber security. Especially in the already mentioned virtual data room, blockchain technology is used to secure data rooms and also the dependence on limited and less convenient forms of data storage (Lucks, 2020). This digital information is captured through the blockchain technology and becomes tamper-proof, ensuring data integrity. The risks and challenges of such a digital transformation of processes are, besides the handling of IT security and data protection, the capturing of reliable data and dealing with regulatory demands (Verbeeten and Heinen, 2021).

Beside the COVID-19 pandemic, enterprises were asked to estimate the biggest changes which were caused by digital technologies. The biggest perceived change was the reduction of process lead times which reflects the effect of the usage of digitization in the M&A processes where applicable. The reduction of lead times correlates directly with an increase in customer and employee satisfaction.

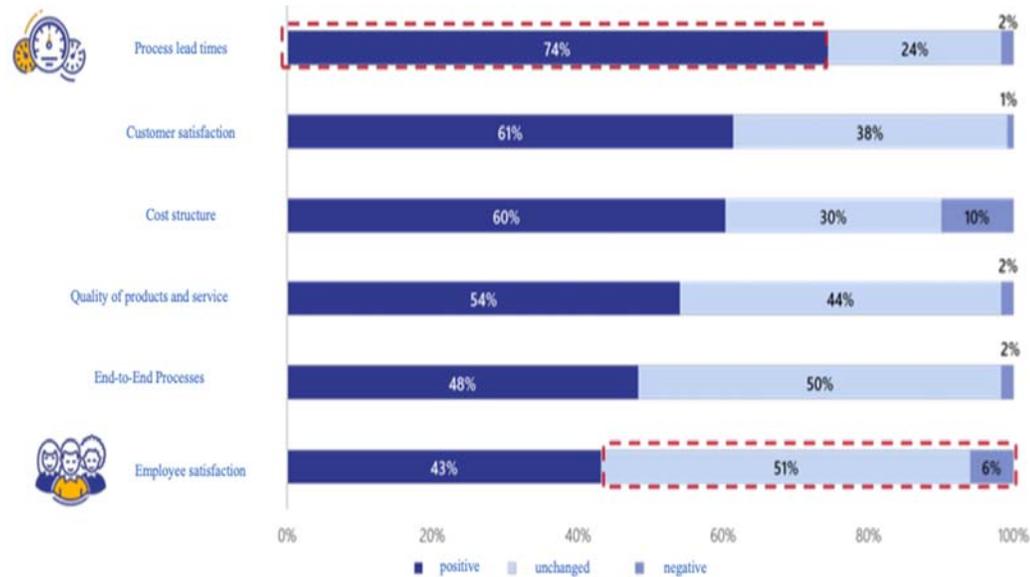


Figure no. 2. Changes through digital technologies

Source: Zillmann, 2020

In the perception of global risks, a survey of the World Economic Forum shows that failures of cyber security are assessed by business leaders to present dangers in a short-term perspective (World Economic Forum, 2021). This is a critical issue that companies are confronted with and it also applies to the M&A processes, as the protection of data and the leakage of information concerning the project of a pending sale of a company is critical knowledge if it gets into the wrong hands.

Conclusions

The influence of digitization as an instrument to leverage the M&A processes can be very powerful. The digital technologies used to transform the different processes digitally must be considered and addressed on the hand with regards to efficiency but on the other hand in terms of cyber security. The biggest risk to occur for the M&A business is the leakage of information or data, that is why security measures have highest priority and the treatment of sensitive data must be protected by a clear strategy.

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Sustainability in the Meat Processing Industry and the Impact of the COVID-19 Crisis on the Food Business in Romania

Elena Radu¹, Claudiu Nicolae Ghinea², Ștefan Mihalache³ and Roxana Sârbu⁴

¹⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Romania*

²⁾ *Therme Media*

E-mail: elena.radu2102@gmail.com; E-mail: claudiung95@yahoo.com

Email: stefan_mihalache03@yahoo.com; E-mail: sarbu.roxana@ase.ro

Please cite this paper as:

Radu, E., Ghinea, C.N, Mihalache, Ș. and Sârbu, R., 2021. Sustainability in the Meat Processing Industry and the Impact of the COVID-19 Crisis on the Food Business in Romania.. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 425-430 DOI: 10.24818/BASIQ/2021/07/055

Abstract

In a world with a growing population, a health crisis, global warming and limited resources, the global community is increasingly involved in finding innovative solutions to long-term sustainable consumption patterns. Consumers are more aware that the purchases they make should support sustainability goals and are even more willing to pay more for products that contain sustainable, organic or natural ingredients. Food manufacturers around the world have responded to these changing demands by developing and launching a growing number of products that claim to be "environmentally friendly". Despite the crisis caused by Covid-19, the main purpose remaining to protect the environment.

In this paper, we want to analyze how the food industry reacted to the crisis generated by the SARS-COV-2 virus, and for this we made a portrait before and after the crisis, describing how the food industry has adapted to the change generated by this virus, using the observation method.

Keywords

Sustainability, food industry, Covid-19, meat industry, crisis, consumer/customer, supply chain.

DOI: 10.24818/BASIQ/2021/07/055

Introduction

The great confinement encouraged accelerated experimentation with new organizational practices. The impacts of the health crisis were very strong, from March 2020 during the time of confinement and then in the time of deconfinement from May 11 and the recovery after June 24, in terms of collective commitment and individual, adaptation, health, very rapid adoption of new working methods.

Businesses have been challenged to adjust very quickly to deal with the emergency. With the interconnection of crises - health, economic, social, environmental - the situation has changed and all stakeholders must question the lasting impacts of this experience, which is as unique as it is intense.

The crisis has revalued the role of proximity and committed organizations to a greater humanization of management, with new forms of organization of work and life at work, and a more concerned *raison d'être* and economic model of nature, gender and social equity to respond to the strengthening of several major societal trends (Peretti, 2020). The experience of those weeks when the economy came to a screeching halt and in the period of recovery should be a source of reflection and teaching for researchers and policy makers.

In the paper “*Changement de crise, les organisations, à l’épreuve du COVID-19*” (Peretti, Autissier, Besseyre des Horts, 2020), a group of management professionals and researchers proposed a first formalization which aims to understand the way in which the crisis was experienced in private and public organizations and also to highlight good practices likely to be perpetuated. The testimonies and reflections of 30 co-authors living in countries with different contexts (China, Korea, France, India, Quebec, Senegal, Tunisia) on the situation of organizations during the Covid-19 crisis describe how organizations have adapted, the difficulties encountered, the innovations that emerge and the major management issues that arise with the crisis. In crisis trajectory: adaptation of organizations to the crises of Covid-19 (Autissier, Besseyre des Horts et Peretti, 2020), the co-authors wonder about what will change based on the experiments experienced in the trajectory crises, this succession of interconnected periods of health, economic, social and societal crises. To fuel the debate on the lessons to be drawn from this experience during a first half of 2020 deeply disturbed by the crisis experienced by organizations and on the lasting impacts on the managerial level, Question (s) de management questioned in June 2020 a new panel of actors committed to their vision of the world after asking them to answer a crucial question in this period of recovery: “*What are the organizational changes brought about by the Covid-19 crisis?*”

With the development of the COVID-19 pandemic, many countries have expressed concern about food security. Although the crisis has had a direct impact on the food and agricultural supply chain, the negative impact of the COVID-19 pandemic is not limited to short-term supply and demand disruptions. Although these disruptions have had serious negative effects, they have also accelerated the industry’s need to adapt. The most important of these trends is digitalization and changing consumer preferences. These accelerators provide opportunities for longer-lasting recovery. However, all participants in the agri-food value chain need to prepare for the larger structural changes that will affect the sector, including climate change and stricter environmental legislation. To some extent, the pandemic is the preamble to these changes.

The agro-food industry in Romania before The Covid-19 pandemic period

According to the words reported in Romania’s National Sustainable Development Strategy 2030, adopted by the Romanian Government, in 2018 and 2019, Romania’s GDP increased by around 4%. The growth is attributed to Romania’s strategic location, increasing consumer demand and an improved business climate. Agriculture plays an important role in the economy. There are almost 4 million farms in the country, which is one third of all farms in the European Union. Moreover, unlike most of the region, the agricultural sector in Romania has a suitable job offer.

Thanks to the position on the map, it also has sufficient water and land resources. Romania’s agricultural sector accounts for the largest proportion of total employment in Central and Eastern European countries (so far-about 15 percentage points higher than the 2017 European Economic Community average). However, this share has steadily declined from approximately 33% in 2005 to approximately 23% in 2017. In the past 10 years, the value of agricultural production has increased significantly in all sectors. The structure of Romania’s agriculture is as follows: vegetable production accounts for approximately 66%, animal production accounts for approximately 25%, processing accounts for approximately 8%, and the last 1% represents agricultural service production.

This suggests that Romania may be more vulnerable than other CEE countries to changes in demand for high added value goods. The main sub-sectors of the Romanian food and processing category are: meat, dairy products, fish products, fruits and vegetables (in the form of jam, jam and canned vegetables) and bread.

According to USDA FAS data, Romania’s “natural” and organic products are still subject to certain restrictions. The local food processing industry has not yet committed to developing these market areas because the consumer base for these products must continue to maintain high incomes. Local suppliers of organic products that can be consumed in Romania are still limited, and the prices of these products are high. Romania has a long tradition of eating processed meat and seafood. These products are still very popular and are becoming more and more “advanced”. More and more products come from seafood, chicken, turkey, goose and duck.

Manufacturers also promote these products in healthier markets (for example, no artificial ingredients, etc.). Before the pandemic, people's overcrowding of lifestyles and interest in healthy products were expected to result in a steady increase in the demand for healthy products, including such organic products. According to the latest available data, Romania's retail market was worth 37.2 billion euros in 2018, with 2500 companies. For retailers, online shopping is seen as a possible area for expansion, with only 8% of Romanian households ordering online.

How the meat processing industry was affected

The high rates of Covid-19 contamination in slaughterhouses and meat processing plants all over the world have put the spotlight on the failures of this model. In France, Germany, Australia, the United State. All countries have been affected by this phenomenon. Few studies make it possible to understand why these places have become nests for Covid-19, but several hypotheses have been put forward such as the strong promiscuity between the workers, the humidity of the places, the ventilation systems, the poor social protection of the employees who were there, or going to work despite potential symptoms.

Pressure has been mounting since March 2020, when measures to spread the SARS COV-2 virus taken by all countries have hampered and blocked imports and exports.

Being faced with such a situation, companies began to increase their stocks, to make supplies of raw materials. There was also a lot of pressure from the behaviour of customers who rushed to the stores to create supplies. Merchants did not think that customers would no longer visit stores, but that they would have nothing to offer customers (Hobbs, 2021).

The meat industry subsectors that have been affected are: Meat Processing (Abattoirs), Wholesaling and Retailing of meat products, Poultry Processing.

The meat processing companies that represented an advantage during this period were the highly technological companies, which depended as little as possible on the work of the individual. I must remember that this industry cannot function with the help of telework.

At the organizational level, meat processing units and slaughterhouses have resorted to a series of measures both to limit the occurrence of an outbreak at work, but also for consumer health.

As an example, some controls, in the United States of America, were based on honest and open communication with employees. This means meat companies have established a clear test, contact tracing, and isolation plan based on guidelines issued by the Centers for Disease Control and Prevention from United States of America. The meat companies made this information available to their workers in their language and community. This communication, combined with effective liaison with local public health departments, has allowed workers to understand the risk of infection and the steps everyone should take to stay safe. It appears that this communication effort to build workers' confidence in work safety was a key element, not only for maintaining a sufficient number of employees, but also for ensuring that surveillance and prevention strategies were followed.

According to the Centers for Disease Control and Prevention, almost all meat factories carry out daily temperature checks on all workers and visitors before entering the factories. In addition, visits inside the factory are limited to unnecessary visitors. This has always been the basis of the surveillance process and has worked closely with doctors and local public health authorities to provide an appropriate analysis. The purpose of this strategy is to eliminate the entry of infected people, which will create the potential for the virus to spread to the workplace.

Detection of infection among employees has been widely used and has generally been successful. In some factories, all workers have been tested. Many of these tests are performed by private laboratories with very fast response times, so employees can be notified, contacts can be quickly tracked, and follow-up tests are performed to ensure that the infection does not spread. Observed results indicate that the widespread implementation of exposure testing and subsequent quarantine and other prevention strategies actually prevented transmission to the workplace.

In meat factories, great efforts have been made to prevent the spread of aerosols or objects. For all employees, it has become common practice to wear masks in certain places unless they eat. Once again,

anecdotal observations seem to indicate that the use of masks in meat factories, combined with testing, is very successful in eliminating transmission to the workplace (Barbut, 2020).

In addition, some factories have implemented face masks to prevent contact of the drops of saliva with the nose and eyes, although their use is not as common as the use of masks, and their effects have not been scientifically evaluated.

These facilities have increased the number of personnel dedicated to cleaning and disinfecting all public areas, greatly improving internal hygiene. In Romania, the law stipulates that the production areas of the meat industry must be thoroughly cleaned and disinfected every day. Historically speaking, this was designed with food safety in mind, but it also moved SARS-CoV2 away from work and contact areas. Many factories have implemented better cleaning in public areas such as dining rooms, laundry rooms, toilets, halls and attendance control clocks, at least three times per shift. Use food-safe disinfectants and cleaners for cleaning. These disinfectants and cleaners have proven effective against SARS-CoV2. The type of product is not as important as frequent and thorough cleaning: all ordinary surfaces must be cleaned to remove dust and debris, and then these surfaces must be disinfected. Many meat processing plants work hard to eliminate points of contact to minimize the frequency of worker interaction.

Separators are installed on all tables in the canteen. Masks cannot be used during meals. These partitions ensure that workers can stand independently. These spacers are usually made of clear acrylic resin and rise more than 0.9m above the table to prevent airborne transmission.

The factory has developed a system to ensure the cleanliness of the chairs in the restaurant, usually using a red / green card: after the employee uses the chair, it is placed on the red side, indicating that it should be disinfected before the next use. The installation of these separators at lunch can minimize the mass transmission of aerosols.

Other measures taken were: opening the doors so as not to touch the surfaces, dispersing the equipment, installing separators between the places on the belt.

Improving sustainability in the meat processing industry

Sustainability in terms of the use of resources and the use of energy efficient processes along the value chain is one of the greatest challenges of our time. And this also applies to the meat processing industry. Intelligent control and automation technology, energy efficient drive systems, compressors, fans and pumps are among the classic solutions to improve energy efficiency and resource efficiency.

An uninterrupted and efficient cold chain is the number one priority for food safety in the meat processing industry. Refrigeration, icing and freezing are the most important processes to prevent highly perishable products, such as meat and sausage products, from spoiling. Therefore, the demands placed on modern refrigeration installations, such as cold chillers, cold and cold stores, cooling tunnels, spiral, plate and helical band glazing systems are increasing rapidly. However, cooling is one of the most complex processes in terms of energy. According to official estimates, refrigeration accounts for around 30% of total electricity consumption. In many cases, cooling equipment is not perfectly matched to actual needs, resulting in lower efficiency levels and higher energy costs. Modernizing the existing cooling installation and adapting it to current needs is an economic and ecological way to increase efficiency, for example by reconditioning the compressor, optimizing the liquefier or adapting a heat recovery system.

In addition to producing coolants, providing heat is also an energy-intensive and expensive process in the meat processing industry, such as cooking, boiling, scalding and pasteurization. In such cases, the waste heat from the extract air, steam and water can be recovered to a large extent via heat exchangers before being temporarily stored and then used to heat the wash water. Compressors, large motors and wastewater used to clean machines and plants are other sources of waste heat.

Replacing energy-intensive processes and technologies with low-cost methods, machines and facilities is a fundamental prerequisite for achieving internationally agreed climate and environmental goals.

The purification of waste air is a starting point in the meat processing sector. However, the widespread use of thermal and catalytic afterburning emissions from smoking, broiling, frying and roasting facilities consume a lot of energy, are expensive and are harmful to the environment.

Converting to more energy efficient electric filters can reduce energy costs by 80% compared to thermal afterburning, while significantly reducing emissions of carbon dioxide. Depending on the purification needs, additional modules can be added, for example emission cooling with heat recovery for heating the process water, waste gas purification, UV lighting systems and bio and activated carbon filters. Perfectly adapted, these modules allow a very efficient purification, respectful of the environment, resources, energy and, consequently, a reduction in emissions, while reducing costs.

Machines and plants designed in accordance with hygienic design principles are state-of-the-art and a prerequisite for cleanliness, hygiene and food safety throughout technology and are a prerequisite for cleanliness, hygiene and food safety throughout the meat processing chain.

Hygienic design means fewer surfaces where food, dirt and germs can adhere, saving time, water and energy, as well as detergents and disinfectants for cleaning.

This is especially true in combination with processes such as cleaning-in-place which, although it provides for a defined and time-optimized cleaning, does not realize the full potential of all cleaning processes. The reason is the predetermined cleaning procedures.

Smart cleaning robots represent a whole new approach. Controlled by camera, they adapt the cleaning process to the individual level of contamination of the machine or installation concerned. Their nozzles can be individually controlled and precisely targeted. In addition, the mobile robot also adapts its forward speed to the prevailing conditions. And, thanks to its intelligent software, it avoids spray shadows on even the most complex geometries, dramatically improving cleaning results compared to conventional methods.

Basically, robots have a lower volume flow of about 50%, associated with a 20% increase in resource efficiency, that is, a 20% reduction in consumption of water.

The aspects described above are only a fraction of the steps that can be taken to improve energy and resource efficiency. Intelligent sensor technology, control and application software, interconnection of machines and plants, control monitoring and implementation of Industry 4.0 principles offer additional potential for saving time, scarce labor and resources.

Conclusions

The report of M&A Agriculture, Food and Beverage Group's Global Food and Beverage Industry shows that the Covid-19 epidemic has had several effects on different areas of the food industry in all regions of the world, with Asia-Pacific and Europe being the most affected. Restaurants, cafes and bars are completely closed in some areas.

Participants of online delivery and takeaway food are able to continue their activities and develop. The packaged food and beverage industry continues to experience an increase in demand, as the shelf-stable food and beverages domain, including dairy products (due to concerns about scarcity and the impact of consumer storage).

The industrial supply chain has been largely affected by the pandemic: For example, the Coca-Cola Company's supply of raw materials from China has been delayed.

As North and South America, Europe, India, and Russia face the second wave of the virus, and now, the world faces the third ones, the number of infections continues to increase, and food safety inspections and restrictions on the outflow of people continue to have a serious impact on the industry.

Today, a large part of the food supply comes from the industrial sector facing multiple challenges. Like all industrial sectors, it must incorporate new environmental and sustainability requirements into its activities. However, they are also undergoing major changes in final consumption and agricultural production. On the one hand, consumers or at least some of them have new expectations for food and its production conditions. On the other hand, developments in agriculture indicate that the methods of

supplying agricultural raw materials may change. Finally, the company's participation in the dynamics of competition at the national, European or international level raises the issue of medium and long-term competitiveness development.

It is too early to predict whether the GDP growth in the next year will restore the impact of most of the epidemics in Romania, or to prove whether they will be so severe that they will hinder the economy in 2021, it is too early. It is worth mentioning that we should also keep in mind that extremely uncertain forecasts resulting from forecasts should respond to changing pandemic conditions. However, from a comparative perspective, we can identify some important factors that will determine the possible future conditions of the country and the agri-food industry. After the Romanian economy performed relatively well in the first quarter, it contracted 10.5% of GDP. The current pandemic is long-term stable economic growth. Therefore, the European Commission predicts that GDP will decline by 6.0% in 2020 and will slightly recover to 4.0% by the end of 2021.

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Role of Higher Education for Circular Economy Related Capacity Building

Tiziana Crovella¹, Annarita Paiano² and Andrea Pontrandolfo³

^{1,2,3} *University of Bari Aldo Moro, Bari, Italy.*

E-mail: tiziana.crovella@uniba.it; E-mail: annarita.paiano@uniba.it;

E-mail: andrea.pontrandolfo@uniba.it

Please cite this paper as:

Crovella, T., Paiano, A. and Pontrandolfo, A., 2021. Role of Higher Education for Circular Economy Related Capacity Building. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 431-440
DOI: 10.24818/BASIQ/2021/07/056

Abstract

At the general level, Capacity Building was implemented for improving the strengthening of the human resources capabilities in a Public Administration. This paper aims to highlight the significant role of the Capacity Building projects, as well as advantages and disadvantages of them and provided a useful framework to design Capacity Building approaches for the Circular Economy (CE) at a meso scale.

Particularly, since 2019, the Department of Economics, Management and Business Law of the University of Bari Aldo Moro, sited in Apulia (Southern Italy), set an active role in Capacity Building, through a partnership with the Agriculture Department of the Apulia Region, to provide a project for implementing Circular Economy in the Agri-food sector.

We adopted a methodology based on a qualitative analysis to verify how the Capacity Building tool interacts with the research and reveal the underlying strategies applied on MoDEC, a project based on the relationship between university and institutional administration.

Some provisional results highlight that the Capacity Building of this public department has been significantly strengthened in terms of the CE in a regional economy. The monitoring measures were undertaken through a bottom-up approach that involved various stakeholders of the agricultural supply chain.

The approach applied in the MoDEC is replicable and allows the transfer of knowledge and good practices to widespread digital learning and a soft culture among stakeholders, creating a virtuous network to be implemented, not limited to the Circular Economy, within the macro-scale Mediterranean and the Euro-Asian corridor.

Keywords

Capacity Building, High Level Education, University-based model, Circular Economy.

DOI: 10.24818/BASIQ/2021/07/056

Introduction

To address the European 2030-2050 strategy, a transition from Linear Economy (LE) to Circular Economy (CE) models needs in order to achieve greater efficiency and effectiveness in the use of resources. CE aims to reduce inputs and reuse waste, not only in the context of production processes, but in a systemic way. This new economic approach addresses the creation of a new management system that is increasingly sustainable from an environmental, social and economic point of view.

It should be emphasized how much in this fundamental transition process has to carry out too by Public Administrations (PA) and by universities or public research institutes. Generally, PA is delegated to

face a necessary renewal and adaptation, especially with a view to the efficiency and effectiveness of the regional economic policies to be adopted. For this purpose, the research centers, especially universities, must support this process of innovation and change also to address the financing measures of the so-called “Recovery Fund” and to relieve the member countries in the post-pandemic period.

Lately, therefore, a path of “Capacity Building” has gain visibility, although it is an approach born more than 30 years ago. It refers to the ability of public structures to identify and solve problems by collaboration with high levels of education, with the general objective of building an environment of renewal and change.

The strengthening Capacity Building projects carried out within the European Programmes, such as Alfa, Edu-link and Tempus, were aimed at fostering cooperation between the EU and member countries, supporting partner countries in addressing management and governance challenges, ensuring the improvement of the quality of education and training, modernization of education systems through reform policies and promotion of cooperation in different regions of the world and through joint initiatives too (EACEA, 2021).

European Commission forecasts two types of Capacity Building projects for the members states:

- 1) Joint projects, aimed at organizations to improve curricula, governance and strengthening relations between higher education systems;
- 2) Structural projects, to promote reforms in higher education systems, modernize policies, governance and strengthen the relationships between higher education systems and the economic and social context.

Furthermore, Capacity Building projects can be implemented both at national and transnational levels.

The European Commission platform dedicated to Education, Audiovisual and Culture Executive Agency activities have been published in recent years several calls, as we can see in Table no.1, in order to incentivize adherence to programmes of Capacity Building for the master graduates of the EU members states:

Table no. 1. The European programmes in Capacity Building

Beneficiaries Spaces/ Call for proposal	Actions	Call reference
Capacity Building in the Field of Higher Education 2020	Erasmus+; Key Action 2: Cooperation for innovation and the exchange of good practices; Capacity-Building in higher education	EAC/A02/2019
Capacity Building in the Field of Higher Education 2019	Erasmus+; Key Action 2: Cooperation for innovation and the exchange of good practices; Capacity-Building in higher education	EAC/A03/2018
Capacity Building in the Field of Higher Education 2018	Erasmus+; Key Action 2: Cooperation for innovation and the exchange of good practices; Capacity-Building in higher education	EAC/A03/2017
Capacity Building in the Field of Higher Education 2017	Erasmus+; Key Action 2: Cooperation for innovation and the exchange of good practices; Capacity-Building in higher education	EAC/A03/2016
Capacity Building in the Field of Higher Education 2016	Erasmus+; Capacity-Building in higher education	EAC/A04/2015
Capacity Building in the Field of Higher Education 2015	Erasmus+; Capacity-Building in higher education	EAC/A04/2014

Source: Authors' elaboration on data EACEA, 2021.

Therefore, nowadays, master graduates in engineering, agronomy, food science, food technology, biochemistry, biology, veterinary, economics and so on, who are looking for an innovative job in the agri-food industry, such as the provision of CE models, are faced yet with a lack of practical experience in the field required by employers. Then, for the overcoming gap between higher education and job, it is

fundamental to adopted Capacity Building programmes (Jack, Anderson and Connolly 2014; Becot, Conner and Kolodinsky, 2015).

In particular, we presented “MoDEC Apulia: Circular Economy models for a new regional economy” project, funded by a structural project implemented at the national level according to the European Commission initiative and focuses on a Capacity Building improvement of PA through the support of scientific research. This project provided for the advanced training of a master graduate, through the provision of a research fellowship (Gustafsson, Díaz-Reviriego and Turnout, 2020), in the fields of Economics, Sustainability and CE. This human resource has collaborated with a public department in order to develop a model and an approach for green agriculture. This project, indeed, supported the adoption of CE models for the agricultural sector in the Apulia region of Southern Italy.

Therefore, MoDEC has considered two general objectives: the innovation in the transfer of knowledge on the issue of CE to the Apulia Region and the professional and scientific improvement of an Apulian master graduate through the funding of a research program.

For this reason, MoDEC has to strengthen the development of this public institution in the field of environmental and economic protection and research, as well as the international cooperation, aiming at improving the skills of the staff, in particular enhancing the organizational effectiveness /efficiency and improving the quality of the services provided.

This paper is organized into five different sections:

- in the 1st section the Capacity Building approach was dealt with;
- in the 2nd section a review of scientific literature was presented, in order to highlighting the level of interest on this topic;
- the 3rd section described the methodology behind the MoDEC project;
- the 4th section analyzed the main findings of the implementation of MoDEC project;
- in the 5th section a general conclusion, limitations and future implications of the study was described.

Review of scientific literature

In the literature, there is a lot of discussion about Capacity Building, that is an approach born more than 30 years ago. Among the first authors dealing with this topic, Blomquist and Ostrom (1985) suggested that the adoption of Institutional Capacity Building is necessary to achieve common objectives for the development. Capacity Building was defined as the creation of an enabling environment based on the adoption of an appropriate policy framework providing institutional development through community participation and the strengthening of managerial systems (Alaerts, Blair and Hartvelt, 1991). Later, since the second half of the 1990s, Capacity Building has become a frequent theme in political discourses around the international development (UN, 1997; Goodman, et al., 1998; UNDP, 1998; Hunt, 2005; Verity, 2007).

At the international level, according to a UNEP definition (1997, p. 5), “the term *capacity* generally referred to the ability of individuals and institutions to perform their assigned functions efficiently, effectively and sustainably”. The concept of “Capacity building” also extends to the process of improving individual capacities or strengthening the competence of an organization or set of organizations to undertake specific tasks. The most inclusive view of this concept was contained in UNCED Agenda 21, according to which Capacity Building implied the development of a country's human, scientific, technological, organizational and institutional capabilities (UNCED, 1992). For this purpose, the UNCED (1992) considered fundamental the cooperation between government, national research institutes, non-governmental organizations and local communities for analyzing problems and evaluating the policies to be strengthened.

In general terms, Capacity Building is a necessary tool to achieve the sustainable social change, empowering all the stakeholders involved in the transition to CE, such as populations, organizations, communities and nations (Chaskin, 2001; Hunt, 2005; Craig, 2007).

Moreover, according to Cole, et al. (2014), the phenomenon of closing the loop, as a result of the transition from a LE model towards a CE, becomes a particular institutional problem, especially with reference to waste management. The CE requires the adoption of new business models in collaboration with public authorities, which must create adequate support through policies, environmental legislation and economic and market instruments. For this reason, public and private partnerships should build a path to strengthen institutional capacities in achieving CE. Online platforms are already a tool to support companies in visualizing conversion paths from waste to resources and promoting synergies (De Abreu and Ceglia, 2018).

Some authors in the past also investigated the concept of Institutional Capacity Building, until paradigm shift in Capacity Building, highlighting that, different capabilities are needed to establish circular models (De Abreu and Ceglia, 2018). Furthermore, this dimension involved three elements of Institutional Capacity: knowledge resources, relation resources and mobilization capacity to contribute to the transition from linear economy to CE through industrial symbiosis initiatives (De Abreu and Ceglia, 2018).

For example, Srinivas (2019) considered Capacity Building as a process related to education and training, therefore as an added value. In 2020 Gustafsson, Díaz-Reviriego and Turnout defined Capacity Building significant for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) starting from a concept theorized by UNEP (2010, pp. 5) according to which this approach is fundamental to strengthen the science-policy interface towards the conservation of biodiversity, long-term human well-being and sustainable development. Additionally, Yan (2021) highlighted that the gap in space Capacity Building between developed and developing countries has increased over the past sixty years.

In particular, the cooperation can improve Capacity Building, close the gap in the scientific capacity and bring greater socio-economic benefits by accumulating technology, finance and human resources for developing countries. Accordingly, Yan (2021) Capacity Building approach involved simultaneously the development of scientific and technological capacities, human resources, organizational development and space policy and law.

Nowadays, there is a need for courses to deliver adequate Capacity Building training for all types of employees who have to adapt or supplement their work with new knowledge and flexibility; furthermore, higher training courses must also be adapted to the broad reach of the workforce of local companies in order to better address needs at meso-scale level. The need is to develop a toolbox to implement these processes, including successful models already implemented by some companies (FoodDrinkEurope and EFAAT, 2016; Lazaro-Mojica and Fernandez, 2020).

Finally, we have proposed this analysis because most of the previous studies have not addressed the Capacity Building approach in the field of Circular Economy, so we fill the gap and raise awareness of the innovative and fundamental scope of this approach.

Research methodology

The aim of our research is to reveal the underlying strategies applied in a real Capacity Building model, such as the MoDEC project. In order to analyze this project, we adopted a methodology based on qualitative analysis to verify how the Capacity Building tool interacts with the research and to understand the construction of the model adopted too.

The methodology used is based on the Stakeholders Engagement and aims to understand their expectations in terms of policies and strategies, clarity in reporting activities of data and information, development of an innovative framework to address the sustainability issue. During the specific investigation and research process, the direct observation method mainly used, based on interviewing project managers and regional supervisors. The sample involved in this first step was composed of the staff from the Department of Agriculture of Apulia Region, in particular the Section of Agri-food Chains Competitiveness, for public stakeholders, and of some components of the sectoral associations for private ones.

We focused on skill and level of knowledge of the participants, level of interaction between the various stakeholders, clarity of communication, flexibility, knowledge of the subject, organization of training/meeting, use of materials, learning techniques, demonstrations, plans, brochures, manuals, newsletters. Based on the results of the primary observations, the Kyutech approach (Polansky and Cho, 2016) influenced researchers in the design of this project. This approach must be based on five elements (figure no. 1):

1. Assessment of local conditions, infrastructures and resources,
2. Education and human resource development,
3. Official agreements to stimulate collaboration,
4. Low cost proof test and fast delivery,
5. Assistance with model implementation opportunities (Polansky and Cho, 2016).

Therefore, in 2018 the Department of Economics, Business and Law (DEMEDI) of the University of Bari Aldo Moro, designed an innovative model for the partnership between University and PA, based on Kyutech approach with the aim of strengthening of Capacity Building. Then, accordingly Polansky and Cho (2016), DEMEDI started from an evaluation of the state of the art of the agriculture sector in Apulia region in order to designed the single step for implementing a CE approach. Subsequently, in partnership with Adisu Puglia, the agency for the university right of study, it was awarded a research grant for educating and training a highly specialized human resource in studies on sustainability and CE to support the identified PA, that is the Department of Agriculture of Apulia Region. Therefore, DEMEDI and the research fellow on MoDEC have entered into various collaborations, especially with the Section Competitiveness of Agri-food Chains of Department of Agriculture, Rural and Environmental Development in order to investigate some key elements fundamental for planning and programming funding on CE. In terms of project testing, the section of Department involved has conducted several meetings, on online platform too, and elaborated a survey in collaboration with the section of PA in order to map their need in terms of activities to be carried out. This survey is intended to be an extended version of the primary qualitative analysis undertaken for the elaboration of MoDEC, involving a larger sample of private and public stakeholders, such as regional agencies of services for agriculture, regional authorities for water resources, local public administrations, agricultural consortia and professional associations. The first results of this collaboration will be presented at the International Conference on Digital Agriculture – EFITA 2021. The final objective will be the model implementation of the CE approach for the Apulian agriculture.

Therefore, to conduct an effective implementation of the model, education and building skills require new approaches based on a better integration of competences among the different stakeholders. The measures adopted include support to the public institution with the aim of improving its capacity for planning and providing services, as well as skills in the design, monitoring and execution of government strategies and development policies local and sectoral in a perspective of CE.

For this purpose, the academic-scientific part of the project supported and planned some specific activities, also on the basis of the skills and experience gained by the research team itself: training, accompaniment and development of human resources (e.g. research fellow), creation of management and process structures, elaboration of procedures manuals, both for individual institutions and at inter-institutional and multisectoral level, strengthening of technical-scientific skills and methods of providing services through an appropriate and targeted transfer of knowledge and specific experiences.

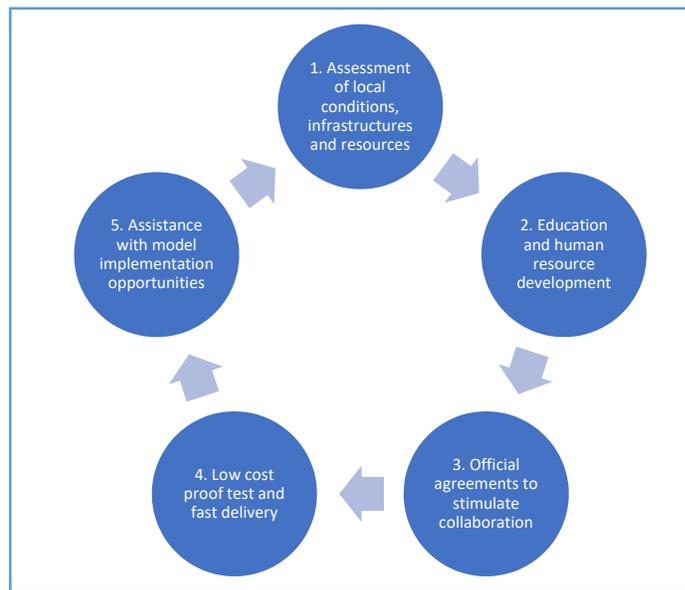


Figure no. 1. The Kyutech approach of Capacity Building

Source: Polansky and Cho, 2016.

Results and discussion

In the European agenda, the issue of the Circular Economy is significant and deeply felt. Currently, indeed, it is fundamental moving towards this type of approach, working together, exchanging the acquired knowledge and the experiences gained in order to identify solutions to territorial problems, improve the ability to conduct monitoring and forecasts on climate change too and adopt the best adaptation measures to the environmental issues. In this context, the role of human resources departments is not easy, since the search for personnel often does not meet the needs and does not hire the suitable skills, with the consequence of loss in resources and time (Lazaro-Mojica and Fernandez, 2020).

The results deriving from the first qualitative analysis of the public and private stakeholders sample, were used for the MoDEC elaboration. This analysis revealed that most of the stakeholders involved in agriculture are unable to gather data and information, because they are not systematized; moreover, many farmers want to be trained on the issues of the Circular Economy. Generally, there is a shortage of information on sustainability indicators and territorial and climatic conditions as well, as highlighted also by results derived from the qualitative analysis.

MoDEC was aimed at implementing good practice models of CE, which can also be replicated in the Medi-terranean macro-area. On the basis of the international and EU guidelines on CE, the academic-scientific partner carried out the technical-scientific activities and supported the administrative and institutional action of the Agriculture, Rural and Environmental Development Department of the Apulia Region, in the correct application of all regulatory instruments and implementation procedures. This activity was conducted through the use of technical and regulatory tools useful for the pursuit of correct economic and environmental management, in a perspective of CE, through a capillary training and information campaign, also oriented to the job technical assistance.

The research fellow has participated in scientific training events and according to a bottom-up approach, improved the analysis, evaluation and research activities for the purpose of a correct implementation of the new CE models. All the Capacity Building activities to be carried out were characterized by the protection of the environmental characteristics of naturalness, the landscape characteristics of the territory and the cultural identity of the territories in order to create better conditions for the quality of life of the resident population and guests.

To do this, the role of environmental technical-scientific information, based on technical-scientific data and the best technologies available, contributed to more environmental protection through specific initiatives. To achieve these objectives, already existing approaches and techniques are applied that contribute to sustainable innovation for the environment and whose impact is strongly enhanced by new technologies and digitization.

MoDEC project provides real and detailed guidelines to achieve training and knowledge in the field of CE and to address the issues revealed from the first qualitative evaluation. The innovation consists of the feasible application of these methodologies both for communication and dissemination and for procedures and regulations.

The starting point was the exploration and analysis of the most recent developments and the most widely used methods, on the wave of the thrust of technological development in this field of the CE, for the knowledge transfer as the dissemination of information and disclosure of new sustainability practices.

The tools to support Capacity Building can be numerous, but the most important and versatile ones adopted by MoDEC fall within participation in international conferences, elaboration of reports for "non-professionals" and distance learning.

During MoDEC, some results were achieved: firstly, it was conducted a systematically and statically mapping of the agricultural production with the aim of mainly undertaking the state of the art of the water use in Apulia; secondly, it was analysed the water consumption in the agri-food sector by source; thirdly, a digital CE framework in this sector was modelled. The first and second results were achieved at the university. Conversely, for the realization of the third products, the university and regional department worked closely together for identifying a data-set model in order to enable stakeholders to know the most suitable sustainability indicators and finally to implement the best CE model. This new framework can improve the stakeholders' decision-making process (Wolfert, et al., 2017), achieve a CE approach, lead to a greater cooperation in the agricultural supply chain. Furthermore, the application of this CE knowledge model enables to overcome obstacles in data procurement (Newton, Nettle and Pryce, 2020).

From a scientific point of view, the fundamental activities included: the activation of knowledge-sharing dynamics, the exchange of good practices and the enhancement of cooperation between stakeholders, the dissemination of the "culture of sustainability", promoting it at all levels (business, civil society, institutions, research).

Through the actions carried out, the sensitivity and knowledge of the subject have been increased to 360 degrees so that the so-called "good practices" can become a concrete and measurable reality. Technological innovation, therefore, through the results of the most recent research and experiences, has contributed to starting an improvement of the same Capacity Building activities through the adoption and development of the most advanced tools and methodological and procedural aspects, including 4.0.

Conclusions

The transfer of scientific knowledge deriving from research activities for the institutional strengthening of structures and entities undergoing reorganization, development and strengthening can capitalize the results of the relationship between technological innovation and consolidated experiences at different institutional levels, from the regional, national, European and Mediterranean.

The new approaches to information and technical-scientific dissemination in environmental matters and CE can trigger useful virtuous circles for environmental protection linking to international networks, as they are multipliers of new technologies and space for continuous comparison with the most critical territorial realities. This approach was applied in the MoDEC, a replicable project capable of transferring the knowledge of good practices, including through the implementation of European and/or transnational projects within the Mediterranean macro-area and the Euro-Asian corridor.

Specifically, the results obtained through a qualitative analysis undertaken for the elaboration of MoDEC revealed the significance of the dynamic and interdependent relationship between several

activities, such as monitoring of territorial and climatic conditions, elaboration of data set based on sustainable indicators, training of the stakeholders involved into the agricultural sector, in order to implement strategies, tools and actions for the transition from LE to CE.

Therefore, the various collaborations of the host university allow the exchange of ideas and approaches by making their own high skills available, with the aim of addressing issues and developing ideas and concepts. MoDEC, therefore, could become a “virtual mentor” for public administrations, young people, research institutions and private sector dealing with important decisions about the implementation of new models of CE.

Given the scope of the project and its implications, the dialogue with companies operating in this area was fundamental because the development of a circular model requires constant collaboration between different sectors, not only with the world of research and the PA. The main result derived from the implementation of this project has been the modelling of a common language of data collection, the identification of the information gaps to be filled and planning CE strategies in agriculture.

For this reason, MoDEC Apulia has been able to build and disseminate the trademark of the “Apulian Circular Economy”. All the benefits that will derive from this project will be in terms of competitiveness, innovation, environment and employment.

Capacity Building is the key for public administrations and companies to forge alliances with universities and research centers and training institutes to optimize programmes that provide the right skills and competences for human resources. Likewise, the building of a replicable framework allows to widespread a digital learning and soft culture among stakeholders, creating a virtuous network to be implemented in the Mediterranean area. Furthermore, scholars, stakeholders and public administration can use this framework presented to design a common language of data collection, identify the information gaps to be filled and plan CE strategies not only in agriculture, but in all economics sector.

Finally, among the medium and long period goals of MoDEC Apulia, we will set up innovative and new industrial districts of the CE, in the field of the agro-industry for instance, which can implement biorefineries to use biomass, even residual one, and produce active ingredients and thermal energy and cogeneration.

Finally, this research will be useful to the university and/or research of department and public administration involved in the transition from LE to CE and other stakeholders who pay attention to an environmental issue.

Acknowledgements

This research was undertaken thanks to a partnership between University of Bari Aldo Moro (Department of Economics, Management and Business Law), Regione Puglia (Department of Agriculture, Rural Development and Environmental) and ADISU Puglia for the MoDEC Apulia Programme 13/16.

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Standards for the New Economy

Pasquale Giungato¹, Roberto Leonardo Rana², Caterina Tricase² and Zenon Foltynowicz³

¹ University of Bari Aldo Moro, Bari, Italy.

² University of Foggia, Foggia, Italy.

³ Poznan University of Economics and Business, Poznań, Poland.

E-mail: pasquale.giungato@uniba.it; E-mail: roberto.rana@unifg.it;

E-mail: caterina.tricase@unifg.it; E-mail: zenon.foltynowicz@ue.poznan.pl

Please cite this paper as:

Giungato, P., Rana, R.L., Tricase, C. and Foltynowicz, Z. 2021. Standards for the New Economy. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 441-449 DOI: 10.24818/BASIQ/2021/07/057

Abstract

Purpose/objectives: many of the products and services we use are designed and developed following International Standards like ISO (The International Organization for Standardization, ISO). Standards affect most of the global trade and represent a fundamental driving force for new technologies. Standards provide an adaptive and responsive approach to manage innovation in the new economy, for this reason, the creation and use of consistent standards, through the input of both the private sector and governments, is fundamental for the medium to the long-term sustainable development of the new economy.

Design/methodology: in this paper, a qualitative analysis of standards developments in blockchain and in AI have been performed, focusing on the new economy paradigms.

Originality/value: the integration between cryptocurrencies based on blockchain technology and existing networks, trading and software accounting systems and other clearing networks rely on, results almost difficult to obtain, due to a series of relevant issues among which the most relevant is the lack of a standard and in this paper we have analyzed the state of the art in the development of new standard for the new economy.

Findings: as main results, recently ISO standards are providing fundamental definitions for blockchain and, in general, of distributed ledger technologies, the first step toward the implementation of more extended standards allowing widespread adoption of blockchain by industries and governments. In parallel, numerous International Standard Developing Organizations are developing and publishing AI-related standards including actionable steps to underpin a framework for the 'responsible stewardship of trustworthy AI'. This includes the design, development, and deployment of AI internationally, through the OECD Principles on AI.

Possible practical implications: these initiatives will surely foster the development of two key technologies for the new economy, with practical implications in Industry 4.0 and the Internet of Things (IoT).

Keywords

Blockchain, distributed ledger, cryptocurrency, Artificial Intelligence, ISO standard, new economy, Industry 4.0, Internet of Things

DOI: 10.24818/BASIQ/2021/07/057

Introduction

According to ISO/IEC Guide 2:2004 Standardization and related activities- General vocabulary, a standard is “a document, established by consensus and approved by a recognized body, that provides for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context” (ISO/IEC, 2004). The adoption of standards all over the world would facilitate technology innovation by defining and establishing common rules for product differentiation, technological innovation, and other value-added services, fostering a widespread, interoperable and efficient marketplace. Standards generally specify requirements, specifications, guidelines, or characteristics that can help to ensure that emerging technologies and systems meet critical objectives for functionality, interoperability, and trustworthiness- and that can work as accurately, reliably, and with safety tools. Most of the products and services we use daily are designed and developed following international standards in which ISO standards play a key role. Standards affect 80% of global trade and are important concerning emerging technologies, like blockchain and AI. Standards provide a strong approach to manage emerging technologies in the new economy as 80% of global trade valuable in 4 trillion USD/y is regulated by standards or similar technical regulations (McShea, 2017). Use of standards, created by the fostering of both governments and private sectors, is crucial for the global new economy in long-term sustainable development. International Standards in ICT have increased integration across platforms, ensured quality, lowering trade barriers, building greater public and user awareness in digital products and services. Standards, such as the ISO and IEC, have enabled agreement among extended commercial environments, on issues as quality management (ISO 9001), cloud computing (ISO/IEC 27017) and information security (ISO/IEC 27001). Standards can lead to the development of risk management approaches as well as more detailed technical solutions that provide guidance on these principles in companies, customer bases, and the wider community. In this paper, we focused on the development of standards for the new economy in blockchain and artificial intelligence (AI), two emerging technologies that probably will be the driver for the development of new economies. In this paper, the importance and needs of a standard for blockchain-based cryptocurrencies and standards in AI will be highlighted and future developments of technical standards depicted. Possible practical implications will be the implementation of a widely recognized blockchain-based public ledger of a transaction, characterized by immutability, useful for the management of numerous public and private services. Adopting recognized standards is the first step towards intergovernmental recognition of a technology that can drive current industrial revolutions such as Industry 4.0 and the Internet of Things.

Literature review and Research methodology

The specific procedure for identifying, selecting, analyzing and report synthetically the relevant articles on the given topic, has been performed in the way to obtain rigorous, transparent and robust results typic of a deep analysis. The prior art of the research area investigated has been explored with a specific method which involves the definition of conceptual boundaries of the research, the selection of scientific papers and reports using the operator typic Boolean operators, and by defining the time period of the collected papers. The databases utilized were Scopus, Web of Science, Science Direct, but excluding duplicates, note, letter, conference articles, or article/reports not published in English.

Results and Discussion

Standards in blockchain and related technologies

Cryptocurrencies have rocketed both in values and in numbers, following a feeling of freedom felt by people transacting without a centralized authority. Following the launch of Bitcoin, cryptocurrencies have increased to about 9,100, and new launches are being observed day after day (CoinMarketCap, 2021). Bitcoin prices have fluctuated but since March 2020, with the beginning of the Coronavirus outbreak, prices rocketed to about 60,000 USD per Bitcoin, maybe driven by fears of a collapse of the economy (figure 1). The feeling of the cryptocurrencies as haven assets has increased in the last year, pushing demand and prices. Bitcoin remains the most capitalized cryptocurrency (\$1,115,941,778,371) followed by Ethereum, Binance Coin, Tether, Polkadot, Cardano, XRP, Uniswap, Litecoin. Among the most top-capitalized the hash rate is: Bitcoin (165.62 Eh/s), Ethereum (483.32 Th/s), Lite coin (70.50

Th/s). Total Bitcoins mined at the date (03 April 2021) were about 18.671 million (Blockchain.com, 2021) representing about 88.9% of the total available (as an ultimate resource recovery of 21 million) as seen in figure 2. As cryptocurrencies are adopted by people, the focus on the underlying blockchain technology has rocketed as the advantages of the adoption of a distributed ledger of the transaction, in numerous public and private applications, have been fully recognized (Mashamba-Thompson TP. Et al., 2019; Nurgazina, et al., 2021; Jagtap, et al, 2021). Blockchain solutions in public and private systems are growing from 1.5 billion in 2018 probably to 15.9 billion by 2023 in which the financial sector contributes about 60% of the market value of blockchain worldwide in 2018. Worldwide spending for blockchain solutions in 2020 is about 4.1 bn USD with banking the sector with the highest distribution of blockchain market value (Liu, 2020). The diffusion of the blockchain has highlighted some flaws in the technology that only recently have been addressed: the Bitcoin system stands up due to miners, whose rewards sustain the entire distributed ledger technology network, but the electricity consumption arising from computational tasks necessary to validation of a block is very high a pose of a serious threat to the sustainability of the system. Although no trace of a carrying capacity arises from the analysis of Bitcoin issued over time (Giungato, et al., 2017; Rana et al., 2019) new form of blockchains have been issued, in which a block reward is given to miners after a block is confirmed in a blockchain system, maybe in the form of a token instead of a cryptocurrency. This token is a digital asset that represents a collection of electronic entitlements, or anything that has value to a stakeholder. To protect an electronic fee collection (EFC) an ISO norm describes several steps: the definition of the security objectives and policy statements in a security policy, a threat analysis with a risk assessment to define the security requirements, and the development of the security measures followed by the development of security test specifications (ISO 19299:2020). Another important issue to be addressed in the blockchain solution is the privacy protection of personal information, which poses a serious threat to the diffusion of this technology in smart contracts and sanitary distributed databases, as an example. For these reasons, a technical committee is developing a new standard on the protection of sensitive data, privacy, and personally identifiable information (PII) on blockchain-based and distributed ledger technology systems (ISO/TR 23244:2020). In the field of smart contracts also there exists numerous terms and to solve the confusion, a technical committee published a report, focused on interactions between smart contracts in blockchain and distributed ledger technology systems (ISO/TR 23455). Moreover, other technical committees are developing new standards in the field, like the ISO/TR 3242, Blockchain and distributed ledger technologies - Use cases, the ISO 23257, Blockchain and distributed ledger technologies - Reference architecture, the ISO/TS 23635, Blockchain and distributed ledger technologies - Guidelines for governance (Naden C., 2020). The ISO standard document subject of this work was prepared by Technical Committee ISO/TC 307, "Blockchain and distributed ledger technologies", following rules and guidelines set by ISO/TC 37, "Language and terminology". The norm is recognized as contributing to the Sustainable Development Goal of Industry, Innovation, and Infrastructure, the number 9 goal of the United Nations 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015 (United Nations, 2015).

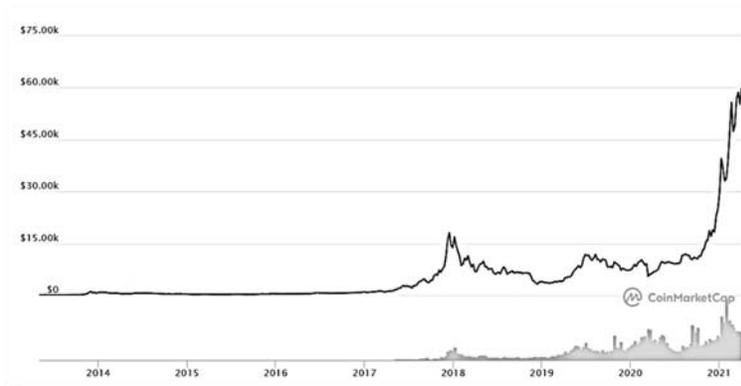


Figure no. 1. Bitcoin prices (USD) from launching to Apr. 03, 2021

Source: CoinMarketCap, 2021

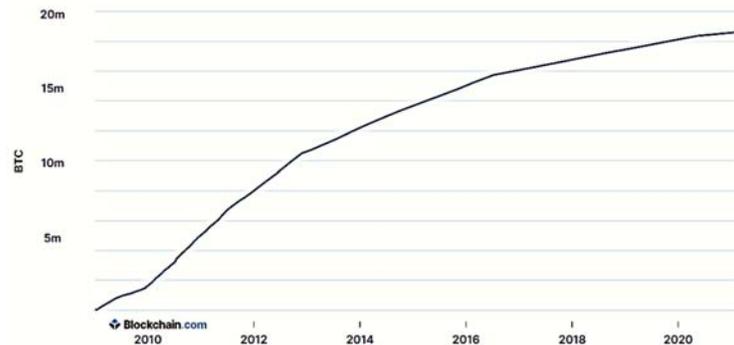


Figure no. 2. Bitcoins mined from launching to Apr. 03, 2021.

Source: <https://www.blockchain.com/charts/total-bitcoins>, 2021

To allow Bitcoin to enter the database tables used by MasterCard, PayPal, SWIFT, Visa, an ISO currency code is needed as regulated by the ISO 4217:2018 that defines alpha-numeric codes for the representation of currencies. Bitcoin in this standard may have the first alpha code as "X" used for supranational currencies, procedural purposes, and several precious metals which are similar to currencies (ISO 4217:2018). In this case, the code for Bitcoin may be the "XBT" and finally, Bitcoin can enter the existing networks, trading and software accounting systems and other clearing networks rely on (Matison, 2014). Other technical committees are developing new standards to solve privacy issued and smart contract misunderstandings. IoT may benefit from the adoption of a blockchain-based database as a data-sharing framework or platform that is needed to motivate devices to exchange data. As a distributed ledger technology, blockchain has the potential to solve the above issues, due to its nature of data transparency, distributed operation, and reliability. Devices do not need to communicate with a central server, using its computational power, but the processing of data may be managed locally (Du, et al., 2021).

Standards in AI and related technologies

Standards can play a constructive role in enabling the widespread use of responsible AI, as an example, they can establish common building blocks and risk management frameworks, for companies, governments, and other organizations.

NIST has recently released a document focused on the importance of trustworthiness incorporated in AI standards, following an Executive Order (EO 13859, February 11, 2019) of the President directing Federal agencies to take a variety of steps designed to ensure that the U.S. maintains its leadership position in AI. This order emphasizes the importance of AI to the future of the U.S. economy and national security, recommended that AI standards will articulate requirements, specifications, guidelines, or characteristics that can ensure that technologies in AI meet quality standards for interoperability, functionality, and trustworthiness, and that they can be accurate, reliable, and safe (Kimball, 2019). The document is focused on the following themes related to the AI: Concepts and Terminology, Data and Knowledge, Human Interactions, Metrics, Networking, Performance Testing and Reporting Methodology, Safety, Risk Management and Trustworthiness. The issue of trustworthiness is crucial as today there exists a lack of the ability to understand and analyze the decisions of AI systems and to measure their trustworthiness in particular to address the bias in machine learning (Emmert-Streib, 2021). All these aspects should have been considered early in the design process of AI technologies and should be tested during the development and use phase. Since 2017, fourteen of the world's most advanced economies have announced huge investments in focused AI programs and activities. This unexpected growth in AI and the related investments has the potential to transform the lives of Australians, who have already been the early adopters of this technology. However, concerns have been raised about the impact of AI on the future of work, although the technology lacks the essence of human intelligence as understanding the situations we experience, being able to grasp their meaning and this issue needs a different approach (Mitchell, 2019). The interest in AI standards has raised in regulating responsible design, distribution, evaluation of AI platforms, and to facilitate global adoption. Following a successful approach in Information and

Communication Technology (ICT), standards have fostered digital formatting, web accessibility, and information security. Standards have revolutionized the way we transport commodities including the humble shipping container. In the same way AI technical standards can provide developers with clear guidelines for the design of AI platforms to facilitate integration with other technologies. Developers are enticed to use the best practices for the safety, cybersecurity, and utility of their products. Moreover, standards in AI can be used to evaluate and compare different AI systems, e.g. in the legal requirement for ensuring transparency for a decision-making process in judicial decision-making. Without clear standards defining algorithmic transparency, it can be difficult to evaluate an AI system concerning the aforementioned requirements, or to distinguish if it does better than another different system; without these standards accepted in the scientific and programmers community the adoption of these technologies would be discouraged. Technical AI standards will be a key technology to determine whether an AI system is appropriate for use in a particular context like the legal one. A range of International Standard Developing Organizations are developing and publishing AI-related standards and 42 countries, have committed to the development of consensus-driven standards on AI, through the OECD Principles on AI (Cihon, 2019). The development of such Standards is taking place through the Artificial Intelligence Joint Technical Committee of ISO and IEC - (ISO/IEC JTC 1/SC 42). OECD, has developed a set of principles for AI that were endorsed by the OECD Ministerial Council in May 2019 and 42 countries have engaged themselves to these principles. The basic principle includes all the steps to design a framework for the “responsible stewardship of trustworthy AI” or the design, development, and deployment of AI internationally. These high-level value-based principles are:

- AI should benefit people and the planet by driving inclusive growth, sustainable development and well-being.
- AI systems should be designed in a way that respects the rule of law, human rights, democratic values and diversity, and they should include appropriate safeguards - for example, enabling human intervention where necessary - to ensure a fair and just society.
- There should be transparency and responsible disclosure around AI systems to ensure that people understand AI-based outcomes and can challenge them.
- AI systems must function in a robust, secure and safe way throughout their life cycles and potential risks should be continually assessed and managed.
- Organizations and individuals developing, deploying or operating AI systems should be held accountable for their proper functioning in line with the above principles.

It is important to note that the OECD principles encourage governments to “promote the development of multi-stakeholder, consensus-driven global technical standards for interoperable and trustworthy AI” (OECD, 2019; Standard Australia, 2020). The Joint Technical Committee (JTC) 1 is the major joint ISO and IEC ICT-focused Standards Committee and it was established to provide a forum for standards development concerning ICT and has developed commonly used standards including MPEG, JPEG, as well as standards on data governance and cybersecurity. In 2017, JTC 1 established Sub-Committee (SC) 42 to focus on standards development for AI systems. The major objectives of the Committee are to:

- Serve as the focus and proponent for JTC 1’s standardization program on Artificial Intelligence
- Guide JTC 1, IEC, and ISO committees developing AI applications.

Through the work of this committee, a new five-part series of standards and technical reports establishing a Big Data Reference Architecture (BDRA) and framework that organizations can use to achieve interoperability between BDRA systems has been developed. The series includes:

- ISO/IEC TR 20547-1: 2020 Information technology - Big data reference architecture - Part 1: Framework and application process
- ISO/IEC TR 20547-2:2018 Information technology - Big data reference architecture - Part 2: Use cases and derived requirements

- ISO/IEC 20547-3: 2020 Information technology - Big data reference architecture - Part 3: Reference architecture
- ISO/IEC 20547-4: 2020 Information technology - Big data reference architecture – Part 4: Security and privacy
- ISO/IEC TR 20547-5:2018 Information technology - Big data reference architecture - Part 5: Standards roadmap.

The SC 42 has so far published additionally one ISO/IEC standard and two Technical Reports (TR) related to AI:

- ISO/IEC 20546:2019 Information technology - Big data - Overview and vocabulary
- ISO/IEC TR 24028: 2020 Information technology - Artificial Intelligence (AI) - Overview of trustworthiness in Artificial Intelligence
- ISO/IEC TR 24029-1:2021 Artificial Intelligence (AI) — Assessment of the robustness of neural networks — Part 1: Overview

Currently, 22 projects of the Standards are under the responsibility of ISO/IEC JTC 1/SC 42, among others:

- ISO/IEC DIS 22989: Artificial Intelligence Concepts and Terminology
- ISO/IEC CD 23894 Information Technology — Artificial Intelligence — Risk Management
- ISO/IEC DTR 24027: Information technology - Artificial Intelligence (AI) - Bias in AI systems and AI aided decision making
- ISO/IEC AWI TR 24368 Artificial intelligence — Overview of ethical and societal concerns
- ISO/IEC AWI 42001 Information Technology — Artificial intelligence — Management system
- ISO/IEC WD TS 4213 Information technology — Artificial Intelligence — Assessment of machine learning classification performance
- ISO/IEC WD 5338 Information technology — Artificial intelligence — AI system life cycle processes
- ISO/IEC WD 5339 Information Technology — Artificial Intelligence — Guidelines for AI applications
- ISO/IEC WD 5392 Information technology — Artificial intelligence — Reference architecture of knowledge engineering
- ISO/IEC AWI TR 5469 Artificial intelligence — Functional safety and AI systems
- ISO/IEC CD 23894 Information Technology — Artificial Intelligence — Risk Management
- ISO/IEC AWI 42001 Information Technology — Artificial intelligence — Management system
- ISO/IEC TR 24030: Information technology - Artificial Intelligence (AI) - Use cases

In addition to JTC 1, ISO also has other committees that might have relevance to AI Standards development, including the aforementioned ISO/ TC 307 (blockchain and DLT) which Australia chairs. This committee with consumer representatives also participates in ISO's Consumer Committee (COPOLCO), which is undertaking a project exploring AI, primarily from a consumer perspective. IEC has undertaken significant work to support the standardization of AI and, in 2018, published a comprehensive Whitepaper that addressed the rise of AI, technical and social issues, and opportunities for standards development (IEC, 2018). The Institute of Electrical and Electronics Engineers (IEEE) has released several documents regarding the ethical design and development of AI through their Global Initiative on Ethics of Autonomous and Intelligent Systems. The IEEE Ethically Aligned Design document articulates five core principles to consider in the design and implementation of AI ethics and discusses these at length. These principles include adherence to existing human rights frameworks, improving human wellbeing, and ostensibly ensuring accountable and responsible design, transparent technology, and the ability to track misuse. Standards, in this context, might outline the specific risk management frameworks and controls that businesses might employ to manage access to information in a manner that protects and promotes privacy. In the past, international standards have either focused

on information security, as one element of a privacy-focused approach (through ISO/IEC/27001, for example) or focused on risk management more broadly through ISO 31000. Within the arrival of the Mandatory Notifiable Data Breach Scheme in Australia and the desire by some businesses to achieve a degree of harmonization with the GDPR (EU, 2016) on the protection of natural persons about the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), such an approach, which builds on international frameworks and best practice, might be timely. ISO/IEC 27701, outlined below, provides one such live opportunity. In mid-2019, ISO/IEC 27701:2019 was published. This new standard, developed by JTC 1/SC27/Working Group 5, is an extension to the existing standard ISO/IEC 27001- Information Security. It provides a framework to continuously improve privacy controls for personal information within an organization of any size, through a Privacy Information Management System (PIMS). Currently, this standard is mapped against the European GDPR and might well be one of the constitutive elements of a global certification regime for the GDPR and privacy more broadly. Many stakeholders have proposed a certification model, which involves industry, governments, academia, and others, in shaping the outlines of what might be considered “responsible AI” (Finkel A., 2019). It is like a sort of certificate or “AI Trustmark” or also called a “Turing Certificate” which would be the symbol that a vendor and product are worthy of trust, as the standards certificates in the manufacturing industries assure the functioning of electrical or mechanical devices as they comply the related standards.

Conclusions

Intergovernmental recognition of technology and its fostering needs the adoption of a recognized standard, which can be the driver of the revolution that Industry 4.0 and the Internet of Things have announced. The adoption of well-recognized standards widespread and accepted by governments would foster technology innovation by defining and establishing common rules for product characterization, quality management, enabling a widespread, integrated and efficient marketplace. In this context, numerous government institutions all over the world are pushing agencies to define the goals and objectives of standards in blockchain and AI. These emerging technologies may benefit greatly from the adoption of recognized standards, in various fields: from the money/cryptocurrencies exchange to AI development. In the last years, more and more efforts were made to push these technologies which can be the driver of the revolution in Industry 4.0 and the Internet of Things. There is an urgent need for standards for the new economy, to avoid mismatch in integration between different developed technologies or the issuing of standards that are not fit-for-purpose or not available when needed, or that are designed following wrong or different schemes. These issues can hamper innovation and development of reliable, robust, and trustworthy AI technologies generating constrain to the effective or timely development of the new economy. Global cooperation and coordination on ICT standards comprising blockchain and AI will be crucial to get a consistent set of rules to enable market competition, preclude trade barriers, and allow innovation to rocket. Moreover, these integrations may provide opportunities to reach the 17 United Nations Sustainable Development Goals together with the framework and concepts of circular economy (Hoosain M.S., 2020).

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Development of Agriculture Through Sustainable Production and Consumption

Gabriel Popescu¹, Ioana Panait² and Marian Catalin Cucu³

¹⁾²⁾³⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: popescug2004@yahoo.co.uk; E-mail: panaitioana48@gmail.com

E-mail: cmc.catalin02@gmail.com

Please cite this paper as:

Popescu, G., Panait, I. and Cucu, M.C., 2021. Development of Agriculture Through Sustainable Production and Consumption. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 450-456
DOI: 10.24818/BASIQ/2021/07/058

Abstract

The study includes some theoretical insights about the sustainability of agriculture, respectively a sustainable and responsible production and consumption. Through the choices they decide to make, both the producer who chooses to produce a sustainable product and the consumer because he buys and consumes products certified according to sustainability standards, a market is created based on a common effort to contribute to the sustainable development of agriculture. The harmonious development of the agricultural sector has two key actors, the final consumer of which through daily choices of sustainable products will increase the demand for these products, and producers will move to sustainable agricultural practices to meet demand, the ultimate goal being creating a sustainable agri-food market that provides products corresponding to the requirements of the sustainability, in this case also taking care of the future of generations. This paper presents a quantitative and qualitative analysis about sustainable agriculture, responsible production and responsible consumption of agri-food products that aims to highlight the importance of the analyzed topic. At the same time, the paper presents the analysis of some indicators to reflect the current situation of Romania regarding the level of achievement the sustainable development objectives, to highlight the path taken and to determine development opportunities at an accelerated pace of fulfilment a sustainable agriculture. The main results regarding the development of agriculture aim at the sustainable demand which is represented by the increase of the population's awareness regarding especially the social aspects and those that imply the protection of the environment, which determines the choice of sustainable products and sustainable production is represented by the increase in the number of agricultural producers who obtain voluntary sustainability standards. Current trends tend towards resilience given social inequity and environmental awareness.

Keywords

Agri-food supply chain, sustainable agriculture, responsible production and consumption, voluntary standards

DOI: 10.24818/BASIQ/2021/07/058

Introduction

The sustainability is a common responsibility of these actors in the supply chain that aims at the sustainable development of the agricultural sector, as well as sustainable production and consumption and that through responsible actions now consider the future of future generations (Tilman, et al., 2011). Agricultural production activities and sustainable food choices, respectively sustainable demand and consumption must be an integrated part of the economy, and the agri-food sector must pursue the transition to a green economy (Beddington, 2010). The Romanian agricultural sector must create a

responsible system focused on harmonious cooperation between socio-economic and natural resources (Pretty, 2008), where the farmer representing the supply of agri-food products and the final consumer representing the demand must move towards actions and adopt trends based on principles sustainable by developing a modern, competitive and sustainable market.

The Food and Agriculture Organization (FAO) together with United Nations Environment Programme (UNEP) realized the FAO-UNEP Sustainable Food Systems Programme which was created in 1992 when the emphasis was on sustainable consumption and production due to the high need for natural resources and their irrational use in agriculture. This program aims at the sustainability of the entire agri-food supply chain by connecting producers, retail, the final consumer together with the government creating a synergy that will lay the foundations of a sustainable agricultural sector (Meybeck and Redfern, 2016). The actions of this international sustainability program on agri-food production and consumption include the transfer of knowledge for producers, information transparency for consumers, together with government support for mechanisms to ensure market sustainability.

The farmer must use sustainable agricultural practices, and the consumer must be informed and educated about sustainable choices and their effects, while actors in the agri-food supply chain adopt sustainable actions, so the whole agri-food system becomes more sustainable. Sustainable production and consumption have effects on many systems, such as the environment, public health, food security. Producers must use all resources efficiently and rationally, especially natural ones, (Struik and Kuyper, 2017) and consumers must adopt a sustainable lifestyle (Gilg, et al., 2005).

The agri-food supply chain has several actions through which food losses occur, so it is important to reduce food losses along the supply chain through an integrated management that monitors all activities and prevents huge losses. Adapting agricultural practices and agri-food production to the sustainable requirements of the agroecosystem by adopting resilience in all specific activities are essential for the sustainable development of the agricultural sector (Brodt, et al., 2011).

The Common Agricultural Policy (CAP) introduces sustainability and sustainability pillars as an integrated part of its policies, following the transition to a green economy, one of the main actions being the development of a sustainable agri-food system based on the community strategy from farm to fork, which guarantees that all activities supply chain have been made in accordance with the specifications of sustainable development. Thus, the European Union (EU) strategy aims at both sustainable production in European farms, followed by a distribution that will ensure safety and food security for all agri-food products made in the EU and the final consumer will benefit from a product that is the result of a sustainable supply chain.

The paper is based on the level of development that agriculture in Romania has known lately, the main actions from which the study started being the importance of ethical choices of consumers along with ensuring production and agri-food products certified with voluntary sustainability standards, the results indicate that currently these two hypotheses have a high contribution in the agricultural sector.

Research methodology

The methodology of the paper consists in performing a statistical, quantitative analysis, in order to identify the current situation of sustainable and responsible consumption and production in Romania. Based on the data collected from international databases, the evolution of the indices registered by Romania was calculated, as well as the progress from 2017-2020 for the score obtained on each Sustainable Development Goals (SDG).

At the same time, a quantitative and qualitative analysis was performed on the specialized literature. Quantitative analysis was performed using VOSviewer software, version 1.6.15. This software was used to create and visualize maps and bibliometric networks, in order to determine the most frequent occurrences and the most important extracted terms.

Review of the scientific literature

Using the bibliometric analysis on the articles published on sustainable agriculture, we notice a high interest in the subject, and its evolution that is in full swing. To perform the bibliometric analysis, data obtained through the Web of Science platform were used. The search criteria that formed the basis of the search for publications were (search performed on March 21, 2021): “TOPIC: (Agri-food supply chain*) OR TOPIC: (sustainable agriculture*) OR TOPIC: (responsible production*) OR TOPIC: (responsible consumption*)”, criteria that generated a number of 92,733 publications. In order to restrict the number of publications, a filter was introduced on areas of interest such as: “environmental sciences or agriculture dairy animal science or horticulture or plant sciences or agricultural economics policy or public environmental occupational health or fisheries or agronomy or green sustainable science technology or food science technology or agriculture multidisciplinary or environmental studies or ecology or management or business or agricultural engineering or water resources or soil science or economics or forestry or zoology or veterinary sciences”, a selection criterion that restricted the number of results to only 36,977 publications.

Following the obtained results, it is observed that the first publication on the analyzed subject dates from 1977, from that year, the interest granted increasing constantly and accelerated, in 2020 registering 4,391 publications, representing approximately 11.87% of the total results obtained. Of the total studies generated through the Web of Science platform, 31.3% have open access, 79.8% are research articles and over 96% of the publications were written in English. The highest frequency of studies is found in the fields: environmental sciences (27.92% of papers); plant sciences (12.19% of papers); agronomy (11.35% of works); food science green sustainable science technology (10.92% of papers); technology (9.68% of works). The highest number of publications comes from the United States of America (20.27% of results), followed by China (11.82% of publications), Romania registering only 1.23% of the total publications published. In the top of the authors with the most publications are Li Y (84 publications), Zhang Y (81 publications) and Wang Y (67 publications).

In order to create the keyword map based on 10,000 results obtained, the VOS viewer software was used, defining the selection criteria for 10 minimum occurrences of a keyword, and out of 42,223 words, only 1561 met this criterion.

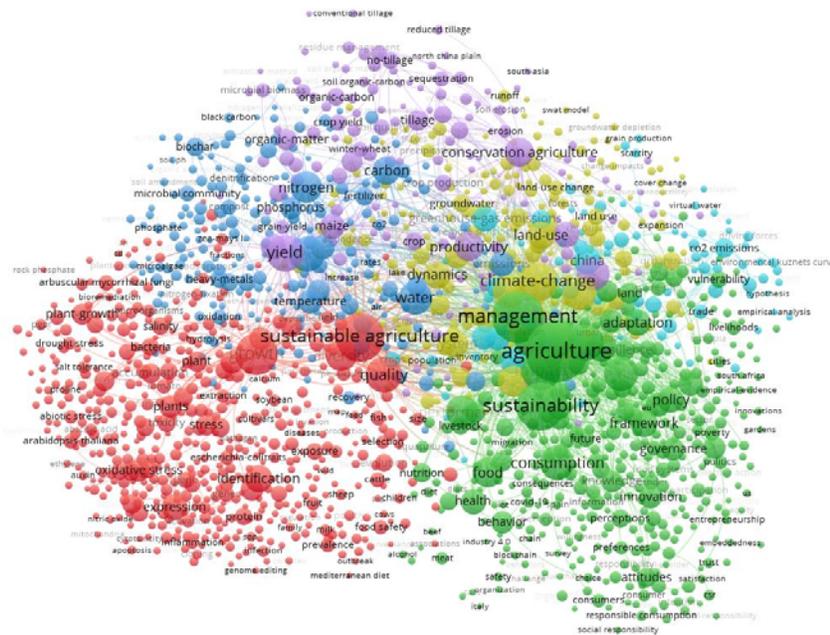


Figure no. 1. Bibliometric analysis

Source: own data processing in VOS viewer software, 2021

The figure above reflects the connections of the 1561 words that met the condition of at least 10 occurrences. The top of the most common keywords consists of: "agriculture" with 1198 appearances, "management" with 817 appearances, "sustainable agriculture" with 726 appearances and "sustainability" with 695 appearances.

The evolution of Sustainable Development Goals in Romania

Since 2015, when the 2030 Agenda on sustainable development was established and 17 SDG have been adopted worldwide, Romania has managed in the last 5 years to climb 3 positions in the Global Index Rank, ranking in 2020 on 38th place out of 166 countries. Regarding the general score of the 17 SDG, Romania registered an increase of 7 points in 2020 versus 2016.



Figure no. 2. Evolution of the Global Index Score and Global Index Rank indicators for Romania

Source: Global Index Results for SDGs, 2020

In 2020, Romania ranks 24th in the EU in 27 member states, followed by Bulgaria, Greece and Luxembourg, having the potential to improve the position because 8 of the 17 objectives have a regression in 2020 compared to 2017. Table 1 presents the evolution of the score of the 17 objectives registered by Romania in the period 2017-2020.

Table no. 1. Evolution of the score obtained by Romania for SDG

SGD number	SGD name	2017	2018	2019	2020	Evo 20/17
1	No Poverty	99.85	95.25	98.83	99.09	-0.77%
2	Zero Hunger	51.86	61.05	58.03	64.95	25.25%
3	Good Health and Well-being	79.25	81.31	80.63	80.20	1.20%
4	Quality Education	82.63	82.23	84.17	82.38	-0.31%
5	Gender Equality	61.55	69.04	64.47	57.41	-6.73%
6	Clean Water and Sanitation	90.89	93.66	77.98	81.47	-10.36%
7	Affordable and Clean Energy	81.84	82.80	88.97	88.65	8.32%
8	Decent Work and Economic Growth	77.75	73.12	80.44	82.73	6.42%
9	Industry, Innovation and Infrastructure	34.67	38.45	41.34	53.25	53.62%
10	Reduced Inequality	94.60	30.08	29.97	48.54	-48.69%
11	Sustainable Cities and Communities	84.01	83.64	81.25	79.36	-5.54%
12	Responsible Consumption and Production	65.42	66.47	71.93	76.18	16.45%
13	Climate Action	90.69	92.90	95.23	89.06	-1.80%
14	Life Below Water	65.58	56.28	53.30	65.46	-0.18%
15	Life on Land	79.64	80.58	84.25	84.79	6.47%
16	Peace and Justice Strong Institutions	60.21	65.20	76.10	77.11	28.06%
17	Partnerships to achieve the Goal	59.77	58.67	69.53	60.64	1.47%

Source: Global Index Results for SDGs, 2020

If 8 indicators have regressed, 4 indicators have a very good evolution, of two digits, indicating a good management of the actions that correspond to the targets necessary to be reached to achieve the objectives.

Aspects regarding the sustainable development of the agricultural sector concern both the producer who must produce food respecting the principles of sustainability, in order to benefit the next generations of a sustainable food supply, and the consumer who must be rational in his choices and informed about the consumed products, through his constant choices influencing both the offer that the producer will generate, and the choices of the future consumers because they will have to choose from an already sustainable market.

According to Gheewala et al. (2020) the 12th SDG aims at “Responsible consumption and production” and considers the agri-food sector for which it highlights the following aspects that need to be improved:

- Food waste
- Degradation of natural resources: land, soil, water
- The impact of agriculture on the environment through greenhouse gas emissions

SDG 12 is closely related to SDG 2 "Zero hunger" which together aims at a production of food that must ensure the food needs of the entire population, now and in the future, providing the need for nutrients, vitamins, and minerals. Both indicators had important increases in Romania, being important for the development of the Romanian agricultural sector.

Production and consumption trends to achieve the Sustainable Development Goals

The trends regarding the sustainable development of Romanian agriculture are directed towards the adoption of the producers of voluntary sustainability standards (VSS). The VSS which guarantee that the product was made according to the standards regarding social protection, environmental protection, food safety and ethical economic principles (Montiel et al., 2014). The International Trade Centre (ITC), through its focus on sustainability, states that in Romania in 2018 there were only 3 voluntary standards that ensure the sustainability of the producer, Forest Stewardship Council (FSC) which promotes responsible forest management and was adopted by 31 companies, the Global GAP certificate which was held by 265 producers and the certification regarding the organic agriculture which is the most important certification present in Romania being 7908 operators registered in the organic system.

In recent years, the number of certificates on the sustainability of economic activities, especially those related to the production and commerce of agri-food products is increasing due to the importance of the agricultural sector in the economy and which must continue to function constantly adapting to challenges (Blankenbach, 2020). The adoption of sustainable practices by Romanian agricultural companies is highlighted by the fact that they are voluntarily certified for international standards on sustainability, by this action being responsible for a development imperative to the agricultural sector, while ensuring transparency of the stages of the agri-food supply chain making available to consumers all the information that guarantees that the company has included in obtaining the product actions corresponding to the 3 pillars of sustainability: economic, social, environmental.



Figure no. 3. The elements of sustainable development of the agricultural sector

Source: Author's own processing

The consumer through his choices propagates the consumption trends, while the producer must constantly adapt to the requirements of the consumers. The current consumer considers when choosing the products that they meet the requirements of sustainability, the main motivation being the care for the environment and the social aspects that took part in the supply chain, especially the producer. Active information of actors in the agri-food supply chain will generate the desire to be a participant in a long-term transformation of the agricultural sector so sustainability requires a proactive involvement that gradually replaces current trends in some involving the concept of sustainability at all stages, both now and for the future.

According to a study conducted by Euromonitor International and published 2021, consumers have created a set of actions that address social and environmental issues, designed to transform their lifestyle into a sustainable one in the figure below being presented the first 3 concrete actions performed by them:

Table no. 2. The main actions of consumers on sustainable food choices

Environmental issues	reduction of plastic and plastic packaging reducing food waste recycling
Social issues	choosing suppliers with similar values choosing suppliers with CSR activity in accordance with its values active involvement in social activities

Source: Euromonitor International, 2021

The trends described above also apply to food choices, especially by supporting local producers and developing short supply chains, buying strictly what is needed to reduce food losses and preferring seasonal products with a tradition in cultivation at national level.

Consumers will be more concerned about sustainability and their selections will balance between social and environmental initiatives and the producers but also sellers need to communicate their sustainability strategies and the long-term attention will be paid to sustainable development of agriculture.

Conclusions

The potential of sustainable agriculture is high in Romania because it can be developed harmoniously in accordance with the pillars of sustainability, generating added value to agri-food production while offering sustainable products. Although Romania, in 2020, occupies the 38th position out of 166 countries in the Global Index Rank, the agricultural potential it had also the opportunities offered by its membership in the European Union can bring it much closer to the podium of this ranking.

Sustainable agriculture, through responsible production and consumption, has become a topic with increasing interest, this is reflected primarily by the number of rising researches conducted on this topic worldwide, as well as by finding as an objective in Agenda 2030.

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Aknowledges



This article is part of the research project “Towards Sustainable Food and Drink Choices among European Young Adults: Drivers, Barriers and Strategical Implications” (SUSCHOICE) (ID 66). SUSCHOICE is a transnational project and part of the ERA-Net SUSFOOD2 with funding provided by national sources (MIUR-Italy, RCN-Norway, PM-BLE-Germany and UEFISCDI-Romania) and co-funding by the European Union's Horizon 2020 research and innovation programme.



This work was supported by a grant of the Romanian National Authority for Scientific Research and Innovation, CCDI-UEFISCDI, project number COFUND-ERANET-SUSFOOD2-SUSCHOICE, within PNCDI III.

Snapshot into Factors Influencing Employees' Readiness for Change Before a Change is Initiated

Diana Andreea Firican¹

¹*The Bucharest University of Economic Studies, Bucharest, Romania*

E-mail: diana.firican@gmail.com

Please cite this paper as:

Firican, D.A., 2021. Snapshot into Factors Influencing Employees' Readiness for Change Before a Change is Initiated. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 457-466

DOI: 10.24818/BASIQ/2021/07/059

Abstract

While change resistance has come to be considered a normal occurrence, change initiators rarely assess its level or nature and create a general change management plan, instead of tailoring it to the presented context. Moreover, most of the existing change management literature and models have focused on the resistance to change only after the actual change has been initiated. Change agents rarely assess the change resistance that is already existent before initiating change, even though this, too, ultimately affects the outcomes of any change once it's initiated. Therefore, the purpose of this paper is to perform a literature review of the English-speaking landscape, in order to identify the sources of resistance before, and not only after, the change has been initiated. The results show that the already existing resistance to change stems from within the individual, as well as from the influence of the group or organization. The factors identified as stemming from the individual are personality, skills and experience, family and cultural background, and personal context outside of work. The factors identified as stemming from the group's or organization's influences are the individual's position or role within the group, relationships within the group, group perceptions and culture. Being aware of the existing level of resistance, as well as the influencing factors, will allow the change initiators to, firstly, address the existing resistance to change before any change endeavor, in order to make the organization overall more resilient to change, and, secondly, to use the change management methods that are appropriate for the context where the change is implemented. This will help organizations achieve better change outcomes.

Keywords

Change management, change readiness, resistance to change, individual change, organizational change

DOI: 10.24818/BASIQ/2021/07/059

Introduction

According to Beer and Noria (2000a), as well as to subsequent research, an estimate of 70% of change initiatives in organizations fail. This has become a widely accepted reference point for change management scholars and practitioners when addressing organizational change. However, Hughes (2011) argues that this number is an overestimation of the actual change failure rate. Irrespective of the reliability of the failure estimate of organizational changes, a vast body of literature has been dedicated to identifying the best ways to manage change in order for it to be deemed successful. The reason is that, change, whether incremental or organization-wide, spontaneous or planned, is a constant and a necessity in the life of organizations and serves as a mechanism of adaptation and growth.

As the vast literature, alongside numerous change management models created throughout the years, shows that the actual characteristics of the change, such as magnitude, scope, duration, etc., have a

significant impact over the way individuals react to change, meaning it will affect the level of resistance shown in the incipient phases, as well as throughout a change initiative (Armenakis, et. al., 2001).

This paper argues that the already existing attitude of the individual towards change (1) affects the resistance faced once a change endeavor is initiated, (2) can be addressed even before a planned change to make the organization more change resilient, and (3) should be taken into account when planning a change in order to better achieve the change outcomes. Therefore, this paper performs a literature review of the English-speaking landscape focused on the resistance to change that is already present before the actual change is initiated, which means that the characteristics of any particular change will not be taken into consideration.

The results show that at an individual level, the factors that might affect an individual's attitude towards change are represented by personal or professional, i.e. personality, skills and experience, family and cultural background, personal context outside of work. Furthermore, an individual's attitude towards change could also be influenced by the professional group they belong to and their context at work within that group. Under this category, following aspects could be included: the individual's position or role within the group, relationships within the group, group perceptions and culture.

In this paper, the literature review is presented to start with, followed by the explanation of the research methodology, the discussion of the results and, in the end, the conclusions are drawn and suggestions for further research are made.

Literature Review

Change resistance can be observed at individual, group, respectively organizational level and on each of these levels, there are a multitude of potential factors influencing an individual's attitude towards change (Rafferty, 2012). However, this paper will focus on the former, i.e. the individual level. The assumption is that there is a large variety of factors influencing a person's resistance to change, stemming from within an individual, as well as from being influenced by the group, respectively the organization the individual is part of. In the following, some of these potential factors will be identified. Some have been thoroughly addressed in the literature, while others have been addressed to a lesser degree, leaving room for further research to enrich the field of resistance, as well as change management overall.

At an individual level, the factors that might affect an individual's attitude towards change can be personal or professional. On a personal level, these could be, as shown in Figure no. 1, among others, their personality, skills and experience, family and cultural background, personal context outside of work.

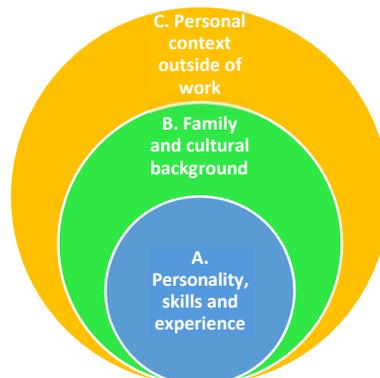


Figure no. 1. Factors defined at an individual level

Source: Author's own design based on literature.

Firstly, under the category personality, skills and experience, the following factors could be included: self- confidence, self-awareness and self-worth, overall perception of themselves, soft-skills, inclination

towards variety or challenge versus comfort or habit, tolerance for uncertainty, resilience towards change.

Secondly, pertaining to the family and cultural background category, the following factors could be encompassed: their education and upbringing, the culture they or their family belong to, the countries they have lived in, etc. Culture plays an important role in the way people think and behave, according to Hofstede (2011) and Meyer (2014).

Thirdly, concerning the personal context outside of work category, the following factors are worth mentioning: age and life stage, i.e. whether a person is a fresh graduate, a parent or close to senior age, life context, such as health, financial stability, mental, emotional and social context, relationships and support system, current events in their lives, such as moving, marriage divorce, etc., overall context in the respective location, such as politics, economic stability, or other occurrences, such as a world-wide pandemic.

The previously mentioned aspects have the potential to influence the attitude a person has towards change, however, they are almost not at all within the control of the change initiators or the organization. Nonetheless, some of them are constant, like the family and cultural background, others may or may not change with time, such as the skills and experiences, while other aspects are prone to change, like the life stages. Nevertheless, given that these aspects might affect the individual's change resistance/readiness, they might be worth taking into consideration.

An individual's attitude towards change could also be influenced by the professional group they belong to and their context at work within that group, i.e. by the individual's position or role within the group, relationships within the group, group perceptions and culture

Regarding the individual's position or role within the group, following aspects could be considered, among others: position with in hierarchy, career stage, tenure, perceived job satisfaction, perceived job security. The position can be formal, i.e. simplistically put whether the individual is a manager or employee, or informal, i.e. whether the person is perceived as a thought leader, change agent, informal authority or otherwise. A person at the beginning of their careers might have a different attitude towards change than more seasoned, respectively individuals closer to the end of their careers. Similarly, individuals working with a company for many years might perceive and react to change differently than individuals who just joined the group. The timing when an individual has obtained the current position, as well as their career advancement plans might impact their perception of change. A person eliciting a high job satisfaction and/or job security might have a different degree of change resistance than a person with low job satisfaction and/or job security. Lastly, the amount of work the individual currently has, i.e. whether the amount of work is perceived as on the higher or lower side could affect whether they are receptive to change.

Regarding the relationships within the group, aspects such as the level of perceived support from the group members and managers, the trust in the group members and managers, the relationships with the peers, the relationships with the manager, their leadership style could influence a person's attitude towards change.

The individual might take on the perception of the majority of the group when it comes to change. If the group is open to change, it is possible that the individual becomes more open to change themselves. Furthermore, just like in the case of personal culture, the culture of the group could have an impact the attitude of the individual within the group, as culture affects, among others, the way individuals communicate, decide, plan or lead. For example, it might be that in a culture where the "uncertainty avoidance" is high, that the change resistance is higher.

Lastly, an individual's attitude towards change could also be influenced by the overall organization they are a part of. Under this category, following aspects could be included: organizational culture, industry, organization's maturity

For the purpose of this paper, the focus will be on the existing change readiness within the individual, respective the influence of the group on the change readiness of the individual.

Change management has been defined by Hiatt (2003) as “the people side of change”. Irrespective of how effective the new processes, how proficient the new technology or how efficient the new organizational structure is, neither of the above will be implemented successfully and sustainably unless the individuals working with and within them are on board with the change.

One of the most addressed topics within this body of knowledge has been the resistance to change of the individual who is impacted by the change (Lewin, 1951). Change resistance has been defined as the behavior of the employees with an organization who are unwilling to accept and support the implementation of an organizational change (Coghlan, 1993). Waddel and Sohal (1998) point out that understanding the individual’s attitude towards change has proven to be a complex and multi-faceted process. This resistance affects the way people perceive change, as well as the outcomes of the change (Hiatt, 2006), both positively and negatively (Waddel and Sohal, 1998).

Some literature deems resistance as the main factor contributing to change failures (Beer and Noria, 2000a) and as negative and counter-productive behaviors from the part of the employees (Waddel and Sohal, 1998). Erwin (2010) calls this the “bankruptcy models”. Alongside Erwin, newer literature suggests that resistance is not a negative trait, but rather a given occurrence that should be taken into consideration in the context of any change initiative within an organization (Golan, 1981). Echoing the same thought, other scholars, like Waddell and Sohal (1998), argue that resistance shouldn’t be pictured as a negative force, causing delays and costs to the change initiatives, but it rather has its own utility, leading to more diligence and better planning from the change initiators. They suggest utilizing the resistance, rather than overcoming it. Kuster, et al. (2015) mention that, without resistance, as a force to tame uncontrolled growth, there would be chaos, reinforcing that resistance does not have the negative impact that early scholars have attributed to it. Lastly, some authors consider that blaming the change resistance of the individual for unsuccessful change initiatives is a way to mask managers’ inability to manage change effectively, both in their approach towards the employees and other aspect of the change, such as towards the process, technology and/or organizational structure related aspects (Erwin, 2010).

However, in order to harness the utility and alleviate the negative effects of resistance, as well as to avoid blaming solely individuals’ change resistance for change failures, the change initiators need to understand the level and nature of the resistance.

A wide variety of change management models have been created throughout the years: Lewin’s Change Model, Kotter’s 8 Steps for Leading Organizational Change, Hiatt’s ADKAR Model, Satir’s Change Model, William Bridges’ Model, McKinsey Seven S Framework, to name a few. A commonality between these models is that they focus on addressing resistance after the change is initiated. Bejinariu, et al. (2017) agree that the highest degree of resistance is to be expected in the incipient stages of a change initiative. What stands out, however, is that there is little body of knowledge that offers approaches for reducing the already existent resistance within the individual, group or organization before an actual change is initiated.

This paper suggests that it might be that knowing the existing resistance/ readiness to change prior to change could result in a better and more suitable approach when initiating the change, thus leading to better change outcomes. As Dent and Goldberg (1999) mention, instead of waiting for resistance to occur, resistance should be prevented, by having measures in place. Watson (1969) suggests that, in order to help a person to be more open to change, it is essential to identify and address their source of resistance. Satir as quoted by Woods and Martin (1984), assures that everyone is healable, meaning that any individual can become open to change, respectively change, when the right sources of resistance are identified and addressed.

Scholars of change management suggest a variety of factors that can potentially affect the change resistance/readiness, which will be reviewed in the following section. Most do not differentiate between the three different already mentioned levels: individual, group, respectively organization, however, there is overlap in the identified factors at all levels.

Armenakis, et al. (2001) define change readiness as readiness of an individual to accept, embrace and adopt change. Kreitner (1992), as cited by Dent and Goldberg (1999), acknowledges that resistance can be both rational and irrational. Coghlan (1993) recognizes that change has both a cognitive and

emotional or affective element. Rafferty et al. (2012) divide the responses into cognitive, respectively affective.

Among the possible factors influencing change resistance/readiness at individual level, we identified: personality, skills and experience, family and cultural background and personal context outside of work.

Golan (1981) explains that the resistance is meant to protect the status-quo, which is perceived as known and safe, while change is perceived as unknown and potentially unsafe. Additionally, Golan states that resistance is associated to “feelings of loss and longing for the past”. Erwin (2010) suggests that people do not resist the idea of change, but rather the loss of status, or loss of comfort. In addition to this, failure to mourn the loss and acknowledge the longing may cause continuing to live in the past and resisting change (Bridges, 1980).

Oreg (2003) notices that some people resist change even if it is in their own interest and believes that this could be attributed to personality traits. Woods and Martin (1984) analyze Virginia Satir’s model of change management developed in 1981, which has its roots in psychology. The authors cite Satir’s suggestion that “communication, self-worth and centeredness” influence how a person reacts to change. According to Satir, a person’s self-worth will affect their responses to stress, resilience, flexibility and adaptability, as well as the abilities to deal with uncertainty. Related to this, the less hope and the higher the fear, the more resistance the individual will exert. Similarly, Dubrin and Ireland (1993) identify fear as a “common denominator” of the resistance to change.

A series of studies identified sources of resistance at both individual and group level. Watson (1969), identifies nine sources of resistance in the personality: homeostasis, habit, primacy, selective perception and retention, insecurity and regression, illusion of impotence: Feeling helpless or perceiving oneself as a victim, superego, self-distrust, dependence: The influence of socialization on the opinion and response of an individual towards an occurrence.

The first eight sources emerge at the level of the individual while the last one refers to the individual as part of a group. The second source echoes Rummelt’s (1995) idea that habits and routines affect change readiness. Rummelt also adds lack of proper analysis, a large number of changes and expectations of obstacles and efforts, as aspects influencing an individual’s change readiness. In their empirical analysis on a sample of 86 top and middle managers, Pardo del Val and Fuentes (2003) deem deep-rooted values, strong beliefs and low motivation due to past failures as the most significant aspects influencing change readiness.

Crites et al. (1994) indicates that discrete, quantitatively different emotions like love, hate, delight, sadness, happiness, annoyance, calmness, excitement, boredom, relaxation, anger, acceptance, disgust, joy, and sorrow might affect an individual’s resistance to change. These could generate from the individual’s personal life, as well as professional life. They can be present before the actual change, as well as be generated by an initiated change.

Dent and Goldberg (1999) analyze five studies: Kreitner, 1992, Griffin, 1993, Aldag and Stearns, 1991, Schermerhorn, 1989 and Dubrin and Ireland, 1993, regarding the causes of resistance identified in each. The causes of resistance identified by three or more studies at individual level were: emotional side effects. The causes of resistance influenced by the group or the environment the individual is a part of, as defined by this paper, were: misunderstanding of the change (lack of, insufficient or incorrect communication), uncertainty, lack of trust, personality conflicts, work group break-up and threat to job status and job security. The latter was identified by all five studies as being a cause of resistance. All of these apply once a change is initiated, however, some of them exist even prior to it, i.e. the lack of trust, personality conflicts and job status and job security, all of them being influenced by the group the individual is a part of.

Rafferty, et al. (2013) mention positive job attitudes, including job satisfaction and organizational commitment as key outcomes that influence change readiness.

Dent and Goldberg (1999) analyzed the change resistance in different models of change management and revealed that both Lewin and Kotter identified that the resistance can be in system. For Lewin,

resistance to change is a system's phenomenon, not a psychological one, unlike some of the previously mentioned authors.

Coghlan (1993) suggests that being part of an environment leads to the adaptation of existing behaviors, attitudes, values and ways of coping. Rogers (1990) identifies three conditions favorable to change, both at individual and group level. Even if the author brings the change agent in discussion, it is possible that the concepts apply also intra-personally, as well as in the relationship with their manager:

1. **Genuineness, realness or congruence:** The change initiator or the change agent understands and owns their own perception and attitude towards the change, while being authentic when dealing with the person upon which the change will be inflicted. This could potentially be applied for each individual and affect the change readiness in a positive way.
2. **Acceptance, airing or prizing:** An open, non-judgmental, accepting environment, where an individual feels safe to express their opinions, reveal their short-comings and ask for help, without fearing losing the other's positive regard of them.
3. **Empathic understanding:** The individual feels genuinely understood by change initiator or change agent, without forced interference. If this is extrapolated for each individual, it might have a positive effect on change readiness within a group.

Pardo de Val and Fuentes (2003) identify in their literature review political and cultural aspects that can influence change readiness: the implementation climate, department politics and team dynamics or emotional loyalties. Even though the authors refer to these aspects once a change is initiated, it can be argued that these aspects also existed previous to the change and affect change readiness irrespective of the nature of a change. However, their empirical analysis only deemed department politics, as well as leadership inaction and collective action problems as significant.

Rafferty, et al. (2013) emphasize the influence that the group has on the individual, mentioning that individuals in a group develop "shared responses" by comparing themselves to other members of the group to assess their own reactions and ultimately converging towards the consensual view. The more time and interaction the individual has with the group, the more they will converge towards the shared responses.

Lastly, the individual's resistance to change can be influenced by the group perception and culture. Hofstede (2011) identifies six dimensions to describe culture: power distance, uncertainty avoidance, individualism vs. collectivism, masculinity vs. femininity, long vs. short term orientation, and indulgence vs. restraint. Meyer (2014) identified 8 scales that define a culture: communicating (low vs. high context), evaluating (indirect vs. indirect negative feedback), persuading (principles first vs. applications first), leading (egalitarian vs. hierarchical), deciding (consensual vs. top-down), trusting (task-based vs. relationship-based), disagreeing (confrontational vs. avoiding confrontation), scheduling (linear vs. flexible time). These aspects affect how individuals, think and behave outside of work, and potentially, also in their professional lives. Meyer suggests that what actually matters, are not the numbers in each scale, but to what degree the culture of the individual is different from the culture of the group, respectively organization.

Research methodology

The literature review intends to provide insights into the sources of the individual's resistance to change identified by change management scholars, while suggesting new potential sources of resistance in the individual and ways these can be used for further research.

For the purpose of this paper, qualitative research methodology has been employed in the form of literature review through which multiple articles have been reviewed and critically analyzed. The discussions presented in this paper have their foundations in a thorough study of the academic literature that deals with change. The pool of data used for research has been gathered through extensive searches over the Internet of web pages and articles published in the English language containing the following keywords: change management, change readiness, change resistance, individual change. Thus, the findings of the article present a picture of the English-speaking landscape in which the concepts have

originated and where they have attracted the most attention. The information gathered from these various sources is pieced together to trace the resistance to change of the individual and the aspects impacting it. Most papers assess this aspect mostly only after a change has been initiated, not before, however, some of the identified aspects can be extrapolated for the existing resistance to change, even before a change is initiated. The aspects have been categorized into stemming from the individual, or stemming from the influence the group or organization have over the individual. In the end, conclusions have been drawn on which model best addresses change in the incipient phases of a change initiative and suggestion have been made for further research.

Results and discussion

The individual's resistance to change is affected by factors existing prior to the change initiation, as well as by characteristics of the initiated change. The factors affecting an individual's resistance before a change is initiated are intrinsically to the individual, as well as influenced by environment: group, respectively organization. The literature review confirmed the assumptions regarding the categories of the factors that influence an individual's change resistance.

Table no. 1 represents a summary of the literature review regarding these factors. The factors within the individual affecting their change resistance can be divided into the following categories: personality, skills and experience, family and cultural background, respectively personal context outside of work. Even though most cannot be influenced by the organization, they influence the resistance, so it might be useful to take them into consideration. The factors pertaining to the group that affect the individual's change resistance can be divided into the following categories: the individual's position or role within the group, the relationships within the group, respectively the group perceptions and culture. These factors are more likely to be addressed and modified by the change initiators to increase the chances for successful change implementation.

Some of these factors are static, like family background, some are dynamic, like life stage or tenure and some can be either static or dynamic, such as skills. This is why, the level of change resistance is not constant and, if the change initiator strives for the accurate level at a given time, they must assess it at that particular time. Furthermore, the more time elapses from the assessment, the more inaccurate will it become.

Conclusion

Being aware of the attitude towards change of the individuals within their teams prior to any change initiative will help managers take the appropriate measures in order to increase their team's change resilience. It will help change initiators tailor their approach into reducing resistance to the level of granularity of the individual, in such a way that it addresses the issues at hand, instead of general ones. It would also reduce the amount of weight that resistance is given in the eventuality of failure of an initiative.

An assessment of the resistance to change existent prior to any initiative being taken, would help change initiators draw conclusion on how to act, e.g. reduce amount of work to make room for people to adjust to the change, take measures to create a more communicative culture, improve recruiting process to bring in individuals more open to change, increase people's skills, decide to delay the change, etc.

A questionnaire or assessment method of the existing resistance to change would allow change initiators draw more detailed conclusions on the levels and nature of the resistance to change of the individuals.

Lastly, it is important to mention that people, more than anything else, are unpredictable. This is what makes change and resistance management challenging. However, accepting that not everything can be accounted for, allowing for continuous adjustment of the measures employed and further expanding the knowledge in this field are the best ways to go about resistance and change initiatives overall.

Table no. 1. Summary of literature on change resistance in individual's

Individual	1. Personality, skills and experience	<ul style="list-style-type: none"> • Protect status-quo (Golan 1981) • Feelings of loss and longing for past (Golan 1981) • Beliefs, attitudes, and intentions (Armenakis 1999) • Deep-rooted values, strong beliefs and low motivation (Pardo del Val and Fuentes 2003) • Self-worth and centeredness (Satir 1984) • Stress, resilience, flexibility and adaptability (Satir) • Ability to deal with uncertainty (Satir) • Fear (Dubrin and Ireland 1993) • Routines and habits (Rumelt 1995) • Homeostasis, habit, primacy, selective perception and retention, insecurity and regression, illusion of impotence, superego, self-distrust (Watson 1969)
	2. Family and cultural background	<ul style="list-style-type: none"> • Power distance, uncertainty avoidance, individualism vs. collectivism, masculinity vs. femininity, long vs. short term orientation, and indulgence vs. restraint (Hofstede 2011) • Communicating (low vs. high context), evaluating (indirect vs. indirect negative feedback), persuading (principles first vs. applications first), leading (egalitarian vs. hierarchical), deciding (consensual vs. top-down), trusting (task-based vs. relationship-based), disagreeing (confrontational vs. avoiding confrontation), scheduling (linear vs. flexible time) (Meyer 2014)
	3. Personal context outside of work	<ul style="list-style-type: none"> • Feelings of love, hate, delight, sadness, happiness, annoyance, calmness, excitement, boredom, relaxation, anger, acceptance, disgust, joy, and sorrow" (Crites 1994)
Group on individual	1. The individual's position or role within the group	<ul style="list-style-type: none"> • Positive job attitudes: job satisfaction and organizational commitment Rafferty (2013) • Fear of loss of status (Erwin 2010)
	2. Relationships within the group	<ul style="list-style-type: none"> • Lack of trust, personality conflicts and job status/ security (Dent and Goldberg 1999) • Team dynamics or emotional loyalties (Pardo de Val and Fuentes 2003) • Relationship to the change agent or manager (Kirschbaum and Henderson 1990): <ul style="list-style-type: none"> - Genuineness, realness or congruence - Acceptance, airing or prizing - Empathic understanding • Developing "shared responses" by comparing oneself with other (Rafferty 2013)
	3. Group perceptions and culture	<ul style="list-style-type: none"> • Modification of existing behaviors, attitudes, thought processes, values and habitual modes based on group's ones (Coghlan 1993) • Implementation climate and department politics (Pardo de Val and Fuentes 2003) • See above Hofstede 2011 • See above Meyer 2018

Source: Author's own research.

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How Do Europeans Travel and Spend? A Pre-COVID Cluster Approach

Rodica Manuela Gogonea¹, Andreea Simona Săseanu², Simona Ioana Ghiță³ and Sorin George Toma⁴

¹⁾²⁾³⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

³⁾ *Institute of National Economy, Bucharest, Romania*

⁴⁾ *University of Bucharest, Bucharest, Romania.*

E-mail: manuela.gogonea@csie.ase.ro; E-mail: andreea.saseanu@com.ase.ro

E-mail: simona.ghita@csie.ase.ro; E-mail: tomagsorin62@yahoo.com

Please cite this paper as:

Gogonea, R.M., Săseanu, A.S., Ghiță, S.I. and Toma, S.G., 2021. How Do Europeans Travel and Spend? A Pre-COVID Cluster Approach. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 467-475
DOI: 10.24818/BASIQ/2021/07/060

Abstract

The planning options for tourist activities take into account the potential tourists' behavior and travel preferences. In this context, the study presents a systematic framework on the travel preferences of European tourists. These are highlighted by the number and types of trips, in which priority is assigned to those oriented towards rural and mountain areas, as well as by trip expenditure related to basic services (accommodation and transport). The analysis involves a clustering of EU countries, taking into account the previously mentioned indicators, in order to identify tourism behavior patterns in European countries. The conclusions take into account the increase of global awareness regarding the tourists' preferences, especially that the orientation towards ecological, green tourist destinations tends to be perpetuated in the current European context, in which the COVID_19 pandemic deeply affects the tourist activity.

Keywords

Tourists' preferences, Average number of trips, Average expenditure per trip, Cluster analysis

DOI: 10.24818/BASIQ/2021/07/060

Introduction

The issue of preferences underlying the choice of tourist destinations is increasingly debated in the literature. It takes into account the practical managerial perspectives that are needed for tourism to continue to be a significant tool in the process of national and global economic growth (Wight, 1996; Young, 1999; Kim and Lee, 2002).

Motivational preferences of tourists are characteristics that influence the choice of tourist destinations (Park and Yoon, 2009). An important role, at the level of each country, is played by the formation of preferences, which takes into account not only its potential, but also the competitiveness of the tourist destination. The attractiveness of a tourist area is a landmark in the development of tourism activities, the characteristics and ability to maintain a competitive advantage being a priority in future choices of potential tourists. Thus, it is possible to highlight a model for assessing the tourist preferences that includes reception and sympathy of local residents, artistic and cultural cities, landscape/environment and nature, hotels and other accommodation, typical foods, cultural events, level of prices/living costs, quality and variety of products in the shops, information and tourist services as well as tourist safety (Chang and Lo, 2014). The travel behavior of the tourist also aims at the desire to experience new destinations and cultures with a sustainable character. Along with the degree of novelty and familiarity

that tourists take into account when traveling, there are also particular factors that take into account the type of accommodation, the type of travel companions, the language of the host community, but also the resources that are least polluting.

All these characteristics have as substrate the orientation towards the development of some tourist activities in the rural and mountainous space. These are the starting point in choosing tourist destinations if we take into account the need for people to escape to less polluted areas, given that daily activities are carried out in conditions of high stress and polluted environment. At the same time, the availability to travel also takes into account the financial possibilities, which influence the total level of trip expenses or the two basic trip services (accommodation and transport).

The article was structured in four parts. The introductory part is followed by a presentation of the main results from the specialized studies, and of the working data and processing methodology. The next chapter includes the presentation and analysis of the results obtained, following the application of the clustering method, in relation to the average values of the six variables. The conclusions' chapter summarizes the results, as well as their significance from the perspective of the future development of tourism in rural and mountain areas, in the context in which the COVID pandemic changes the orientation and preferences of tourists.

Literature review

Studying the preferences and behavior of tourists is very important in creating business opportunities both at the sectoral and national level. Thus, the expenses made by tourists with tourist trips, their distribution by categories of accommodation, transport, food and relaxation influence the economy of the tourist destination region. In identifying and characterizing the tourists' behavior and preferences, some studies have analyzed the level and structure of spending on tourist travel from a macroeconomic perspective (Wu, et al., 2013; Konstantakis, et al., 2017). This approach, in Laesser and Crouch's view, fails to capture some specific aspects of tourists' behavior patterns (Laesser and Crouch, 2006). Instead, an approach to these expenses based on microdata would allow a more detailed analysis of tourists' travel preferences (Lin et al., 2015). Park, Woo and Nicolau (2002) studied the determinants of tourism expenditure, focusing on the analysis of ways in which tourists seek information for travel planning. The study shows that the studied factor induces a decreasing effect on the distribution of travel expenses, with a higher impact at the bottom of the distribution and a weaker impact at the top of it. (Park et al., 2020). In the case of tourists traveling in urban areas, the daily expenses and the allocated budget are associated with the objectives, with the purposes of the trips (Loon and Rouwendal, 2017). At the same time, according to the same study, travel time length is positively correlated with the size of the allocated budget and inversely correlated with daily expenses (Loon and Rouwendal, 2017). Amir et al. analyzed the touristic expenditure patterns of domestic and international tourists in Malaysia, identifying some behavior similarities that consist in tourists' tendency to spend less on transportation and entertainment. Some behavioral differences were also identified, with international tourists preferring to spend more on accommodation and food than domestic tourists. (Amir, et al., 2015). However, tourism activity involves a complex of services engaged in a local economy, and their unsustainable development can put great pressure on the environment, which will eventually have a negative impact on the tourist destination area. The behavior and preferences of tourists in choosing the tourist destination will increasingly depend in the future on the sustainable, eco-friendly nature of the tourist services offered, on the degree of non-pollution of the environment in the area chosen as a tourist destination. An increasingly clear preference of tourists for green, ecological destinations is emerging (Hedlund, 2011; Adlwarth, 2010). Other studies suggest that the preference for a green, eco-friendly tourist destination and the way tourists value it is influenced by the knowledge and attitude of tourists for sustainability. Thus, tourists who place a higher price on a healthy, sustainable lifestyle are willing to pay more for the green tourist destination, but availability also depends on the price level of ecological, sustainable tourism products and services (Pulido-Fernández and López-Sánchez, 2016).

Data and Methodology

For the analysis of the number and type of trips by tourist destination, as well as the EU citizens' expenditure related to basic trip services (accommodation and transport), in the pre-Covid-19 crisis

period, the data series provided by EUROSTAT in tourism field were used. In the variables' selection, the tourists' preferences were taken into account, noticing lately an inclination towards sustainable tourist destinations, less polluted, such as mountain or rural areas. Considering that the number of trips made by the citizens of a state is directly influenced by the country's resident population, to ensure comparability, based on the variables *Number of trips* (both at total level and by types of tourist destinations), the average number of trips per 1000 inhabitants was determined for each state (Eurostat). The resulting variables as well as those concerning the average expenditure per trip are presented in Table no.1.

Table no. 1. Identifiers of variables used and their measurement units

Variables		Units
TANT	Total Average Number of trips, 1 night or over, all countries in the world	number per 1000 inhabitants
ANCT	Average Number of trips, 1 night or over, countryside, all countries in the world	number per 1000 inhabitants
ANMT	Average Number of trips, 1 night or over, mountain, all countries in the world	number per 1000 inhabitants
AET	Average expenditure per trip (1 night or over)	EUR
AETRS	Average expenditure per trip - on transport (1 night or over)	EUR
AEACC	Average expenditure per trip - on accommodation (1 night or over)	EUR

Source: author's selection, based on Eurostat data.

The main descriptive statistical characteristics of the data series used are presented in Table no. 2. Given that the Skewness values fall in the range (-1.96, 1.96), it means that the series tend to be normal, with the observation that TANT and ANCT have a slight left skewness. Regarding the Kurtosis values, they highlight a significant leptocurtic distribution for the TANT and ANCT data series.

Table no. 2. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
TANT	28	502	7099	2442.61	1436.673	1.380	3.045
ANCT	28	20	2384	599.36	531.069	1.605	3.433
ANMT	28	7	540	218.82	160.478	0.515	-0.899
AET	28	124	811	340.32	182.817	0.885	.0141
AETRS	28	29	230	99.21	56.150	0.802	-0.141
AEACC	28	28	263	109.96	68.528	0.780	-0.375

Source: author's contribution

The cluster methodology was used to generate the clusters, starting from the data series $Y = \|y_{ij}\|_{i=1, n, j=1, m}$ corresponding to $m=6$ studied indicators. For this the *z-score* method was applied. In order to generate the Proximity Matrix ($W = \|w_{ij}\|_{i=1, n, j=1, n}$), the Euclidian distance was used (Zaharia, et al., 2017):

$$W = \|w_{ij}\|_{i=1, n, j=1, n}, \quad w_{ij} = \sqrt{\sum_{k=1, m}^n (z_{ik} - z_{jk})^2}, \quad j = \overline{1, m}, \quad k = \overline{1, m} \quad j \neq i, \quad k \neq i, \quad w_{ii} = 0$$

$$z_{ij} = \frac{y_{ij} - \bar{y}_j}{\sigma_j}, \quad \text{where} \quad \bar{y}_j = \frac{\sum_{i=1}^n y_{ij}}{n}, \quad \sigma_j = \sqrt{\frac{\sum_{i=1}^n (y_{ij} - \bar{y}_j)^2}{n-1}} \quad (1)$$

Ward's method was used to determine the distance between clusters (Marinoiu, 2016):

$$\Delta(A, B) = \sum_{i \in A \cup B} \|x_i - m_{A \cup B}\|^2 - \sum_{i \in A} \|x_i - m_A\|^2 - \sum_{i \in B} \|x_i - m_B\|^2 - \frac{n_{A \cap B}}{n_{A \cup B}} \|m_A - m_B\|^2 \quad (2)$$

In (3), A and B are two clusters, m_i is the centroid, n_i is the number of elements from cluster i . and x_i an item. In order to test if the variances of the six data series significantly differ, (the homoscedasticity hypothesis) the Levene's Test was applied, its null hypothesis being:

$$H_{0_1} : \sigma_1^2 = \sigma_2^2 = \dots = \sigma_k^2 \tag{3}$$

The acceptance condition of the null hypothesis H_{0_1} is:

$$Sig.F > \alpha \text{ or } F_{stat} < F_{\alpha, k-1, n-k} \tag{4}$$

Following the acceptance of the null hypothesis H_{0_1} , for testing the significance of the variables belonging to clusters, the ANOVA method was used, whose null hypothesis is given by:

$$H_{0_2} : \bar{x}_1 = \bar{x}_2 = \dots = \bar{x}_k \tag{5}$$

The acceptance condition of the null hypothesis H_{0_2} is:

$$F_{stat} = \frac{\sum_{i=1}^r (\bar{y}_i - \bar{y}_0)^2 n_i / df_1}{\sum_{i=1}^r \sum_{j=1}^{n_i} (y_{ij} - \bar{y}_i)^2 / df_2} < F_{\alpha, r-1, n-r} \text{ equivalent to } Sig.F > \alpha \tag{6}$$

The confidence level used in testing the statistical hypotheses was 95%, corresponding to a significance level $\alpha=0.05$. Evidențierea caracteristicilor și a tendințelor de evoluție a indicatorilor incluși în cercetare s-a realizat prin aplicarea analizei cluster. Highlighting the characteristics and evolution trends of the indicators included in the research was achieved by applying cluster analysis. This analysis created an overview of the distribution of indicator averages both in clusters and at EU level, thus reflecting the distribution of tourists' preferences in terms of number and type of travel, as well as the amount of expenditure on basic services (accommodation) and transport).

Results and discussions

The cluster analysis applied to the six variables concerning on the one hand the number and type of trips, and on the other hand the amount of expenses related to basic services (accommodation and transport) made by EU citizens began with the construction of a dendrogram (Figure no. 1).

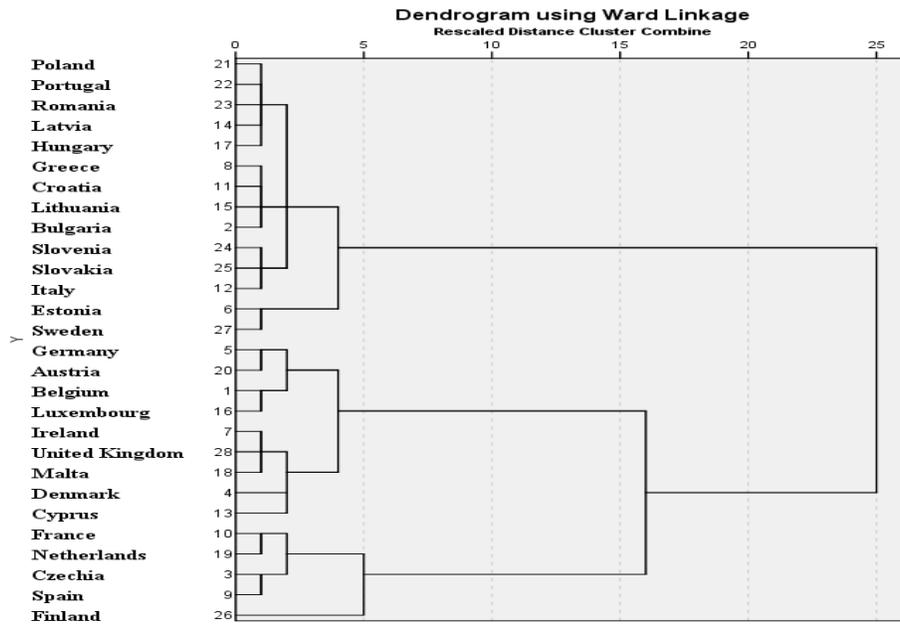


Figure no. 1. Cluster-generation scheme.

Source: author's contribution

The dendrogram in Figure no. 1 shows the grouping of the 28 EU states into six clusters, Finland being treated separately. In terms of the six indicators (TANT, ANTC, ANMT, AET, AETRS, AEACC) the clusters components shown in table no. 3 resulted.

Table no. 3. Cluster components

Cluster	Countries
C 1	Belgium, Germany, Luxembourg, Austria
C 2	Bulgaria, Greece, Croatia, Latvia, Lithuania, Hungary, Poland, Portugal, Romania
C 3	Czechia, Spain, France, Netherlands
C 4	Denmark, Ireland, Cyprus, Malta, United Kingdom
C 5	Estonia, Sweden
C 6	Italy, Slovenia, Slovakia
-	Finland

Source: author's contribution

Next, H0_1 hypothesis regarding the absence of significant differences between the variances of the data series, grouped in six clusters, was tested by applying the Levene's Test (Table no. 4).

Following the testing of condition (4) in Table no. 4, it is observed that all *Sig.F* values are higher than the significance level of 0.05, which determines the acceptance of H0_1 hypothesis. In this context, the ANOVA methodology is further used to test the significance of the belonging of the analyzed variables to the clusters (H0_2 hypothesis).

Table no. 4. Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
TANT	1.012	5	21	0.435
ANCT	1.106	5	21	0.387
ANMT	1.214	5	21	0.337
AET	1.039	5	21	0.421
AETRS	1.531	5	21	0.223
AEACC	1.809	5	21	0.155

Source: author's contribution

The application of the ANOVA methodology led to the results presented in Table no. 5. Taking into account the results of the F test statistic, which are greater than the critical value $F_{crit} = 2.66$, respectively the values of $Sig.F < \alpha (0.05)$, it can be specified that, the null hypothesis H0_2 is rejected. Consequently, all six variables (TANT, ANTC, ANMT, AET, AETRS, AEACC) are significant in terms of cluster membership.

Table no. 5. Results of testing the statistical significance of the average values of the analyzed variables, recorded at the level of each cluster

		Sum of Squares	df	Mean Square	F	Sig.
TANT	Between Groups	20126447	5	4025289	6.444	0.001
	Within Groups	13117297	21	624633		
	Total	33243743	26			
ANCT	Between Groups	3193329	5	638666	11.989	0.000
	Within Groups	1118692	21	53271		
	Total	4312021	26			
ANMT	Between Groups	472535	5	94507	11.996	0.000
	Within Groups	165446	21	7878		
	Total	637981	26			
AET	Between Groups	709136	5	141827	15.413	0.000

	Within Groups	193237	21	9202		
	Total	902373	26			
AETRS	Between Groups	71557	5	14311	22.528	0.000
	Within Groups	13341	21	635		
	Total	84898	26			
AEACC	Between Groups	107759	5	21552	24.613	0.000
	Within Groups	18388	21	876		
	Total	126147	26			

Source: author's contribution

The clusters were ranked in relation to the average values of the three indicators targeting the average number of trips on the three categories (TANT, ANCT, ANMT), but also in relation to the values of the variables related to the three types of tourist travel expenses (AET, AETRS and AEACC) (Table no. 6). At the same time, the classification of the component countries by clusters in relation to the average values of the variables determined at the level of each cluster is present.

C_1 is the second largest cluster in terms of average number of trips to the mountains (ANMT). Germany and Austria are the component countries with more than 306 trips/1000 inhabitants, while Luxembourg and Belgium are below the cluster average value. Regarding the average number of trips to the countryside (ANCT), this cluster is ranked third, with an average of 738 trips /1000 inhabitants, the four countries having the same ranking. Only the *Total Average Number of Trips* indicator shows a slightly different internal distribution of countries than the other two indicators. Germany maintains its supremacy with 3111 trips/1000 inhabitants, followed by Luxembourg and Austria. The countries in cluster C_1 hold the supremacy, with the highest average expenses per trip for all 3 categories of expenses (total, accommodation, transport). At the top of the ranking of the component countries in this cluster there are Luxembourg, Belgium and Austria, while the last place is occupied by Germany.

Table no. 6. The main cluster characteristics

Cluster	Variable	Mean	Std. Deviation	Std. Error	Variable	Mean	Std. Deviation	Std. Error
C_1	TANT	2506	746.735	373.367	AET	629	139.817	69.909
	ANCT	738	336.884	168.442	AETRS	199	29.462	14.731
	ANMT	306	88.127	44.063	AEACC	231	33.322	16.661
C_2	TANT	1284	582.629	194.210	AET	193	69.646	23.215
	ANCT	245	174.650	58.217	AETRS	55	20.505	6.835
	ANMT	91	80.389	26.796	AEACC	50	18.967	6.322
C_3	TANT	2930	292.607	146.304	AET	280	113.916	56.958
	ANCT	1146	307.752	153.876	AETRS	78	37.723	18.861
	ANMT	465	74.247	37.124	AEACC	87	47.843	23.921
C_4	TANT	3045	1351.503	604.411	AET	501	108.541	48.541
	ANCT	358	202.468	90.546	AETRS	140	20.768	9.288
	ANMT	190	104.144	46.575	AEACC	161	28.413	12.707
C_5	TANT	3896	574.171	406.000	AET	228	12.728	9.000
	ANCT	1004	106.773	75.500	AETRS	69	10.607	7.500
	ANMT	60	10.607	7.500	AEACC	77	23.335	16.500
C_6	TANT	1658	646.542	373.281	AET	284	69.169	39.935
	ANCT	286	193.252	111.574	AETRS	75	25.166	14.530
	ANMT	234	123.314	71.195	AEACC	103	27.737	16.014

Source: author's contribution

Cluster 2 (C₂) with the most component countries (9 countries) records the lowest average number of trips for each of the three types: 1284 trips/1000 inhabitants (TANT), 245 trips/1000 inhabitants (ANCT) and 91 trips/1000 inhabitants (ANMT). Hungary, Portugal and Poland have higher than average values for all three indicators, while Croatia, Greece and Bulgaria have lower than average values for all three variables. Latvia has above average values for the TANT and ANCT variables. Lithuania and Romania have the values of TANT and ANMT indicators above the registered averages, respectively. The rest of the component countries of the C₂ cluster show the average number of trips lower than the average values. At the same time, the countries of the second C₂ cluster are characterized by the lowest average expenditures on tourist travel, placing the cluster in last place in the rankings. The first three places are occupied by Greece, Croatia and Lithuania, and the last three places are occupied by Portugal, Romania and Latvia, with average spending values far below the average.

The countries with the highest average number of trips to countryside and mountain are Czechia, Spain, France, Netherlands. The average values of the two indicators for cluster C₃ are 1146 and 465 trips/1000 inhabitants, placing it on the first place, compared to the other clusters. The average of the TANT variable (2930 trips/1000 inhabitants) places this cluster on the third place. The Czech Republic is the country with the highest average number of trips, followed by Spain for TANT and ANCT, respectively by France for TANT and ANMT. Netherland is the component of the third cluster that records the lowest values of the three variables analyzed. At the same time, cluster C₃ ranks third among clusters referring to AETRS and fourth referring to AET and AEACC. Netherland and France dominate the ranking, while the other two countries, Spain and the Czech Republic, are the worst ranked, with the lowest average spending for each of the three variables.

From the point of view of the total average number of trips, the C₄ cluster occupies the second place, with an average of 3045 trips/1000 inhabitants. Denmark and Cyprus are at the top of the list of component countries, above the cluster average. Ireland, United Kingdom and Malta show lower indicator values than the cluster average. Denmark and Cyprus are also in the first place in terms of ANMT. Only regarding the ANCT indicator, the hierarchy is inverse to that of the TANT variable. The two countries analyzed are at the end of the ranking, while Ireland, United Kingdom and Malta are at the top with values higher than the cluster average. Compared to the other clusters, C₄ ranks second for the variables AET, AETRS and AEACC. If for AET and AETRS the first three places are contested by Malta, Cyprus and Ireland, and the last by Denmark and United Kingdom, in terms of AEACC, the situation is different: United Kingdom, Malta and Ireland are dominant in the ranking, and Denmark and Cyprus are below the average level of expenditure.

Sweden and Estonia, the component countries of the C₅ cluster, present the highest values of the TANT variable within the EU. Compared to the other clusters, cluster C₄ occupies the 2nd place in terms of ANCT indicator values, and the 4th place in terms of ANMT indicator values. From the point of view of the expenses with the tourist trips on the 3 categories, the cluster C₅ occupies the fifth place. In terms of AET and AEACC, Sweden has the highest average trip expenditure, with values above 228 EUR/trip for the first variable and over 77 EUR/trip for the second. Estonia has the highest expenditure on the AETRS indicator.

Cluster C₆ ranks fifth in the cluster hierarchy in terms of TANT and ANCT indicators, Slovenia and Slovakia having their values above the cluster average. At the same time, the cluster ranked 3rd in terms of the ANMT variable, with Slovakia dominant in the ranking. Italy occupies the last place in the cluster with the lowest TANT, ANCT and ANMT values. Cluster C₆ ranks third in the cluster ranking in terms of the variables AET and AEACC, and 4th in terms of the AETRS indicator. For all 3 variables, Italy registers values above average, being at the top of the ranking of the component countries. The other two countries (Slovenia and Slovakia) record expenditures below the average values of the cluster for the three variables.

The conclusion is that, following the cluster ranking of EU countries through the average values of the six indicators, but also of the countries within the clusters, Sweden and Estonia (C₅) have the highest average total number of trips/1000 inhabitants, and Czechia, Spain, France and the Netherlands (C₃) are dominant countries with respect to the average number of trips/1000 inhabitants, oriented towards rural and mountainous areas. In terms of average travel expenditure, both in total and for the two

categories (accommodation and transport), Luxembourg, Belgium, Austria and Germany (C_1) are the countries with the highest amounts.

Conclusions

Following the clustering applied on the 28 EU member states, using as classification criteria indicators that characterize the tourist behavior with respect to the number of trips and trip expenditure, six patterns of tourist behavior were identified.

Thus, tourists from the countries in **C_1 cluster** prefer to spend the most important amounts for travel planning, including accommodation and transportation. At the same time, the preference for tourist destinations in mountainous areas, more isolated and far from the hustle and bustle of cities is also well defined, as the average number of trips in these areas is high. In fact, these countries have a great economic power, but also a strongly developed tourism sector. Tourists from the countries of **cluster C_2** have a lower tourist activity, described by the lowest average number of tourist trips, both in total and in rural or mountain destinations. At the same time, they are willing to spend the least on planning travel trips, accommodation or transportation. In this cluster we meet on the one hand, less economically developed countries (former socialist countries), and on the other hand countries with developed tourist activity (like Greece, Croatia or Portugal). Tourists from the countries of the **C_3 cluster** register the highest average number of trips in green, eco-friendly, mountain or rural areas, valuing the relaxation that this type of destination gives. The expenses occasioned by these trips are average, both in total and accommodation or transport. They are not too willing to spend too much on such trips. For tourists from the **C_4 cluster** countries, there is a strong preference for travel, but not necessarily in environmentally friendly tourist destinations, being willing to spend quite a lot on this occasion, both for the entire trip and on accommodation and transport services. The countries in this cluster are more polarized, some located in northern Europe, with greater economic power, while others in southern Europe have a slightly lower development degree. This also explains the higher variation in the values of the indicators in this cluster. The appetite for tourist trips is the highest among tourists from the countries included in the **C_5 cluster**, outlining a fairly strong inclination for rural destinations, full of traditions and far from busy and polluted urban areas. But the expenses with tourist trips as a whole are modest, the tourists from these countries not being willing to spend too much on accommodation or transport. Tourist activity is quite limited for tourists from the countries of the **C_6 cluster**, reflected by a rather small number of trips, and rural areas are not among their favorite destinations, as the average number of trips in these areas is among the lowest. The tourists do not excel in terms of tourist expenses, being rather willing to pay moderate amounts for tourist trips. However, in this cluster Italy stands out, with a more favorable situation of the tourist activity compared to the other countries.

As a tool of economic growth in rural areas, tourism adapts to the tourists' preferences through a variety of development policies and plan strategies, in order to increase eco-efficiency. Thus, there are options related to the management of leisure, the protection of green space, renewable energy. An implementation of eco-efficiency strategies is also envisaged to meet the tastes and interests of tourists, satisfying the needs of community stakeholders. Simultaneously with the orientation of tourists' preferences, their risk-taking behaviors are also taken into account. It may be influenced by their experience, participation frequency and commitment, perception of risky environmental conditions and individual risk compromise (information, experience, other time management constraints or weather conditions) (Steiger et al., 2016). With regard to options for transport services, it is highly recommended to encourage the reduction of energy consumption and pollutant emissions as well.

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Tendencies of the Human Resources Management, Evolution and Development

Mariana Popa (Petrescu)¹, Elena Iancu (Vişan)² and Nicolae Daniel Petrescu³

^{1,2)} University of Craiova, Craiova, Romania.

³⁾ The Bucharest University of Economic Studies, Bucharest, Romania.

E-mail: mpetrescu2021@gmail.com; E-mail: elenavisan55@yahoo.com

E-mail: ndpetrescu@gmail.com

Please cite this paper as:

Popa (Petrescu), M., Iancu (Visan), E. and Petrescu, N.D., 2021. Tendencies of the Human Resources Management, Evolution and Development. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleşea, C. Vasiliu eds. 2021.7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 476-483
DOI: 10.24818/BASIQ/2021/07/061

Abstract

The specialized literature emphasizes the key role of human resources, approached in close connection to the other resources of the organization. The main purpose of this paper is to analyze the human resources management concept, there are a multitude of concepts, ideas and interpretations on the issue of human resources, many theorists trying to delimit over time the concept of human resource management. The research methods used are: review of human resources literature, analysis of the most important works in the field of human resources and human resources training by default. The main results of the analysis aim at enriching the literature in the field of human resources management by proposing two models on the particularities and benefits of human resources training, activities that have an impact on the overall success of the organization. The originality of this paper consists in enriching the specialized literature in the field of human resources management through the two proposed models: Model 1 Adapting the particularities of human resources training to the specifics of the organization; Model 2 The benefits of human resources training for the organization, models that identify new connections between training and obtaining organizational performance by training employees to perform tasks effectively. The two models presented allow the formulation of new interpretations on the particularities and implications, benefits of training and improvement of human resources. The novelty of the models proposed following the study identified new connections between training planning, the need for training, the benefits of the training activity and the overall success of the organization. Practical implications of the main results of the research, outlined by 2 models, consist in improving the human resources training planning activity according to the available training offer, the needs of the organization and the desire to improve its own employees.

Keywords: human resources, training, management, human resources management, career, personnel policy.

DOI: 10.24818/BASIQ/2021/07/061

Introduction

Human resources are interconnected with the other resources of the organization, so only a balance between the resources of the organization can contribute to achieving the goals set in the short, medium or long term (Manole, 2013).

The element of human resources is defined in the literature as representing the totality of activities aimed at the human resources of the organization as well as the achievement of optimal results for both employees and the organization as a whole (Storey, 1995).

The concept of personnel management is approached separately from the concept of human resources management, according to Capon (2000), he emphasizing the fact that human resources management focuses mainly on the role of staff in obtaining results, the “strategic contribution” of human resources to the achievement of organizational objectives (Currie, 2009).

The specialized literature expresses the concept of human resources management in a complex way, but at the same time being relatively recently brought into discussion. Human resources management is an integral part of the company's management, contributing to a good management of the company's personnel policy (Armstrong, 1996).

The development of human resources management allows to increase the employees performances in close connection with the overall performance of the organization (Sitnikov and Bocean, 2012; Barbu, et al., 2019).

Review of the scientific literature

David Goss (1966) defines human resource management as representing: "a diverse body of theories and practices, very flexibly unified by a concern for closer integration of personnel management with the basic managerial activity of the organization" (Currie, 2009).

Armstrong M.,(1996) defines human resource management as “a strategic and coherent approach to managing the most valuable assets the organization has: people who work there and who, individually and collectively, contribute to the achievement of the organization's purpose” (Currie, 2009).

Krulis-Randa (1990), highlights several features of human resource management. Human resources management focuses on the development of human resources by developing their skills for the needs of the evolution of the organization, "employees are seen as people with potential for both growth and development." Thus, it is absolutely necessary to invest in the training of quality human resources. Human resources management emphasizes the goal of employees at different hierarchical levels, namely the success of the organization. On horizontal authority and on the reduction of the hierarchy human resources management makes it possible for the activity carried out, starting from the premise that all employees are dedicated to fulfilling the overall objectives of the organization. Human resources planning is done according to the objectives and overall strategy of the organization, "human resources issues are treated strategically, in an integrated manner. „Human resources management achieves” a concentration of decisions in the field of human resources to be made according to the specifics of the situation by functional managers with the support of specialists in the field of human resources (Currie, 2009).

Storey (1995) emphasizes the distinctive feature of human resource management to gain an advantage over other competitors by managing human resources effectively, using different motivational techniques to stimulate employees' sense of belonging to the organization, and by creating the conditions for the appropriate training and improvement of employees (Currie, 2009).

From the point of view of Donald Currie's style, he highlights two different approaches: the humanistic way and the technical way of approaching human resources. The technical approach puts the objectives of the organization in the center of its concerns, the achievement of quantitative indicators, without having concerns related to the achievement of the individual objectives of its own employees. The humanistic approach to human resource management gives special importance to employees in terms of meeting objectives and gaining a competitive advantage by using the theoretical and practical knowledge of employees, the human potential of human resources requiring constant attention for training and development (Currie, 2009).

Professor Aurel Manolescu exemplifies the detachment of human resources management from general management “Human resources management has differentiated and become autonomous, restricting its problems or object of study, and, consequently, has specialized currently having a well-defined place in general management” (Manolescu, 2001).

Definitions of human resources management are made by Donald Currie: according to David Goss, human resources management is a diversified and unified body in a flexible way with the concern to

integrate as closely as possible the personnel management with the basic managerial activity of the organization by using practices, theories and models. Armstrong defines human resource management as a strategic and well-targeted approach to the management of an organization's main assets: employees who work both individually and in teams and contribute through their work to achieving the goals set by the organization. According to Storey, human resources management establishes a distinct approach to labor relations management that seeks to gain competitive advantage by using the strategy of highly qualified workforce while appealing to the diversity of cultural, structural and personnel techniques (Currie, 2009).

Research methodology

The research methods used in this paper is the review of human resources management literature. The critical analysis of the literature in the field of human resources management led to conception of 2 models regarding the development of human resources: Model 1 Adapting the particularities of human resources training to the specifics of the organization; Model 2 The benefits of human resources training for the organization.

Krulis-Randa brings to our attention the differentiation between human resources management and other management models based on control and compliance as there is a focus on horizontal authority and at the same time the hierarchy will be reduced being a stop of the rigid distinction between employees in the managerial field and employees who do not have management responsibilities. Where possible, the responsibility for personnel management will be transferred to the level of functional managers and the role of personnel specialists will be to advise, guide the functional managers and not to control them in this regard. The way of human resources planning will be done in a proactive way and integrated with the planning of the organization, from the point of view of this aspect, the entire activity of human resources and the problems encountered along the way will be treated strategically as an integrated situation. Will address the idea that the organization's employees are people with growth and development potential and human resources management has the role of identifying employees' needs in career development and at the same time to come up with employee development programs taking into account the evolution requirements of organization. One of the most interesting approaches in terms of human resource management is the concept that both management and executive staff have a common influence and interest in the development of the organization, so implicitly the purpose of resource management human will be to let all employees know that they need to be aware of the influence they have on the development of the organization and achieve the proposed goals. The importance of rewarding employees in an additional way, when the objectives set by the organization are achieved, must not be forgotten. (Currie, 2009).

Among the peculiarities of human resources compared to other types of resources owned by organizations we must mention the investment in human resources is necessary and at the same time beneficial for the organization ,through the substantial contribution to the achievement of a successful activity. Management decisions regarding human resources must be well documented and be adapted to the concrete conditions within the organization. Decisions in the field of human resources must respect the legislation in the field of activity in particular and the legislation of labor in general, as well as create the necessary climate for carrying out the activity respecting the norms of ethics, creating and respecting a value system to ensure transparency and fairness. managerial and operational level. Human resources are made up of employees with different needs, who must be motivated differently, by adapting the motivational system to their needs and aspirations. The emphasis is on meeting on the one hand the organizational objectives and on the other hand the individual ones by creating an adequate motivational system adapted to the distinct needs of the employees. The implementation of the human resources management system must be done by managers with a high value system, which promotes compliance with the code of ethics of the organization, internal operating regulations and applicable legislation in the field. In order to achieve proper management, human resources managers must have real communication with their own employees and promote through equal decisions equal opportunities for all employees. Decisions in the field of human resources are differentiated from one organization to another and highlight social and economic considerations by creating a motivational climate based on the individual needs of the employee in the context of achieving the overall objectives of the

organization (Varzaru and Varzaru, 2013; Varzaru and Varzaru, 2015). Human resources are considered the value-creating resource of the company, which is why it is considered necessary to train and continuously train employees for a quality workforce that contributes to its overall success. Investments in human resources are thus considered absolutely necessary for the success of the organization (Manole, 2013).

The specialized literature knows several definitions of the concept of human resources management, among which we mention: organizational function that contributes to the achievement of individual objectives of employees and general objectives of the organization; ensuring the quality human resources necessary for the development of the company's activity as well as the management of their recruitment, selection, planning, motivation and rewarding activities in conditions of efficiency; the set of managerial decisions that refer to the human resource of the organization, a resource considered a vital one of the organization, ensuring their human dignity; the totality of the decisions taken at managerial level that regulates the manager-subordinate relationship; the concrete ways of creating an organizational framework for the development in optimal conditions of the human resources activity of the organization; achieving the conditions for recruitment, selection, planning, motivation and facilitating the participation of human resources in training courses to achieve efficiency at individual and organizational level (Manole, 2013).

Results and discussion

The human resources of the organization can be delimited as vital resources of the organization, which have the ability to self-regulate and self-develop in accordance with the policy and managerial strategies in the field of human resources that must facilitate access to training and development programs. (Feodor, Kolesnokova, and Salyakhov, 2014).

The main results of the analysis aim at enriching the literature in the field of human resources management by proposing two models on the particularities and benefits of human resources training: Model 1 Adapting the particularities of human resources training to the specifics of the organization; Model 2 The benefits of human resources training for the organization. The research results are outlined in the 2 proposed models, models that reflect the importance of the training activity, the way in which the training activity directly influences the quality of human resources and indirectly the overall quality of the organization's activity.

According to **Model 1- Adapting the particularities of human resources training to the specifics of the organization**, managers must take into account the need of the organization in the field of human resources training, the desire for training among employees in order to establish a high level of organizational performance. Also, according to this model, the possibility of carrying out a quality training activity, by properly selecting a customized training offer from among the existing training offers on market, can be obtained an effective training activity for both the organization and employees (Figure no. 1).

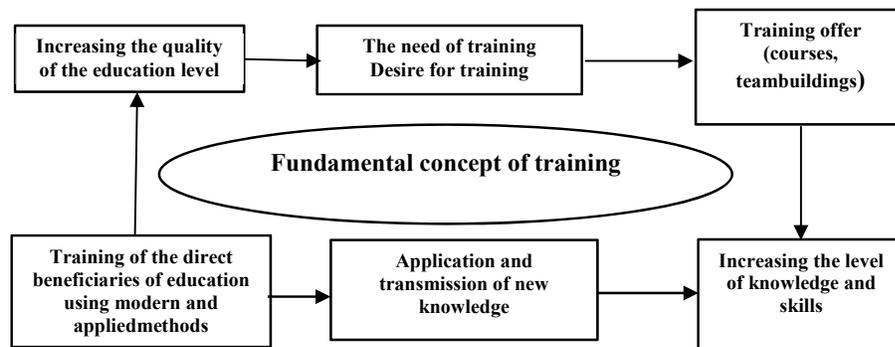


Figure no.1. The fundamental concept of training

Source: Developed by authors

According to M. Armstrong, the evolutionary stages of human resource management are:

- “the empirical stage;
- the stage of well-being or prosperity;
- personnel administration;
- personnel management - development phase;
- personnel management - mature phase;
- human resources management - first phase;
- human resources management - the second phase”(Armstrong, 1996).

Thus, according to M. Armstrong, the 7 stages of evolution from the initial “empirical” phase to the seventh stage, “the second phase of human resource management”, corresponding to the current stage, know a series of developments and attributes. The empirical stage is related to the organization of activities related to work by small business owners, without concrete links with the activity planning activity and without establishing objectives of this activity, the issues being managed during the occurrence of concrete problematic situations, in real time. At this stage it is considered that the success of an activity is closely related to the skills of the organizer of the activity and his ability to make timely decisions in real time. The second stage, called by M. Armstrong as the “stage of well-being or prosperity” is specific to the period of development of capitalism and emphasizes the creation of facilities for employees and the improvement of working conditions rather precarious up to this stage, is for the first time these jobs are created for people, to identify ways to improve the situation of employees, by providing additional services that do not exist so far, facilities related to protecting health, arranging canteens, providing assistance, etc. The third stage of evolution of human resources management called by Mr. Armstrong “personnel management” is the stage in which the staff function is outlined as a result of the development of organizations and legislation in the field of labor protection, employee rights closely related to the trade union movement, mediate the employer-employee relationship. Resolving conflicts arising from employee dissatisfaction with pay, working conditions have led to the emergence of compartments within the organizations that manage these situations, called staff compartments. Although staff departments were not very important in the organizational structure of organizations, they were a step forward in resolving labor disputes and an important step in the development of human resource management: “as many experts in the field, such as George T. Milkovich and Jhon W. Boudreau, the development of labor legislation in the late 1930s and the lack of labor during World War II created new requirements for the development of personnel management. “Personnel management-development phase” is framed as a stage located around the Second World War when a series of factors specific to the reconstruction and expansion of organizations after the Second World War created the conditions for the development of the human resources function”. The main feature of the personnel function is given by the development of an activity aimed at providing labor for organizations during a labor shortage following the Second World War, paying some attention to training activities for certain categories of workers-employees and the improvement of working conditions under the pressure of the increasingly influential trade union movement. The main disadvantage of this form of staff is the lack of a correlation of the activities carried out and the development strategy of the organization in the medium and long term, “which led the renowned North American specialist Peter Drucker to say that, until 1960, personnel management reflects, in particular, its orientation towards “blue collars” (keeping records, filing documents, administering trade union agreements or demands, organizing various anniversaries, etc.)”. “Personnel management - mature phase” is assimilated to the period immediately following the previous one, more precisely 1960-1970 and comes with new elements as a result of a more detailed approach to personnel issues by correlating employees' personal objectives with the organization's strategic objectives. The development of this period is due to a new approach to conflict situations between employees and employers in the context of the existence of specialists in the field of human resources able to manage these situations and a broader legislation governing labor relations. The existing staff function at the level of the organization and appeared in the previous stage, thus knows a remarkable development and evolution both in ensuring the workforce in terms of quantity and quality and in contributing to the achievement of the

overall objectives of the organization. “Human resources management - the first phase” is located around the 1980s, once “the concept of human resources management appears” and has the position of the personnel function within the organizational structure of the enterprises, this being on the same hierarchical level as the other functions of the enterprise, for example production function, commercial function, etc. During this period there is an integration of staff objectives within the other objectives of the organization and a concern for career planning and development (staff management); staff motivation, the provision of financial and non-financial rewards according to the results obtained in carrying out the activity as well as an attention paid to health and safety at work, all this to the detriment of the pressure exerted by the trade union movement previous stage. The novelties of this period are therefore related to the concern for the existence of a clear record at the level of the organization regarding the staff it has, the necessary staff for the next period, keeping track of the costs involved with the staff at the organization level and rewarding employees, the results of individual work; the foundations are laid for motivating employees through financial and non-financial methods. “Human resources management - the second phase” has its origins in the early 1990s and it is characterized by a series of specific attributes that appeared as a result of the evolution of the human resources function, as a function that contributes to the overall evolution and development of the organization, a complex approach to human resources, an approach based on work results, on creating their own organizational culture, a well-being for employees considered at this stage “investment capital for the further development of the organization.” This stage emphasizes the contribution of human resources as a strategic resource to the overall development of the organization, focusing on the best possible training of employees, the achievement of adequate motivation, the implementation of a computerized system of employee records and the need for human resources, creating an adequate work climate and reducing employee-employer conflicts, as well as the existence of “forms of social evaluation, such as: social indicators, social balance, social audit, etc.”(Manolescu, 2001).

According to Model 2- The benefits of human resources training for the organization, the direct benefits of human resources training are represented by the existence of well-trained employees from a theoretical and practical point of view, very well-trained employees in the field of activity in which they perform their work tasks. The indirect benefits of training aim at achieving the overall success of the organization, as a result of carrying out a quality, high-performance activity, adapted to the permanent changes on the market. The central element of carrying out a successful activity is the proper training of its own employees.

We must consider a good planning and organization of management activities to increase efficiency, as well as the particularities of each organization in the context of a constantly changing environment. (Figure no.2)

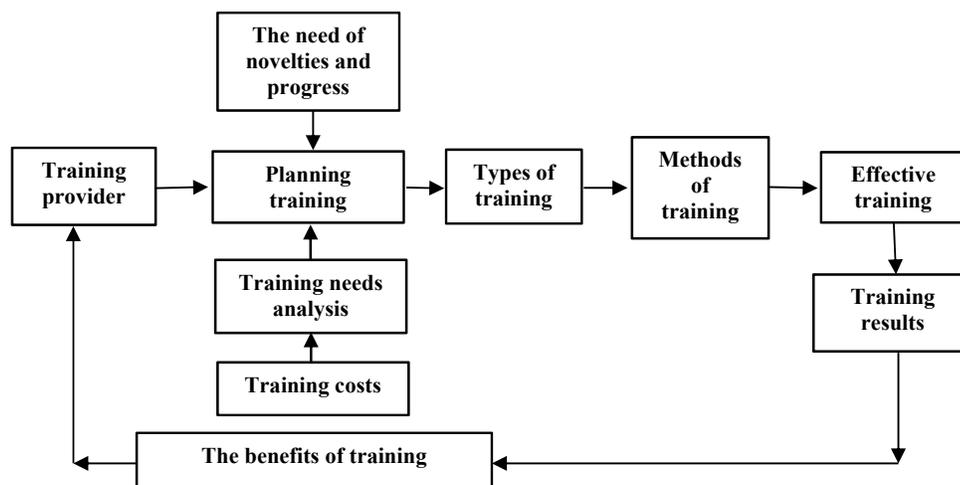


Figure no.2. The impact of human resources management
 Source: Developed by authors

The planning of training and development of human resources involves the analysis of all the factors involved in this process and facilitates the career planning activity and establishing the typology of the necessary training activities.

Research in the field of human resource management focuses on activities such as recruitment, selection, career guidance, training, career management and has developed considerably in recent period of time (Tziner and Birati, 2015).

Conclusions

In conclusion, we can say that the above approaches are similar, mainly focusing on the importance of employees in organizations. By applying the 2 proposed models, Model 1 Adapting the particularities of human resources training to the specifics of the organization; Model 2 The benefits of human resources training for the organization, organizations can improve their overall results in a way by planning the training and improvement activity, by selecting training programs adapted to the needs of the organization and the possibility of career planning of their employees. The idea of implementing employee management closer to the basic activity of the organization is presented. At the same time, it must be taken into consideration that employees contribute to the achievement of the company's objectives. For this reason, an important role will be played both in the selection of employees, their development through training programs and their reward through various criteria. The evolution of human resources management was marked by a series of factors including technological evolution, economic development, social characteristics of the population, achieving the gradual transition from personnel management to human resources management. The essential elements for carrying out the training activity are: identifying the training needs, setting the objectives in close connection with the performances and identifying the resources necessary for the development of the training.

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Working from home in Romania during COVID-19 lockdown across occupations and economic sectors

Adina-Maria Iorganda¹ and Mihaela Matei²

¹⁾²⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: adinamvoda@yahoo.co.uk; E-mail: mihaela.matei16@politice.ro

Please cite this paper as:

Iorganda, A. and Matei, M., 2021. Working from home in Romania during COVID-19 lockdown across occupations and economic sectors. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 484-492
DOI: 10.24818/BASIQ/2021/07/062

Abstract

Based on novel household data, we document the status of working from home in Romania during the 2020 COVID-19 pandemic. Remote work had a sharp increase during the lockdown, showcasing significant differences among different categories of workers' behaviours, pointing to a gendered nature of the practice.

The article is built on the data resulting from a Household Survey distributed on random sampling by the World Bank in Romania at the level of 2,241 households, covering approximately 5,700 individuals.

We have found out that women working remotely were more numerous than men. Moreover, amenable occupations to working from home appear to belong to the specialist, clerks, and skilled and assimilated workers, whereas managers have worked from home to a lesser extent than expected. Finally, the highest numbers of employees working from home were in the education sector, followed by employees in other public, social and personal services and financial intermediation. Remote work in the public administration was modest.

The findings of this research are useful for both companies and public administration representatives. Companies in specific economic sectors that plan to transition into working from home can become aware of their potential remote work by learning from peers. Therefore, they could search for streamlining their organizational processes to allow work from home gradually, which could generate reduced administrative costs, high returns for the environment and better work-life balance for the employees. Public administration may challenge their current practices to increase the share of employees working from home, as we have documented that there is an unexplored potential for remote work in the public sector.

Keywords

work from home, remote work, telecommuting, occupations, labour market

DOI: 10.24818/BASIQ/2021/07/062

Introduction

In Romania, working from home became highly popular only because of the Covid-19 pandemic, as the Romanian Government highly recommended it to promote social distancing. As in other countries all over the world, the Covid-19 pandemic came as a shock, leaving companies across various industries with three options: (i) closing the business completely, (ii) continue business as always with the corresponding healthy risk for the employees or (iii) moving into remote work (Bartik, et al., 2020). The last option was enforced despite the limited existence of procedures regulating remote work and despite the employer's resistance towards reduced control over the activity of their employees. Because

of the pandemic's rapid spread, all employees who could work from home had to work from home in March 2020 during the lockdown.

Using evidence and theory (Karanikas and Cauchi, 2020), we believe that understanding the remote work phenomenon is a first step towards fostering these transitions in Romania, considering Romania is and used to rank before the pandemic on the last places in the European Union (EU) in the number of employees working from home.

Working remotely was not common in Romania before the pandemic (Iorganda and Roman, 2020). According to Romanian legislation, working from home has two forms: teleworking (working from any place, including home, through telecommunication devices) and working exclusively at home (e.g., making candles). Teleworking is the dominant form of remote work in Romania. The legislation on teleworking was approached in Romania in three stages. The first stage was prior to 2018 when Law number 81/2018 regulates teleworking activity. At this stage, Romanian employees had one of the lowest percentages of remote work in the EU, 0.4% (Eurostat, 2017). Until 2018, the Romanian legislation was among the fewest in the EU with no provisions regarding teleworking (not even at the level of the collective labour agreements).

In the second stage, Law number 81/2018 regarding teleworking activities was adopted, and the number of employees working from home increased to 0.8% in 2018 and 1.4% in 2019. The law was drafted following the lobby of employees in the IT sector, considering the labour shortages in the field and the necessity to regulate the practice of some international companies that already allowed employees to work remotely. It is a well-known fact that remote work is performed in Romania predominantly by international corporate companies in big cities. Because of their foreign management, corporate companies are more open to transferring international practices regarding remote work to their Romanian branches.

Nevertheless, despite a consistent increase in the number of employees adopting this practice, Romania was still ranking in the last places in the European Union (before Bulgaria) regarding the number of employees working from home in 2019 (Eurostat, 2019).

The third stage of transition towards remote work started in 2020. The Romanian Covid-19 pandemic lockdown was one of the most restrictive in the world as going outside the house was forbidden (a specific declaration paper was required), except for labour, medical, or limited shopping purposes. Consequently, working from home became a new norm that forced all public and private organizations to change their practices. Moreover, to stimulate teleworking activities, the Romanian Government provided a one-off stimulus package (2,500 lei, approx. \$600) for employers to purchase necessary equipment that facilitates working from home for their employees. Moreover, 400 lei (approx. 100\$) can be deducted by the employers for the monthly expenditure of each employee working from home, starting 2021.

The sanitary restrictions implemented in the context of COVID-19 pandemic in Romania have generated an increase in stress, which affects different professional or social categories, including students (Roman and Plopeanu, 2021) or refugees (Cimpoeru, et. al., 2020).

In this paper, we use the data provided by a WB household survey to inform the extent of remote work during the 2020 Covid-19 pandemic lockdown in Romania. The World Bank conducted the household survey in Romania in the last weeks of July/August 2020 and queries about the habit of working from home in March-May 2020, when the whole country was under complete lockdown restrictions.

The article provides interesting data about the job profile of Romanian employees working from home in Romania during the lockdown, facilitating a deeper understanding of the behaviours and contexts influencing this change in working habits. This behavioural change may provide potentially more stable perspectives for work arrangements in some occupations and businesses and not only a temporary response to the health crisis. We explore the wingspan of remote work in terms of gender and occupations of people working from home and across economic sectors. We talk briefly about the scale-up possibilities of remote work after the pandemic ends.

Review of the scientific literature

There are some proven advantages of using flexible working arrangements with positive effects on administrative efficiency. For instance, some researchers point to the effects on long-term productivity of the company correlated with the temporal flexibility oriented on the employee, rather than on the organization as a whole (Eurofound, 2012). According to the International Labor Organization (ILO) (2019), available alternative working arrangements are also linked with organizations' efficiencies, reducing sick leave and paid absence and reducing absenteeism. Moreover, if managed properly, it can contribute to improved productivity and firm performance.

Telecommuting grew steadily both in popularity and uptake over the last years worldwide, and companies have been working over the years to improve the work packages of employees with telecommuting activities (Picu and Dinu, 2016).

In terms of gender, it appears that working from home is more appealing to men rather than women (Wheatley, 2017), as women prefer reduced working hours to care for household responsibilities. This seems to be the case at the European level as in 2019, male employees who sometimes worked from home (9.3%) outnumber female employees (8.6%) (Eurostat, 2019). However, this aspect is reversed in employees usually working from home, as women are more prone to remote work (5.7%) than men (5.2%). Romania follows the same trend, as the number of women employees usually working from home (1.1%) is almost double the number of men (0.5), whereas the number of men sometimes working from home (0.6%) is slightly higher than that of women (0.5%) (Eurostat, 2019).

To further explore the extent of remote work in Romania, we build our analysis on the authors' previous research in the field (Iorganda and Roman, 2021), who theoretically assessed the applicability of working from home in Romania across occupations in the International Standard Classification of Occupations in Romania (COR). They conclude that almost 46% of occupations in Romania can be performed totally or partially from home, especially in the following occupational groups: professionals, managers, technical, and associate professionals.

The potential of home-based work to continue after the Covid pandemic depends on a number of factors, such as business conditions at the industry level and labour demand (Bick, Blandin, and Mertens, 2020).

Research methodology

This study investigates the relationship between the COVID-19 pandemic and the changes in work arrangements, based on descriptive analysis. Higher levels of remote work for many employees are hypothesized. Since the study evaluates the WFH, teleworking, telecommuting, e-working, flexible workplace, and remote work in the COVID-19 context, we used quantitative methods of analysis.

For the researched we have used the results of the Household Pulse Survey (HPS) carried out during the lockdown in Romania, among a sample of the 2,600 employees, representative for the Romanian adult population in terms of age, gender, occupation and population in the area of residence.

The Household Pulse Survey provides data to help understand the experiences of Romanian households during the coronavirus pandemic. The survey asks questions about how employees have been affected by the ongoing crisis. Data collection of the HPS began on July 2021 and ended in August 2021. World Bank developed technical documentation of the survey in Romania.

The HPS sampling frame consisted of housing units where at least one cell phone number was known. The survey recruits 5,700 participants, estimating that the employees' amount (2,630) would detect differences in work arrangements individually (remote work, teleworking, and flexible work arrangements) during the COVID-19 pandemic in Romania.

Employees were selected as the aim of this study was to examine how the COVID-19 crisis fed into the employment of household members and behaviors, the differential impact of the COVID-19 outbreak on employees work arrangements, and to capture if the worker was able to work from home (home-based work) during the lockdown, whether they had to work from somewhere else (office, shop, hospital), or whether they were unable to work at all (in which record they may have stopped working).

The HPS produces pandemic impact estimates using the answers from responding persons. It is important to consider possible availability biases: it is possible that the estimates may be biased if answers from respondents differ from the potential answers of nonrespondents. Due to the sampling procedure, although many respondents were involved, we cannot confirm that the data is representative of the general population of Romania.

We supplement these findings with the statistical data provided by Eurostat on the percentage of employed persons working at home (lfsa ehomp) and persons doing online training courses (isoc_ci_ac_i), as well as findings from the Eurofound survey (2020). To extract and interpret the raw data for the analysis, STATA software was used.

Results and discussion

The extend of working from home in Romania

During the 2020 lockdown in Romania, the remote work is still modest, as only 22% of the interviews declared having worked from home in May 2020. When compared with the EU average of 37% (Eurofound, 2020), we observe that the situation did not improve overall. Moreover, the WB survey findings show that more Romanians work from home than estimated (18.4) by the Eurofound survey (Eurofound, 2020). As presented in Table no.1 below, out of 2,637 respondents, 576 (22%) were working from home during the 2020 Covid-19 lockdown, 638 (24%) were not working at all, while the great majority of respondents still worked from the office (54%).

Table no. 1. Working from home during Covid lockdown across gender

	<i>WfH</i>	<i>Not WfH</i>	<i>Not working at all</i>	<i>Total</i>
Gender				
Male	230	857	345	1,432
Female	346	566	293	1,205
Total	576	1,423	638	2,637

Source: Authors' elaboration

The female workers dominated the batch of employees working from home, with 60% of women working from home. The situation could be explained by the dominant figure of women within the household, thus creating pressure on employers to allow women to telework while taking care of small children. Additionally, the education sector, where women employees are predominant, has the highest number of employees into forced remote work as all schools in the country went online.

The spread of employees working from home across occupations and economic sectors

The occupations that count the highest number of employees working from home are the professionals (40%), the clerks (13.89%), the skilled and assimilated workers (8.85), the service and trade workers (8.33%), and the elementary occupations (7.64%). As observed in Table number 2 below, female workers are most prone to work from home across various occupations. However, it is interesting to notice that this trend is reversed in the case of skilled and assimilated workers, where men appear more prone to remote work than women. Plant and machine operators (1,22%) and armed forces personnel were the last to work from home (0.69%) due to their work profile, requiring specific interaction with different types of machinery that cannot be controlled remotely and need immediate intervention (if the case).

Table no. 2. Working from home during Covid lockdown across occupations

<i>Occupations</i>	<i>NACE code</i>	<i>Gender</i>		<i>Total</i>
		<i>Male</i>	<i>Female</i>	
Specialist in various fields of activity	2	74	160	234
		32.17	46.24	40.63
Clerks	4	29	51	80
		12.61	14.74	13.89
Skilled and assimilated workers	7	29	22	51
		12.61	6.36	8.85
Service and trade worker	5	18	30	48
		7.83	8.67	8.33
Elementary occupation	9	13	31	44
		5.65	8.96	7.64
Technician or specialist in the technical field	3	22	17	39
		9.57	4.91	6.77
Skilled worker in agriculture, forestry, and fishing	6	23	15	38
		10	4.34	6.6
Legislator, senior official, or director	1	14	17	31
		6.09	4.91	5.38
Plant and machine operators, machine and equipment assemblers	8	5	2	7
		2.17	0.58	1.22
Armed forces	10	3	1	4
		1.3	0.29	0.69
Total:		230	346	576
		100	100	100

Source: Authors' analysis

An interesting aspect emerging from the analysis is that employees in elementary occupations (7.64) appear to have worked from home more than employees in managerial occupations (5, 38%) during the pandemic. This aspect suggests that management occupations have not reached their potential in terms of amenability of working from home, especially because management activities corresponding to managerial occupations are more amenable to (tele)working than elementary occupations, that usually involve face to face interaction or manual handling of specific objects (Iorganda and Roman, 2020). The situation has some potential explanations. A possible reason for the low number of managers not working remotely is the lack of willingness to give up the control manifested through their physical presence in the workplace. This could reflect the manager's lack of control and mistrust in the employee's capacities to perform, especially during a crisis. For example, it was observed empirically that during the Covid-18 lockdown, managers in various economic activities, including in the public administration, preferred to be on the office premises most of the time.

Table no. 3. Working from home during Covid lockdown across economic sectors

Economic sector	Code	Gender		Total
		Male	Female	
Education	12	45	126	171
		19.57	36.42	29.69
Other public, social and personal services	14	42	58	100
		18.26	16.76	17.36
Financial intermediation	9	25	42	67
		10.87	12.14	11.63
Transport, storage, and communications	8	28	19	47
		12.17	5.49	8.16
Wholesale and retail trade	6	15	22	37
		6.52	6.36	6.42
Manufacturing	3	14	18	32
		6.09	5.2	5.56
Real estate, rental, and commercial activities	10	14	11	25
		6.09	3.18	4.34
Agriculture, forestry, and fishing	1	13	10	23
		5.65	2.89	3.99
Public administration and defense	11	10	13	23
		4.35	3.76	3.99
Health and social work activities	13	6	15	21
		2.61	4.34	3.65
Construction	5	9	3	12
		3.91	0.87	2.08
Hotels and restaurants	7	5	6	11
		2.17	1.73	1.91
Supply of electricity, gas, and water	4	4	0	4
		1.74	0	0.69
Mining and quarrying	2	0	3	3
		0	0.87	0.52
Total		230	346	576
		100	100	100

Source: Authors' analysis

As expected in this context, the share of employees in the education sector that have worked from home during the first lockdown (especially women) is the highest (see Table no. 3). This is explained by the closure of all schools throughout the country and the urgency to move into remote work. Remote education is atypical and negatively impacts the learning outcomes, especially for young elementary students, so this situation is not expected to continue after the pandemic ends. However, forced remote learning might be conducive towards more sustainable practices of remote learning, including at the firm level, as the offers for online training increased. For instance, during the pandemic, the Romanian

Governments amended the law to allow all training providers to switch to online training, where possible. At the European level, forced transition into working from home appears to have stimulated online learning, as more people got involved in learning activities. During 2019-2020, participation in online training activities increased by 4%, from 8% in 2019 to 12% in 2020 (Eurostat, 2020). At the international level, during the pandemic, Coursera developed a worldwide partnership to reskill employees with more than 100 Governments.

The analysis showed (see Table no. 3 above) that working from home was prevalent in the financial intermediation (11.63), the transport (8.16), and the wholesale and retail trade (6.42) economic sectors. Employees in public administration and defense were among the last categories to work from home (3.99), ranking approximately in the same position as employees in health and social work activities (3.65%) who carried the burden of the pandemic and little above employees in construction (2.08). Women have worked from home more than men during the lockdown across all economic activities, except those traditionally performed by men, such as transportation, real estate, agriculture, and construction.

The reduced number of individuals working from home in the Romanian public administration could be explained by the resistance to change and the managers' reluctance to losing control over employee's activities. Moreover, remote work was limitedly used in the public administration before the pandemic. However, the Covid-19 pandemic accelerated the change. Because of the lockdown, the Ministry of Labour in Romania urgently issued a set of criteria to facilitate working from home. One of the most important criteria to be allowed to WFH was to have children under care and suffer from chronic disease. According to a recent survey conducted by the National Administration Institute (2020) in Romania, 49% of management staff and 62% of execution staff have worked from home during the pandemic, and this appears to be a new experience for them (only 2% used teleworking before the pandemic).

Conclusions

Remote work is a sustainable work practice that has been highly encouraged in Romania because of the pandemic while forcing various economic sectors to change. Even though Romania is still in the last place in Europe regarding remote work, our analysis shows that an important shift towards this practice was initiated, and there is also room for improvement. We have observed that women are more prone to working from home than men. Moreover, employers in education, financial intermediation, and transport sectors shift more rapidly into remote work than employers in public administration. Also, we observed that employees in managerial occupations such as legislators, senior officials or directors were less amenable to working from home than employees in elementary occupations. Furthermore, we believe that enforced telework practices will probably continue after the pandemic ends, considering the experience gained by employers, HR managers, and employees in the field.

In a nutshell, working from home has various benefits: (i) reduced administrative costs for the companies, (ii) a better work-life balance for the employees, and (iii) reduced carbon emission due to reduction in commuting for the government decarbonization objectives (The European Green Deal, 2019). The analysis findings have significant practical implications in terms of economic activities and sectors that the Government can further support to increase the uptake of the working from home practices. On the one hand, managers can be encouraged to give more autonomy to employees and lead by the power of example, working from home to a more significant extent than in the past. Equally, public administration decision-makers can further reform their practices to encourage a large-scale uptake of working from home at the level of the employees. Last but not least, the Governmental support for stimulating remote work should be continued, permanently evaluated and directed towards the economic sectors that are more amenable towards working from home. The Public Administration sector must be purposefully reformed to increase the remote work uptake.

Acknowledgements

The authors would like to thank Reena C Badiani-Magnusson, Senior Economist in the World Bank, for kindly sharing the microdata from the Household Pulse Survey for this analysis.

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The Role of Internal Audit in the Context of Corporate Governance

Carmen Țurlea¹, Marian Valentin Moldoveanu² and Maria Rafaela Cazazian³

¹⁾²⁾³⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: turleacarmen@yahoo.com; E-mail: moldoveanu.valentin3@gmail.com

E-mail: rafaela_cazazian@yahoo.com

Please cite this paper as:

Țurlea, C., Moldoveanu, M.V. and Cazazian, M.R., 2021. The Role of Internal Audit in the Context of Corporate Governance. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 493-498

DOI: 10.24818/BASIQ/2021/07/063

Abstract

The hereby paper aims at presenting the issues related to the Sarbanes-Oxley Act, act which was adopted in the summer of 2002. This US federal law is based on a controversial history when large companies have been accused of fraud. The advent of this Act has had a significant impact on publicly traded companies on the New York Stock Exchange and has influenced their internal controls. This paper aims at analyzing the main elements required for the adoption of the Sarbanes-Oxley Act, which was the impact and how this internal control helps companies to develop. This paper will present studies related to the costs required to implement a control as well as the research on the needs of companies concerning the complexity of controls. We can summarize the concept of internal audit by the fact that the activity is appropriate to a procedure of monitoring the efficiency of an economic activity, useful especially for the management, a method that helps having control over the business and monitoring its development. At the same time, by keeping track of internal controls, the audition may have the effect of reducing the risk of fraud and non-compliance with the financial rules of the audited company. The effect of an audit is rendered by its utility, low risk of fraud and control.

Keywords

Sarbanes-Oxley Act, Internal Audit, Corporate Governance, Performance, Management

DOI: 10.24818/BASIQ/2021/07/063

Introduction

Considering that we are witnessing the process of globalization, the increase of competition, the role of internal audit becomes more and more important in the hierarchy of an organization. The introduction of the internal audit is a crucial step in the evolution of either public or private entities, being significant in increasing performance, limiting the possibilities of corruption fraud, detecting and correcting deficiencies. The internal audit is a qualified system that contributes to the improvement of an entity's activity, in the management process placing an important emphasis on internal controls. By organizing the internal audit activity, the governance is provided assistance so as to manage the organizational processes, to increase the efficiency of the controls, to achieve the purpose and objectives of the entity (Abbott, et al., 2004). In carrying out a mission the auditor analyses and examines analytically based on materials - supporting documents, information, statements, related to a reference system or in accordance with a methodological tool, the quality, level of functionality and performance of the auditable object. The internal audit report is the standard tool for communicating the results consisting of conclusions and recommendations. The report must have a coherent, unitary composition, it must be sustained by supporting documents, it must contain relevant information that

is communicated to the management in connection with the auditable field. The internal audit approach is materialized in the consultancy granted by formulating some recommendations in the report, which once implemented will ensure the improvement of the audited activity and will bring added value. The moral principles that govern the internal audit activity are integrity, objectivity, confidentiality and competence according to the Deontological Code. In the literature there are several definitions, both nationally and internationally, assigned to the concept of internal audit due to the need to adjust this activity to the evolution of the business environment in general and to increase the importance of internal audit at different levels of the organization.

The internal audit has now been extended to all types of organizations, operating regardless of their field of activity. It also has an important role to play in ensuring the efficiency of financial reporting, which includes it as a key element in ensuring confidence in the business environment and capital markets (Klein, et al., 2002). In terms of its conception and general acceptance, we believe that the internal audit is treated as a manifestation of control of fairness and analysis of financial performance, providing objective and independent assessments of risk management, control and leadership, starting from what the annual accounts and supporting documents reflect in accordance with the law and regulations published in the field, as well as ensuring transparency and disclosure of information, thus contributing to the achievement of the entity's objectives and increasing its performance (Drogalas, et al., 2016). In its evolution, the internal audit has outlined its importance in the corporate governance system as well as in the risk management system by gradually undertaking an independent and objective opinion on the different levels within an organization.

Literature review

The beginning of the third millennium was marked by a profound development in terms of globalization of markets, thus pursuing the economic and socio-cultural development. Unity is pursued not only in speech but also in thinking, as far as the form of the organization of companies is concerned, as well as the way they are audited and managed. Therewith, the accounting principles and methods and practices for the drawing up and presentation of financial statements are followed (Jain and Rezaee, 2006).

For the development of this economic sector, several international conferences are held in different parts of the world, where the debate on this issue was pursued, while also pursuing the obstacles and difficulties that companies face in the process of globalization. The method of organizing and running privatized companies was called Corporate Governance, the OECD principles being as follows: "Corporate Governance is expressed through a set of relationships between the company's management, its board, its shareholders, other holders of securities; at the same time, it provides a structure through which the necessary means are established to achieve these objectives and the monitoring of the pursued performance". This concept is based on rules and regulations aimed at pursuing the administration and management by the board, with the interest of winning new investors or satisfying the existing ones (Lin and Hwang, 2010).

Through the concept of Corporate Governance we can also emphasize the fact that it establishes the structure and objectives of the company, the way in which they are achieved but also the pursuit of performance. By imposing this form of organization, the aim was to change the way of operation and the government to establish the appropriate legal framework, thus reducing risks, accelerating performance, thus having a free gateway to financial markets (Drogalas, et al., 2016). At the same time, this form of organization has improved the way in which the management carries out its activity, thus generating transparency and social responsibility. Through this new form, the marketing for goods and services also grew, the increase of its ability being significantly visible. In the absence of clear rules, chaos would have been generated in the way companies would have been operated, thus encouraging fraud and false promises, lies and other elements that could not be controlled. This new form aimed at finding a regulation based on business, which can give creditors and investors a fair financial picture (Jo and Kim, 2007).

Nowadays, this form of organization is becoming more widespread globally, and in order to ensure the success of the corporation and the efficient combination of a large mass of capital from numerous

investors and to find an administration that is carried out effectively with a large number of employees and owners, we find four features:

- Free movement of shares;
- Legal personality;
- Centralized management;
- Limited spread of investors;

Research methodology

In order to achieve the proposed objectives on the topic addressed, the study will be based on specific methods of scientific research. The methodology of scientific research that we will use in this study combines qualitative research with the quantitative one. Generally speaking, we will use the method of document analysis for data collection, the main method used is the observation one, which is appreciated as the most common method in research. Scientific observation means the careful and systematic follow-up of certain facts so as to observe the essential or differential aspects.

Results of the research

The Sarbanes-Oxley Act 2002, also known as the “Public Company Accounting Reform (Listed Companies) and Investor Protection Act” or shorter “SOX” is a law issued in U.S. in 2002 that sets new standards, improved for the Boards of Directors, the management and audit/accounting firms of all public companies. The U.S. Congress called the Sarbanes-Oxley Act 2002 to protect investors from the risks of accounting fraud in corporate activities, based on rigorous reforms to improve corporate financial shortfalls and to prevent corporate accounting fraud. The emergence of this law had a consequence followed by the big scandals that shook the business environment, for well-known companies such as: Enron, Tyco International, Adelphia, Peregrine Systems and Worldcom. The purpose of this law was to restore investor confidence and cover the disadvantages of companies in terms of security and fraud protection. The Sarbanes-Oxley Act of 2002 consists of eleven sections or titles containing provisions on additional responsibilities of the corporate board, criminal sanctions and it imposes the Securities and Exchange Commission (SEC) to implement decisions on compliance requirements. A public agency, called the Public Company Accounting Oversight Board or PCAOB, has also been set up to oversee, regulate, inspect and discipline accounting firms in their role as auditors of public companies listed on the stock exchange. This law is not addressed to private companies but only to those that are listed on the stock exchange. In the 11 titles it contains, SOX aims at:

- Additional responsibilities of the Board of Directors
- Independence of auditors
- Corporate governance
- Evaluation of internal controls
- Improving financial information

The second section of the SOX Act sets standards for the independence of the external auditor in order to limit conflicts of interest. Furthermore, the new requirements for the appointment and approval of auditors, the rotation cycle of mission partners and the reporting requirements of auditors are provided. A particularly important aspect is that the provision of non-audit services is restricted to audit clients, for instance consulting services. Section 404 is the most discussed and debated aspect of the SOX Act, which requires both the governess and the external financial auditor to report on the adequacy of the company's internal control over the financial reporting. For the companies concerned, this is the most expensive aspect of the law to be implemented, as documentation and testing of accounting, financial policy textbooks, important procedures and automatic controls require considerable effort. According to section 404 of the law, the management is responsible for the design and operational effectiveness of the selected internal controls related to significant accounts and relevant statements.

Furthermore, an "internal control report" as part of each annual report must be drawn up. The report must state “the responsibility of the management to establish and maintain an adequate internal control

structure and financial reporting procedures” and also “contain an assessment, at the end of the most recent fiscal year of the company, of the effectiveness of the issuer's internal control structure and procedures for the financial reporting”. To this means, managers generally adopt an internal control framework, such as the one described in COSO, one of the most well-known international models of internal control. Both the management and the external auditor are responsible for conducting their evaluation and for the conclusions drawn regarding the adequacy of the internal control over the financial reporting.

SOX 404 compliance costs are a tax of inefficiency, encouraging companies to centralize and automate their financial reporting systems. This is obvious in the comparative costs of companies with more decentralized operations and systems, compared to those with more efficient centralized systems. The costs of evaluating manual control procedures are dramatically reduced by automation. For smaller companies, the cost of implementing the requirements of section 404 of SOX has a disproportionate impact on it because it involves a significant fixed cost involved in completing the assessment. For example, in 2004, U.S. companies with revenues of more than \$ 5 billion spent 0.06% of revenue on SOX compliance, while companies with revenues of less than \$ 100 million spent 2.55 %.

The added value of SOX is that the auditors' opinion accompanied by the financial statements is based on a well-defined procedure and rules. Following an external audit control, the auditors will test the procedures applied by the company and also its internal control, and in the end an opinion will be expressed on the two elements. The role of internal auditors is to evaluate the company's internal processes, which include corporate governance and the applied accounting system. They aim at tracking certain elements that are intended to be in accordance with the laws, rules, accuracy and time of financial reporting together with the data collected, thus helping to achieve efficiency in identifying current or possible risks before they are discovered by an external control. Their role in an internal audit process of a company's operations and corporate governance is critical in that the 2000 Sarbanes-Oxley Act aims at pursuing legal responsibilities for compliance with the financial statements. SOX is applied identically through audit controls, and financial integrity along with the accounting application standards have helped form a method of using standard management. While internal controls are expensive, by implementing a properly applied control system, the company can be helped to have increases in terms of efficient operation, the ultimate goal being to prevent fraud.

When talking about the implementation of a SOX control we should keep in mind certain factors that can influence the costs related to the implementation so that the forecasting is done in the fairest and most efficient way. Depending on the needs, risks and vulnerabilities of the company, control will provide added value and security for investors. But the most important factor underlying these elements is the field of activity of the company. Depending on the field, all other elements are influenced in such a way that everything related to the implementation of a SOX control is directly influenced by the field of activity where the company carries out its activity. Specialists have concluded that it is particularly important to consider the field when referring to the number of controls and the complexity of the controls of companies that apply SOX. It is necessary that when talking about the internal audit of the company to mention the number of internal controls that the company applies. We can say that when a large number of controls is present, the company is very strict in terms of security and fraud prevention. When establishing an internal audit control, the most important element is determined by the field of activity and the risks which the company is facing. However, it is important to establish that not only the numbers of controls are important but also how a control is applied as well as its complexity.

Risks are the most important elements to consider when establishing the criteria of an internal control. In the case of some companies, depending on the field of activity as well as other vulnerabilities, controls are established so as to cover all needs. In most cases, in order to fully cover the risks and avoid fraud, companies have to implement a large number of internal controls, so as to cover everything that involves their ultimate purpose. It is also important to state that a significant element that can influence and determine their number is related to costs. The estimated costs for implementing the Sarbanes-Oxley Act in the company's internal controls are high enough, which can make it difficult for internal auditors to determine how these controls are designed.

We can thus argue that the number of internal controls is determined by the needs and possibilities of the company. The relationship between auditors and corporate governance changed when the Sarbanes-

Oxley Act was adopted in 2002. SOX came up with new strict rules that changed the way in which the internal audit was performed as well as the evaluation of such controls. The disadvantage of these new rules was generated by the fact that most of the resources were allocated for the implementation of SOX controls but not for improvements.

In 2006, PWC conducted a survey of U.S. companies which apply SOX and found that more than half of their resources were required when the controls were implemented. The purpose of the internal audit is to determine whether the internal policies established by the corporate governance are complied with, which indicates the importance of such controls and added value to the company. The audit committee is considered to be a subcommittee of the board of directors that plays a very important role in corporate governance and internal audit by monitoring the activities of managers on financial disclosure. A study conducted by the Canadian Institute of Chartered Accountants (CICA) in 1981 demonstrated that there are 5 main factors that point out the responsibilities and objectives of the internal audit committee such as:

- assisting the board of directors in corporate governance and other actions related to financial reporting;
- facilitating communication between the external audit and the board of directors;
- validating and ensuring transparency in financial reporting;
- helping in the communication between the administration within the company and the external one, managers or auditors;
- ensuring the independence of external auditors.

Conclusions

All companies listed on the US stock exchange must comply with and apply the provisions of the SOX law. However, we must consider that although the listing is on the American market, the activity of companies is in other countries, which also influences the labour market when we think of auditors. The major problem facing large companies is related to the training that must be provided to employees so that they get to know very well the law required to be able to develop SOX controls and ensure that they are SOX compliant. Of course, the effects are visible in the costs that the company allocates for labour as well as the longer time needed to become aware of the Act and to be sure that it is properly applied.

Sarbanes-Oxley has brought to the attention, not only of those in corporate management, the impact on the changes required to improve the company's performance and the risks they are exposed to, but also the fact that economic education plays a particularly important role in future employee decisions. Concluding on everything stated above, we can say that these changes have resulted in modifications brought not only to the legal framework but also to the business environment and the educational one, thus all these changes having an interest to each party involved in a more or less significant way. To improve performance, this set of new rules helped identifying the shortcomings in the business environment and the famous scandals that helped shape this law being a great example to pursue in order to present the consequences and effects of a system lacking a well-established infrastructure, but also to highlight the connection between a system of management, accounting, auditing, technology and finally education, where practically the path of a future professional begins. Through all these aspects that helped to form the opinion of a specialist, it was demonstrated that Sarbanes-Oxley together with Section 404 was not just a new law but also a new business model.

Concluding on everything analysed, we can state that the process of implementing a SOX control is extensive, it is achieved over an extended period and it requires not only high costs but also qualified people. Since the employees of the companies do not hold all the required information, the companies are bound to allocate costs for their drawing up, fact which influences the figures of the amounts allocated for the implementation of internal controls.

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Model Risk and Importance of Validation

Elena Mitoi¹, George-Aurelian Tudor² and Ioan-Codrut Turlea³

¹⁾²⁾³⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: elena.mitoi@centralbank.ie; E-mail: george.tudor@cig.ase.ro;

E-mail: turlea.codrut@gmail.com

Please cite this paper as:

Mitoi. E., Tudor, G.A. and Turlea, I.C., 2021. Model Risk and Importance of Validation. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 499-509 DOI: 10.24818/BASIQ/2021/07/064

Abstract

The article focuses on presenting the evolution of the credit risk modelling and practices as well as sets supervisory expectations around the validation of the models build in accordance with the expectations set by the Basel Accords (Basel I, Basel II and Basel III) or the more recent International Financial Reporting Standard 9 Financial instruments (IFRS 9) and Basel III: finalizing post crisis reforms as well as the importance of model risk and model risk management.

Since the introduction of the Basel requirements, the evolution of quantitative models was driven by regulatory expectations and framework id est (i.e.) financial institution's choice to apply the Internal Rating Based (IRB) approach: foundation or advanced for credit risk, market risk or for operational risk.

The IFRS 9 standard requires institutions to use of more advanced modelling techniques in order to be able to estimate both 12 months and lifetime credit losses. The new expected loss model requires financial institutions to ensure more collaboration between the different departments, in comparison to the IAS 39 (International Accounting Standard 39) where the expected credit loss (ECL) computation is no longer the sole responsibility of the finance or accounting department instead, it requires using the input and collaboration of several stakeholders. For example, accounting, risk, macroeconomic departments (if they used in the forecast of macroeconomic conditions) Treasury, IT etc. in order to produce the IFRS 9 outputs.

Given the arguments presented above, we consider this article can be used by a large range of stakeholders such as financial institutions (board of directors, internal audit, the validation function), external auditors or supervisors to understand the importance of model risk and model risk management in the decision-making process to assess the impact on the accuracy of the model's outputs and their limitations.

Keywords

Model risk, Basel, IFRS 9, resilience, strategy, financial crisis

DOI: 10.24818/BASIQ/2021/07/064

Introduction

The 2008 crisis has shifted the focus of both academia and supervisors from a decentralized approach of developing, monitoring and assessing models to an integrated approach, based on model risk management. The new view proposes a more risk-sensitive approach towards the quantification, validation and assessment of models and model risk in financial institutions.

Following the 2008 financial crisis, the International Accounting Standards Board (IASB) issued in 2014 the complete version of the International Financial Reporting Standard 9 (IFRS 9) “Financial instruments”, which is expected to address the shortcomings of the International Accounting Standard 39 “Financial instruments: Recognition and Measurement” (IAS 39). The IAS 39 standard required “Incurred Credit Losses” to be estimated however in practice this was found to lead to a “too little too late” approach to credit loss provisioning leading financial institutions to be underprovided for to withstand the financial crisis. IFRS 9 seeks to address these shortcomings by requiring institutions to estimate expected credit losses incorporating forward-looking information. The IFRS9 standard came to force starting 1 January 2018.

The paper begins by outlining the evolution of Credit Risk Models, starting with the Basel requirements and focuses on identifying the organizational structure required to ensure an adequate impairment estimation framework is set up. Furthermore, it highlights the concerns around the impact of inadequate models over the institution profitability through model risk management.

From an academic perspective, Derman (1996) defines model risk from a market risk rather than a credit perspective as the risk of using assumptions that are not plausible or realistic. Furthermore, Kato and Yoshida (2000) define and classify model risk by distinguish between market and credit risk models i.e., the risk the market risk model does not accurately assess the price of securities and the risk that the credit risk model does not accurately assess future losses. In addition, Rebonato (2003) considers model risk from a market risk perspective, the focus on being assessment the variability of the assumptions used across institutions; this variability across market participants can lead to large differences between the mark to market models, hence the values/prices of the securities would differ significantly. He also presents the main elements of model risk referring to operational errors, the use of unrealistic assumptions, sudden changes in market conditions that could not be predicted or incorporated in the models. More recently, Morini (2011) noticed that during and following crises, institutions tend to use more simple models which would include the most recent stress conditions within the assumptions used for modelling purposes.

Literature review

Regulatory frameworks interaction - Basel requirements vs IFRS9

The economic environment is characterized by an asymmetrical distribution of information and constraints impact both corporate governance and risk management of the financial institution. Hence the regulations around models and risk management aim on ensuring the models’ outputs are reliable and adequately understood due to the increase of the reliance of quantitative models, which results in the decrease of model risk.

The paper discusses the development of risk management and its role in capital and impairment estimation. The evolution of the credit risk modelling practices is marked by the following milestones: Basel I; Basel II; the 2008 financial crisis, **Basel III** and its update and **IFRS 9**.

The Basel Accord has set up the basis for the prudential supervision by bringing risk assessment, measurement and modelling to the focus of the supervisor’s attention. Ever since the drafting of the first Basel accords it was linked to the evolution of prudential supervision i.e., during the early 1990s, supervisors emphasize market risk and trading portfolios with the amendment in 1996 of the first Basel accord. The second and third Basel Accord has put more emphasis on credit risk and operational risk. In more recent years of the post-crisis reform, i.e., Basel III: Completing post-crisis reforms continues to provide more risk-sensitive solutions to account for the lessons learned during the 2008 financial crisis i.e., providing further clarifications for the modelling requirements and expectations for credit risk, counterparty credit risk, market risk and operational risk.

Among the first models developed and used are pricing models Black and Scholes (1973) option pricing model which considered volatility skew. Adrian and Shin (2008) research focuses on making the assessment of relevant key indicators before and during the 2008-2009 financial crisis. During this period, the financial institution’s behavior changes i.e., the risk and leverage indicators increased as

asset prices rose, this led to the institutions having to actively managed and adjusting their balance sheet in order to remain compliant with their internal limits while trying to mitigate the volatility of asset prices. In more recent years, Le Leslé and Avramova (2012) conclude that modelling choices affect the institutions' incentives in the choice of assets i.e., the trade-off between assets carrying a low-risk weight ensuring a strong capital ratio and assets which would have high returns hence high-risk weights due to their increased risk.

The use of models has always been on the agenda of the regulatory and supervisory bodies. One of the proposed solutions to mitigate the risk of having different capitalization for financial institutions bearing similar risks is the use of more straightforward and convergent modelling methodologies as proposed under the Basel III Accord as well as the European Banking Authority (EBA) guidelines. The aforementioned guidance fosters and intends to ensure convergence of the modelling methodologies used across the institutions i.e., the computation of regulatory capital, economic capital, stress testing, impairment, however as there is less stringent guidelines on the IFRS 9 calibration process, initial results highlight that this might not have achieved in practice. Supervisors expect that the models are tailored to the institution's specificities and are risk sensitive. From a supervisory perspective, the convergence of the outputs is desired in order to allow supervisors to understand the reasons behind the variability of results i.e., the differences in the key risk drivers in the riskiness imbedded in the institution' portfolios e.g., loan to value, days past due, restructuring profiles, geographical distribution and not only the use of a less conservative methodology.

Historically, regulation and supervisory actions have followed the economic cycle, hence in the aftermath of the 2008 crisis the supervisory policy and guidance improved by focusing on enhancing the transparency and ensuring the model outputs are understood by all relevant stakeholders. Furthermore, supervisors want to ensure level playing field across different jurisdictions hence rely on common methodological expectations and guidance given the increase of the role of models in computing capital requirements and impairment.

Basel I set the foundations of the risk framework, even though it was simplistic and risk insensitive.

It introduced the "sandbox" concept i.e., limits in line to the financial institution's risk appetite. This was mostly seen as a reporting requirement and often left in charge of the accounting function which monitored the limits and took actions to ensure they remained within the pre-defined thresholds.

Under Basel I the risk and financial functions worked independently as its requirements were risk insensitive.

Financial institutions had to respond to a challenging environment with complex and evolving financial productions which required the managing of the economic risks included in the risk adjusted profitability metrics (risk adjusted return on capital – RAROC). These models were built using value at risk metrics and were often included in the risk appetite frameworks of the institutions.

After the introduction of Basel I, the risk and accounting functions were working independently and there was no real intent to work towards the convergence of the accounting and risk data.

The critical moment in the development of risk models was the introduction of the Basel II requirements. The Internal Rating Based (IRB) approach ensured the Pillar 1 capital requirements became risk-sensitive and specific to the risk profile of each financial institution. Furthermore, by defining the Pillar II and the Internal Capital Adequacy Assessment Process (ICAAP) the updated supervisors require institution to develop models that capture both normative and economic perspective of the capital needs ensuring that the two perspective inform each-other. This change made the risk and accounting functions to collaborate to ensure both economic capital and regulatory capital requirements are always met. Furthermore, institutions started aim to factor the capital impact in their pricing strategies and ensure they remain compliant both from an economic and normative perspective. However, no consistency was ensured between capital planning and economic and regulatory capital requirements.

The lack of integration between the strategy, finance and risk areas lead to financial institutions taking risk above the acceptable risk levels.

The supervisory reaction to the 2008 financial crisis led to the development of the Basel III and Basel III completing post-crisis reforms which provide more guidance on the requirements set up by Basel II, without having a significant impact on modelling techniques.

Furthermore, from an accounting perspective the IFRS 9 standard was introduced to share a new perspective of the impairment modelling practices. The standard requires the impairment models to be risk sensitive, based on economic forecasts, considering multiple scenarios and ensuring the accounting and risk functions interact in order to capture the entire suite of risks faced by the institutions concerning its exposure to credit losses. The expectation is that the IFRS 9 model interacts with the stress testing, budgeting, economic capital and regulatory capital frameworks.

The regulatory and accounting changes have led to organizational changes to support the processes i.e., integration between the risk, finance and strategy functions, this dissolved the traditional boundaries, in order to enable an integrated risk framework and capital management.

In the post-crisis global environment, where financial institutions operate across multiple regions and business lines, this approach allows financial institutions to benefit from an integrated risk framework and become more risk resilient. Under this framework, the business functions help identify and capture synergies among the financial institution's different business units while the risk function also makes sure that economic and regulatory capital are calculated consistently by the institution.

Research methodology

One of the first research techniques used for the purpose of this article is the literature review. This was carried out by reviewing previous studies such as the results of academic papers as well as the research and guidance presented by the International Accounting Standard Board, the European Banking Authority, the European Central Bank or the Federal Reserve Board in order to understand what the model limitations and their implications on the macro-economy are as well as on an idiosyncratic basis. Furthermore, the authors have used the previous research and guidance to understand the current requirements and expectations set around models and model management as well as to form a view on the limitations of the current framework.

Following the research and information stage, the authors focused on providing a discussion using qualitative methods. The study focuses on presenting the results of the outcome of the data collection i.e., focus group and one to one interview with experts in model risk from various countries i.e., named the outcome of the review of 28 experts carried out between May-August 2020 as presented in Table 1 below:

Table no 1. List of experts interviewed for the IFRS 9 assessment

Experience/ Field of expertise	Number of experts
Over 15 years	13
External Audit	1
Accounting	4
Validation	3
Internal Audit	5
Between 11-15 years	5
External Audit	1
Accounting	2

Validation	1
Internal Audit	1
Between 5-10 years	8
External Audit	4
Accounting	1
Validation	2
Internal Audit	1
Less than 5 years	2
External Audit	1
Validation	1
Total	28

Source: Authors' processing 2021

However, from the 28 persons which were initially selected for the scope of the interviews/focus groups, only 25 have accepted and communicated their views with the authors.

As part of the research the following questions have been addressed:

Question 1: "Do you consider that the corporate governance arrangements have changed significantly over the last 10-15 years?"

Question 2: "Do you consider that model validation and model risk should be the focus of corporate governance over the next few years?"

Question 3: "Do you consider that there is a stronger connection between the accounting and the risk functions?"

Question 4: "Have you identified significant synergies between the IRB and IFRS 9 models?"

Question 5: "Do you consider that you need additional guidance/supervisory expectations on the treatment of model risk?"

Overall, the role of this qualitative research was to attempt to understand first-hand the impact that models and model management have on the financial institutions. The views of the different professionals have been used to inform the results and discussion section presented below.

Results and discussions

This section of the paper aims at bringing together the information obtained first-hand from practitioners on the impact that models and model management have on the financial institutions. The views of the different professionals have been used to inform the results and discussion section presented below.

Model risk management and the importance of validation in the IFRS 9 context

Financial institutions are considered riskier than other market participants due to their risk-taking activity. The presence of securitizations, asset-back securities, derivatives, financial instruments with embedded optionality expose the institutions to higher risks coming from changes in market conditions; furthermore, due to their broad range of internal and external stakeholders their failure would have a high impact over the entire economy as shown by the 2008 crisis. Furthermore, the institutions' risk increases with the use of more complex models (credit, market or operational risk models) used under the Basel II requirements for the computation of Pillar 1 requirements or, more recently the models used for the computation of impairment losses under the IFRS 9 standard.

The 2008 crisis revealed that senior executives and the management body (board of directors and supervisory committee) possess a limited understanding of the complex risk models in place in their institutions. Hence, as a response to the failure of financial institutions worldwide, corporate governance became the target of both academia and supervisors i.e., the general consensus was that, in order to better quantify the risks faced by financial institutions corporate governance and risk management should be integrated into decision making process.

More specifically, under IFRS 9 model risk arises from either data errors, methodology or assumptions used. The institution could lack sufficient or accurate historical data used for the computation of the key model components i.e., conditional probability of default (PD) and loss given default (LGD) parameters. The forward-looking information used in the estimations might not be representative for the external forecasts (in the case of institutions developing internal estimates). Furthermore, the forecasted elements could lack representativeness for the current and future behavior of the portfolio.

In recent years, supervisors developed guidelines and started setting expectations underpinning the processes and the responsibilities decisions taking in financial institutions, in particular those linked to risk related activities and models in order to ensure the resilience of financial institutions to the complexity of models.

As such, many of the models used by the institutions (additional to the regulatory capital models) are used for managing daily business needs; this includes pricing, strategic planning, asset-liquidity management, impairment computation or capital planning including stress testing.

Hence, the direction is towards implementing an integrated process ensuring the roles and responsibilities are set up clearly, for both development and validation of models according to minimum quality standards. The aim was to ensure the independence between the model development and validation phases, and that the senior executives and management body, understand the limitations of the models and assume them by challenging and approving the models for use.

The Federal Reserve Board set up one of the first supervisory expectations for Model Risk Management (MRM) in 2000 through the SR 11-7 regulation which outlined requirements for model development, validation and governance in order to ensure the robustness of the process. Adequate MRM implies building, implementing a robust model which is used in practice and a sound model validation process to assess the ongoing adequacy of the model outputs. As such, its core is an adequate internal governance structure that sets up a practical framework with defined roles and responsibilities for model development, validation, as well as the identification of model limitations around assumptions and methodologies used. Furthermore, the governance structure should ensure the adequate management bodies have the authority to restrict model usage.

In the European Union among the first legislations that made reference to MRM are the Capital requirements directives (CRD II) and the Capital requirements regulation (CRR IV) in 2013. Hence, financial institutions subject to the CRR and CRD requirements, started assessing and including model risk as part of their operational risk capital quantification. In accordance with articles 3.1.11. and article 85: “institutions manage and implement policies and processes to evaluate the exposure to Model Risk as part of the Operational Risk”.

Furthermore, the European Central Bank and the European banking authority have defined MRM through the Supervisory Review and Evaluation process (SREP). Model risk is an integral part of SREP assessment through which, among other supervisors assess the institution’s exposure to model risk arising from the use of internal models across its business lines and operations. Particular focuses on being placed to the extent and purpose of the models used as well as their role in making decisions process i.e., integration across risk, accounting, business strategy, pricing strategies. From a regulatory perspective, supervisors assess the extent to which the Management Body and Senior Management understand the limitations and challenge the use of models. The EBA SREP Guidelines define model risk from two perspective depending on the area impacts:

- From a capital perspective, model risk could relate to the underestimation of own funds requirements through the use of regulatory approved models which show deterioration signs

i.e., from this perspective, model risk is addressed through the incorporation of overlays or margin or conservative in the specific risks to capital assessments (exempli gratia (e.g.) the IRB PD and LGD model deficiency are addressed as part of the credit risk assessment);

- From a profit and loss perspective, model risk is related to have poor implementation or improper use of all other models (except the regulatory approved models) deployed by the institution for decision-making purposes (e.g., pricing, evaluation of marketable financial instruments, computation and allocation of economic capital, monitoring of risk limits, etc.). From this perspective the risk is assessed as part of operational risk, hence any deficiencies and limitations should be quantified from the point of view of additional losses that the use of inappropriate models can generate.

In accordance with the above presented guidelines, expectations and regulations, the MRM framework is expected to include at a minimum a complete model inventory that allows the institution to have a holistic view of the risks faced through the use of models as well as the estimate possible impacts due to the shortcomings or misuse of models. Furthermore, it should establish mitigating actions to address the uncertainty and model deficiencies and limitations. This process should be surrounded by a strong governance framework which has clearly defined roles and responsibilities, as well as policies, procedures to formalize the process.

Model risk management and IFRS 9 – through the eyes of stakeholders

The authors have carried out a study on IFRS 9 and model validation consisting of 5 questions on a total sample of 28 participants, of which only 25 answers were provided to the assessment team. The aim of the survey was to understand the implications of the IFRS 9 standard introduction and model risk management as seen through practitioner's eyes.

Overall, 22 of the 25 participants to our study considered that the corporate governance arrangements significantly changed over the last 15 years, with the 2008 financial crisis having the most significant impact. When discussing more in detail the modelling assumptions and expectations around models 3 of them considered worth mentioning that while the 2008 financial crisis could have been predicted (as an end tail event) and considered as part of the unexpected loss estimates, the sanitary crisis noticed in 2020 because of to the coronavirus would have been more difficult to predict. While such events could happen, they were the view that its impact is difficult to be assessed especially from the loss perspective (expected and unexpected), given the significant governmental support observed across the European Union.

Their answers represented the natural transition from appreciating the significant efforts carried by the European Union and the United States supervisors to ensure that model governance is adequately implemented to try to avoid the “too little too late” effect noticed in the 2008 crisis.

From the 25 participants 20 consider that the corporate governance arrangements around model validation and model risk should benefit from increase focus, the arguments provided being: the increased role of models in order to improve profitability as well as to incorporate the outcome of a risk-based assessment into pricing strategies, loan origination (granting process), resource management (allocation of funds to the most profitable lines of business).

When discussing about the connection/ interconnectivity of the accounting and risk functions in the context of IFRS 9 only 16 of the 25 participants considered that the role and synergies between the different departments of the financial institutions have increased, with 7 participants disagreeing with the statement, in their view – IFRS 9 has additionally introduced complexities to models and poses significant limitations both from a modelling and from a validation point of view. The main challenges mentioned were: the estimation of lifetime losses – significant concerns over the use of limited data and poor modeling capacities, complex methods which increase model error, inconsistencies between the IFRS 9 models and the economic capital models or IRB models used in the estimation of capital needs.

Considering the models used for IRB purposes as the most frequent used models before the implementation of IFRS 9, participants were required to express their view on the existence of

synergies between the IFRS 9 and IRB model. There is a strong agreement (23 participants) that there are significant synergies between the IFRS 9 and IRB models. The following elements have been brought up: the use of the same definition of default, the adjustment of the long run average probability of default to the point in time philosophy, the move from a downturn loss given default estimate to a point in time assessment. In addition, institutions that already had in place a robust stress testing framework the macroeconomic variables forecasted/used in the generation of the stress losses can be adapted to meet the IFRS 9 criteria.

From the current state of the available guidance and legislation the authors wanted to understand if the participants consider that there is need for additional guidance around model risk management. The majority (23 participants) would welcome additional guidance especially around the way the true and fair view of the financial statements could be ensured when significant management overlays need to be applied as the models are not able to capture external events for example the coronavirus impact. Another issue raised was the lack of clear guidance around the incorporation of lifetime macro-variables, namely in the context of volatility and timing of default recognition.

Overall based on the interviews carried out, the authors compiled some suggestions around the way IFRS 9 governance arrangements are expected to be implemented in financial institutions. The suggestions are presented in the next section.

IFRS 9 governance arrangements

In 2012 the Basel Committee for Banking Supervision presented its expectations around governance arrangements in relation to the review and control process i.e., the three lines of model defense:

- the first line of defense - represents should set up controls performed by the business-owner within the business unit primarily responsible for the process;
- the second line of defense is ensured by an independent unit within the institution assessing if the first line's review has been adequately performed in order to identify, followed up and resolve the identified issues;
- the third line of defense usually performed by internal audit ensuring that the processes through which the first and second line operate are appropriately defined, have no material gaps and are adhered to in practice.

The IFRS 9 standard does not prescribe requirements for the validation of the models used in the expected loss calculation, hence the institutions must rely on the more specific guidance issued by Basel Committee on Banking Supervision (BCBS), 2006 and EBA, 2007 for the validation of the models used in the Basel requirements capital calculations. Furthermore, specific guidance for the IFRS 9 standard has been issued by the EBA in the Guidelines on credit institutions' credit risk management practices and accounting for expected credit losses.

The following suggestions and recommendations with regard to the governance arrangements and parameter refinement are proposed in line with the guidance and comments received from the participants to our survey.

In order to ensure an adequate computation of the ECL the financial institutions must set in place adequate governance arrangements where data and model governance, including sound development, validation and back-testing process are the building blocks of an appropriate ECL framework.

Where possible, financial institutions have leveraged on existing process i.e., forecasting, stress testing and regulatory capital functions.

The ECL process should ensure an appropriate segregation of duties i.e., model development and model validation should be independent functions, furthermore internal audit should be reviewing the process.

The risk function is expected to be in charge of the quantitative models used for estimation of the probability of default (PD), Loss given default (LGD), Exposure at default (EAD) and ensures they are

continually refreshed in order to comply with the point in time criteria by incorporating the adequate forward-looking information and forecasts and most recent available information.

Following the development or refresh of a model, a thorough validation process should be carried by the validation department (independent to the model development team). After obtaining reasonable assurance the chief risk officer should be providing the sign-off of the ECL.

After the modelling process is complete, the accounting department is expected to assure that the output is in compliant with the accounting principles and required financial disclosures. Once these requirements are ensured, the chief risk officer should provide it is sign off. Following this process, the ECL estimates should be further discussed at board level as well as by the credit, risk and audit committees. Another option for the latter governance structure is the development of joint credit, risk and audit committee sessions to discuss and oversee impairment (ECL) results.

Following the assessment of the board committees, the management can propose overlays to address specific shortcoming and are based on objective assumptions, given the use of point in time estimated leads to pro-cyclicality, hence management's actions would try to reduce the pro-cyclicality of the models by proposing overlays.

Hence the financial institutions should ensure the finance and risk functions work together to understand the need of such overlays and try to integrate them within the models.

At least on a quarterly basis the accounting and risk functions should analyze and assess if there have been any significant changes that should be considered in the models e.g., the macroeconomic environment shows signs of distress, the structure and profile/riskiness of the portfolio changed. More frequent reviews are expected in case there are significant changes in the macroeconomic conditions or in the profile of the institution.

Furthermore, back-testing as well as sensitivity analysis should be considered in the refresh model of the models on individual parameters as well as the ECL output. During this process is expected that institutions refresh at least:

- the unconditional PDs to incorporate new obligor-specific information;
- the LGD parameters to factor new closed recovery cases and re-assess the outcome of the incomplete population;
- the macroeconomic explanatory variables required used in the computation of conditional PDs, LGDs and EADs;
- compute the 12 months and lifetime ECL based on the updated parameters.

Conclusions

The paper presents the evolution of the credit risk modelling practices and supervisory expectations starting with the Basel Accords (Basel I, Basel II and Basel II) and moves to the more recent IFRS 9 standard and Basel III completing post crisis reforms as well as the importance of model risk and model risk management.

IFRS 9 has seen as significant improvement in the accounting world as it changed how prospective losses are recognized to address the shortcomings witnessed in the last financial crisis i.e., a move from the incurred loss model as previously depicted by IAS 39 to an expected loss model factoring all available information at the point of the assessment (including forward looking data) under IFRS 9. The use of forecasted information and expected lifetime losses should overcome the weaknesses of IAS 39 and prevent the "too little too late" recognition of impairment which led to the beginning of the 2008 financial crisis.

The journey started with the introduction of the Basel I Accord and the emergence of the risk compliance function. The risk function and its ramifications (model development, validation) started playing a critical role with the introduction of the Basel II requirements as the normative capital requirements started informing pricing and business decisions.

Another milestone was the introduction of IFRS 9 which intended to ensure the impairment models forward looking and risk sensitive by linking the finance data to the risk information.

The IFRS9 standard intends to align the practices within the financial institutions and create synergies between the computation of the expected credit losses, unexpected losses i.e., the Basel Pillar 1 (normative capital) and Pillar 2 (economic capital) stress testing and recovery planning.

As the introduction of IFRS 9 has led to increased emphasis on the reliance of Credit Risk Models for loan loss provision estimation and required increased cross functional collaboration institutions must focus on obtaining model risk management to ensure model deficiencies are identified and clearly understood within the organization.

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Post-COVID Strategies in Public Procurement

Ecaterina Milica Dobrotă¹

¹⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: milicadobrota@yahoo.com

Please cite this paper as:

Dobrotă, E.M., 2021. Post-COVID Strategies in Public Procurement In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp.510-518

DOI: 10.24818/BASIQ/2021/07/065

Abstract

One of the most important factors leading to the success of the public procurement process is the internal organization of the entity and the relationship between all participants in this process. The events during this pandemic, the issues in the supply of medical units emphasized that the poor organization, the absence of internal procedures and of trained staff are risk factors, increasing fraud and corruption.

The purpose of this article is to present solutions to improve the public procurement process: developing internal procedures, together with their adaptation to the telecommuting regime (as a basic element of organization), and digitizing the public procurement system, which will help achieve a faster and more transparent procurement process. In order to achieve the proposed purpose of this paper, qualitative and quantitative research was conducted, using data and information from various official documents.

The main results of the research are establishing a framework of reference used to further build internal procedures for public procurement activities, and the identification of development guidelines, digital transformation of the public procurement process. The novelty elements brought by the paper consist in the analysis on the procedure of drafting the internal procedures (a process which can be conducted with the organization's employees or by contracting a third company), but also the presentation of benefits obtained by using computer programs for procurement management.

This paper supports those involved in procurement (from the procurer to the manager), raising awareness of the importance of internal procedures, and digitizing the public procurement process.

Keywords

public procurement, pandemic, procedures, digital procurement, telecommuting

DOI: 10.24818/BASIQ/2021/07/065

Introduction

The Covid 19 pandemic has changed the way the world works, in all areas of activity, including the area of public procurement. Telecommuting has become the (often inefficient) alternative to performing tasks, to some extent facilitated by IT equipment and the communications system, allowing employees to work outside the conventional workplace (Taskin, 2010). Employers had to adapt their activity to the new telecommuting system, finding solutions so as not to block the activity of institutions, due to lack of staff. The transition to this type of work was conducted based on written orders, issued by managers, but without effectively establishing the process of working "remotely". On the contrary, disorder was a part of the workflow for a few days, even weeks.

As for the sanitary units (mainly hospitals), the telecommuting of the procurement department could not be a viable option, due to the continuous needs of sanitary materials, equipment, medicines,

installations, etc. The medical staff requests the purchase of all the necessary equipment and materials, in an emergency regime, without specifying all the detailed technical characteristics. In addition, increased demand for products has led to an unprecedented "explosion" of prices. Many states have imposed export bans or restrictions (Hoekman, et al., 2021) on health goods and other essential products. This has led to issues such as: the impossibility of running existing contracts; the risk of not concluding new ones (OECD, 2020); purchasing through direct procurement from suppliers who held stocks; initiating negotiation procedures without prior publication.

Measures to prevent the spread and to eradicate the virus required rapid reactions, both from medical staff and from public procurement. In such extreme situations, those in the purchasing departments had to collaborate with doctors in order to identify the necessary goods from the specific field market, that required immediate purchase (directly) from the suppliers who held stocks. There was no discussion of any negotiation, the purchaser being in the "hands" of the supplier.

All these new problems were doubled by the old issues in public procurement (inefficient internal organization, poor training of certain employees, lack of endowment with procurement management programs, etc.) creating syncope in supply.

The events showed that, among the measures that should be applied, two would be of utmost importance: one, in the short term – the elaboration of internal procedures, with telecommuting tasks; and the second, in the long term - the digitalization of the public procurement process.

The elaboration of internal procedures must be a priority for the entity, being vital for all employees involved in public procurement, supporting them in knowing the specifics of the entity in their implementation, but also of the applicable legal framework. The new version of internal procedures must reflect the new standard of procurement.

As the public procurement process consists of mainly intellectual work, that is energy consuming, it must transition electronically. The benefits of digitization are obvious: reducing the circuit of documents, reducing reaction time to various actions, transparency of the process, reducing fraud, reducing the risk of mistakes, etc.

The purpose of this paper is to find opportunities to improve the public procurement process, rendering it accessible and less exposed to errors. The main objectives of the research are: outlining the key issues in public procurement, creating a framework on which to build internal procedures for public procurement activities, establishing directions for transforming/digitizing the public procurement process, presenting the benefits of using software procurement management, formulating hypotheses for future research (Lefter, 2007).

This paper is based on qualitative and quantitative research, together with the evaluation of the process of carrying out the activities specific to public procurement, and the research of the specialized literature, in order to establish methods for the efficient development of public procurement. Following the research, it has been concluded that some of the problems registered in the procurement process, in the last year, were caused by the lack of internal procedures or their lack of adaptation to the context created by remote work, the lack of platforms / electronic programs internal to the organization used for managing the procurement process.

The paper is structured in the following sections: review of the literature; a summary of systemic problems in public procurement; identifying the problems in the elaboration of the internal procedures in this field and presenting some frameworks for their realization; digitization of public procurement; research conclusions.

Review of scientific literature

Public procurement plays an important role in the social development and economic growth of any country (EC, 2021). At the EU level, public procurement generates about 14% of GDP (Maciejewski, et al., 2020). Better management of this sector is essential for economic growth (World Bank, 2020).

Directive no. 24/2014 on public procurement emphasizes the following points: the development of SMEs; the inclusion of social and environmental requirements within public procurement contracts

(Trybus, 2010); the reduction of the administrative burden of public authorities; the electronic conduct of public procurement. According to these new rules, public procurement becomes an instrument of political strategy (Dragoș, 2014). The procedures established by European directives are not applicable to all public procurement contracts, but the condition of transparency must be met (Caranta, 2012). The opening up of public procurement competition must be achieved through a process of changing public sector policies (Bovis, 1998).

During the pandemic, in order to respond to urgent supply needs, especially in hospitals, the European Commission (2020) issued a series of guidelines on the use of public procurement rules, including the initiation of negotiation without prior publication procedures and the purchase directly from suppliers. Negotiation without prior publication was the most widely used procedure, involving consequently the highest risk of misapplication and fraud of public funds due to lack of transparency. Not having specific steps in the procedure of negotiation prior to the publication, the uses of unclear legislative provisions have created dysfunctions in the necessary goods supply chain (Dobrotă, 2020). To ensure the efficient application of public procurement rules (EU, 2017) it is vital to take into account the following steps: establishing strategies in public procurement; training of staff involved (with the development of professionalization policies); digitization of the public procurement process.

Research methodology

The commentaries, analyzes, and opinions in the paper are based on data, information from normative acts (laws, directives, etc.) communicated, reports of the EU institutions, reports of the Court of Accounts of Romania, OECD. The research in this paper was performed by applying the qualitative and quantitative methods to the information in these documents. Qualitative research is adequate for this paper as an interpretation of information from various reports, documents, the author relying also on personal experience (Popa, 2016). Also, the qualitative method was applied because the research involves the study behavior of those involved in procurement, the reasons that led them to make certain decisions, the way practitioners perceive the reality of public procurement, the interaction between phenomena. Through qualitative research, the interactions between phenomena were studied, in order to answer various questions addressed to the events in the field of public procurement. At the same time, the quantitative method was applied, by using statistical data from various documents stated in the paper.

As the hypotheses of the problem already exist (presented in the aforementioned documents), the data collected being realistic and consistent, the purpose of the research is to find solutions to improve the public procurement process (through internal procedures and digitization of procurement). Starting from the information in the aforementioned documents, we issued two possibilities for carrying out the internal procedures. We analyzed the relationship between the expectations of public institutions, the perception of the development and digitization of the procurement process, the intention to modify the internal procedures. In this sense, we set the objectives for qualitative and quantitative research, we studied the reports containing the data used, we developed a logical scheme of actions to be performed, we determined the conclusions (Ciora, 2003).

Results and discussions

All the events that have happened since the beginning of the pandemic are for all of us hard lessons, from which we have to learn how to act in critical situations. The field of public procurement, especially in the medical sector, has been tested by many problems created both by the medical crisis and by internal situations specific to each organization left unresolved prior to the pandemic period. It was in these specific times that many situations arose causing those in procurement to set aside the rules and to act ensuring the public interest (Sanchez-Graells, 2020), or to stray away from the law out of ignorance.

Old problems of the public procurement system became more apparent. Issues that had been left unresolved such as: lack of internal procedures, insufficient training of staff, lack of computer programs for procurement management that would have facilitated telecommuting. The management of each

entity should analyze the efficient and inefficient procedures of this year, should determine the weaknesses, the vulnerabilities, and the strengths of the organization.

OECD (2020) made recommendations on the conduct of public procurement procedures with short-term and long-term measures aimed to remove risks from the public procurement practice. As short-term measures, the OECD proposes: developing procurement strategies for crisis situations; audit of all procurement procedures carried out as a matter of urgency. In the long term, it recommends: the use or extension of e-procurement platforms; remote access to the platform by verifiers, auditors, control bodies; specialization of staff involved in procurement.

In Romania, the Court of Accounts (2020) identified in the inspection performed in 2020 on 949 public authorities, regarding the conduct of public procurement procedures during the state of emergency (16.03-16.04.2020), 147 cases of issues, systemic deficiencies, from the stage of initiating the public procurement procedure, to the stage of receipt and payment of products/equipment. Other issues were ignorance of the application rules of the negotiation procedure without prior publication or lack of fair play of suppliers who have speculated on the crisis. The report issued by the Romanian Court of Accounts (2020) includes a series of recommendations on public procurement: strengthening the internal managerial control system; promoting the accountability of those involved in emergency procurement; defining operational procedures and digitizing procurement.

From the report issued by the OECD and that of the Court of Accounts of Romania, for this paper the following recommendations will be noted: establishing procurement strategies; drawing up internal procedures; conducting telecommuting activities; staff training, and digitization of procurement.

Conducting public procurement at standards that meet the desired supply needs can only be done within an organized entity, which is based on rules contained by internal procedures, on a developed system, adapted to the current situation (telecommuting, procurement online, and electronic procurement platforms accessible to all actors involved), in which staff are trained and perform their tasks so as to maximize the positive impact of procurement (Andhov and Roberto, 2020). Without internal procedures, the work becomes difficult, sometimes chaotic, the staff does not know the stages implied in carrying out the activities, tasks are not by any employee, the overall performance is delayed, due to the lack of deadlines. Also, through telecommuting, the rules become difficult to follow due to the impossibility of following the usual flow of documents, approvals, and to the difficulty of conducting meetings.

The lack of software for procurement management is another acute deficiency, which has made the supply process even more difficult. Creating electronic documents - predefined (for example, necessity report, annual procurement program, technical specifications, etc.) and signing them electronically would have reduced the time required to complete the acquisition. Besides, the staff involved would have been able to carry out these tasks through telecommuting.

Problems in developing internal procedures for procurement

Having a management system that is based on internal procedures showcases the level of organization of the entity, its desire to fulfill in a coherent way the mission it was created for, regardless of the times it goes through. In cases where the procedures would have already existed, their adaptation to crisis situations and to telecommuting should have been conducted involving minimum time and human resource. The implementation of telecommuting procedures will lead to a shift in the mentality of employees and employers, especially in the development of mutual trust (Del Aguila Obra, et al., 2002).

The elaboration of these internal procedures is an independent project, which begins with many questions: Who carries them out? Can they be adapted from another entity? What should they contain? How long does it take to draw up these procedures? Taking into account these questions, but also the recent events that made them resurface, several issues emerged (see below) that the entity must reflect on in order to choose the right strategy to address the project of internal procedures for public procurement through telecommuting.

"Customization" of internal procedures

In the field of public procurement, the rules for awarding contracts are, relatively, defined in Law no. 98/2016 and in its application norms. However, the operational/internal procedures must be "customized" for each entity, depending on its objectives, organizational structure, types of contracts it concludes, etc.

Internal procedures may be identical, from one entity to another, only if the entities are similar/operate in the same field and if they have a small number of employees. For example, distinct groups of institutions can be established: town halls, child protection departments, another group might be university education institutions, etc. If the institution has over 50 employees, the organization, implicitly the internal circuit of the documents, differs. Ministries, state-owned companies, national companies are authorities with totally different organizations from each other to which identical operational procedures cannot be applied. Hospitals fall into a different category of entities for which internal procedures have specific content, especially taking into account the difficulty of applying the telecommuting regime.

Taking over the internal procedures from another institution is not a viable solution, but rather a formal demonstration of their implementation (to avoid sanctions), but without efficient organization, based on quality.

Planning the implementation of internal procedures

The project for the elaboration of the operational procedures must be rigorously planned, so that, within the proposed deadline, the expected results will be obtained.

Step 1 of project planning consists of identifying the need, by:

- a) inventory of activities in the public procurement process;
- b) determining the risks associated with these activities;
- c) compiling the list of internal procedures to be drawn up, as well as assessing the complexity of each procedure with associated the instructions and the forms;
- d) establishing the recipients of the internal procedures;
- e) specifying the moment of project completion.

Step 2 of the planning sets out the conditions and implementation of carrying out the internal procedures:

- a) identification of the necessary personnel for the elaboration of the procedures;
- b) calculating the number of hours for performing the procedures;
- c) elaboration of the scenarios for the realization of the project for elaboration of operational procedures;
- d) estimating the costs of carrying out the project.

All this information is part of the project implementation strategy for the development of internal procedures.

Responsibility for developing internal procedures

Usually, the task of developing internal procedures is assigned to a team of employees of the entity. However, empirically, this way of working does not lead to the desired result. On the contrary, there will be shortcomings in reaching this target for the following reasons. Drawing up procedures for activities within the public procurement process requires extensive amount of work and is performed by employees of the entity who, among daily tasks, must devote additional time to thorough documentation and elaboration of internal rules. The team must analyze the existing procedures, interview the colleagues involved in the public procurement process, regarding the way in which they accomplish their tasks, identify the activities to be carried out and, possibly, modify the current ones. However, the public procurement department is often undersized in terms of human resources. As the

awarding of contracts is prioritized, the internal procedures will be carried out with additional effort by those in the department and within many months after the initiation of actions.

The nomination of employees in the project implementation team creates tensions among colleagues, many of them considering that those who draw up the procedures seek to relieve themselves of tasks, transferring them to others. Moreover, the staff (interviewed about the way in which they accomplish their designated tasks) fears that the team members will communicate the mistakes identified during the interview in regards to carrying out these tasks, the faulty communication between the employees, or various other problems noticed in the interview stages to the management. Therefore, the staff do not pay due attention to team members; are reluctant to work with them; do not provide the required documents; do not answer questions honestly; do not present the real process in which they perform their duties.

Furthermore, the research phase is difficult to fulfill when the interviewing team asks questions about the accomplishment of the tasks at the management level. The reaction of a manager to his subordinate is intuitive, although the latter was appointed by the general manager.

One aspect not to be neglected is the lack of experience of the team in carrying out the entire process of developing internal procedures, from research to their publication.

Team members must be good communicators, they must use interview techniques, so as to dismiss employees' doubts regarding the interviewer. They are to also prepare question sheets in order to obtain the necessary information.

For the aforementioned reasons, it is clear that the execution of this project, by the employees of the entity, encounters a series of shortcomings. The issue can be resolved by contracting a third party (external to the entity) that, in a team, includes specialists in the field of public procurement, with experience in developing operational procedures and communication skills. The critical external viewpoint, emotionally detached from the organization in question, leads to a better elaboration of work procedures (Ulmer, 2016). At first glance, outsourcing the project would be considered unnecessary. But, balancing the advantages and disadvantages associated with such a contract, the costs will be "amortized" by the quality of the work and its result.

The analysis of the opportunity to conclude a public procurement procedure contract must include qualitative, quantitative, logistical, but also financial aspects. The author of this paper considers that a form of "quantifying" the benefits of each working scenario can be tabular (Table no. 1), with questions in which the advantages will be marked with the number 1, and the disadvantages with the number 0. In the end, the total will tip the balance towards the most advantageous scenario: will the project be carried out with its own employees or with a contracted specialized company?

Table no. 1. Example of substantiating the decision of a work scenario

Question	Third party	Entity
Is there a person experienced in?		
- public procurement	1	1
- inventory technics	1	0
- drawing up internal procedures	1	0
Can team members' impartiality be affected?	1	0
Can the research activity be affected by the communication between the team members and the directors?	1	0
Can internal procedures be developed in a maximum of 2 months?	1	0
Can the team train staff be involved in public procurement?	1	0
Total advantages / disadvantages	8	1

Although the contract signed with the third party will generate additional costs for the entity, it must be seen as an investment, benefits being immediate: public procurement procedures are drawn up according to the rigors of the field, people involved in public procurement are to be trained immediately, public procurement procedures is to take place in an organized manner.

Digitization of the public procurement process

An important step in streamlining the public procurement process is its development by electronic means: from the issuance of the report of necessity to the preparation of the document which certifies the fulfillment of the contract.

The current period, where many tasks could be performed online and through telecommuting, is the right time for the transition towards electronic procurement, given that a multitude of activities involves working on a computer. They can be performed from any indoor/outdoor space (office, private apartment, garden, park, etc.); from any distance, provided there is a good internet connection, secure remote access to information, IT equipment, and a minimum technical comfort.

The transition of the entire public procurement process, from offline to online and telecommuting implies the need for reform/intervention on the entire system. Participants act electronically, at all stages, and all levels:

- the contracting authority, at the stage of preparing the award procedure, issues and approves the documents in electronic format;
- economic operators, in the bidding stage, submit the documents electronically, regardless of whether they participate in a direct procurement or a competitive procedure;
- the evaluation commission analyzes them digitally;
- the courts have access to information from the electronic case file;
- the contracting authority and the supplier issue the contract documents electronically;
- the control/audit bodies verify the acquisition based on the information in the electronic file.

The fulfillment of this desideratum - digitalization of public procurement - can be achieved acting on two levels:

- horizontally, within each entity, where managers must invest in: laptops, electronic signatures, and a computer program for document management related to the procurement process, interconnected to the stock program, but also to the accounting program (to verify the existence of budget, registration freight invoices, etc.);
- vertically, for the creation of an electronic platform, accessed by all "actors" in procurement: contracting authorities, economic operators, courts, control bodies.

The implementation of the horizontal plan involves openness on the part of the institution's management and awareness of the advantages of computer programs for conducting public procurement. By "transitioning" to online work and telecommuting, the institution avoids blocking the activity, during periods when employees have to work outside office space, or when safe office working conditions cannot be guaranteed. This institution knows, at any time, the status of each document, of each task. There is a reduction in the time spent circulating the documents. The tension between employees is eliminated, due to efficient communication between them. There is no need for pressuring colleagues to procurement documents on time; the traceability of the documents is ensured by the metering performed by the program and by the use of the electronic signature of each employee.

Vertically, electronic platforms/public procurement portals accessible to all participants in these processes must be created. In Romania, there is the EPPS (SEAP) portal - the electronic public procurement system (from the website www.e-licitatie.ro).

Such platforms should be developed in several directions: to allow access to all those involved in procurement to the documents/information it contains; allow (easy) interaction between contracting authorities and tenderers, in order to set up a good procurement strategy (CEU, 2020); to include technical prescriptions/conditions established for certain products, implicitly standardized award documentation for the products/services of interest; to include a database of suppliers whose eligibility is verified, constantly updated; to allow the interconnection with the computer programs for document management, of the entity; include an access section of the courts.

All changes in the process of conducting public procurement will contribute to: reducing the administrative burden, improving the business environment of economic operators (CEU, 2020); accountability of the staff involved; procurement transparency, reducing fraud and corruption (EU, 2017); reducing the time allocated to auditing public procurement; reducing the time for resolving appeals, by reducing the time for copying and handing over documents to the courts.

Conclusions

In any country, crises, unforeseen situations other than pandemics (natural disasters, fires, large-scale explosions, etc.) can occur at any time. The difference in overcoming them will be given by the reaction of the system. The more prepared it is, the faster it will recover. Reaction and recovery require organization, discipline, an efficient communication system, the necessary equipment to meet the needs of the moment. The public procurement system must be able to respond quickly and efficiently to various demands. Implementing internal procedures, training the staff involved (from the manager to the warehouse worker), creating an IT system in the non-crisis period, this mix can be the key in extreme situations, allowing for lives to be saved and the focus on solving new issues.

Through this research, we determined a framework of reference on which to further build internal procedures in the field of public procurement, but also development guidelines, digital transformation of the public procurement process.

Also in the sense of improving the activities in the sphere of public procurement, the research must be continued to identifying the proper process for the professionalization, and increase of performances of the specialists in this field.

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Perceptions of Organic and Biodynamic Wines in Different Generations - Evidence from Bulgaria

Vesselina Dimitrova¹, Petyo Boshnakov² and Georgi Marinov³

¹⁾²⁾³⁾ *University of Economics - Varna, Varna, Bulgaria.*

E-mail: vesselina.dimitrova@ue-varna.bg; E-mail: pboshnakov@ue-varna.bg

E-mail: gmarinov@ue-varna.bg

Please cite this paper as:

Dimitrova, V., Boshnakov, P. and Marinov, G., 2021. Perceptions of Organic and Biodynamic Wines in Different Generations - Evidence from Bulgaria. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 519-527
DOI: 10.24818/BASIQ/2021/07/066

Abstract

The goal of this study is to examine whether there are differences in consumption between generations in Bulgaria and what are the main reasons that affect their consumer preferences for organic and biodynamic wines. For this purpose, a survey of 27 questions was conducted among 627 users from Generation Z and Generation Y. P-values of Chi-2 tests are presented to major groups of questions. We discover that the attention to eco-friendly or ethically produced wines is already part of the personal drinking preference of Bulgarians as is the orientation in other European wine-producing countries. Respondents do trust in the EU specification of the wine as “organic” and “biodynamic”. Our study confirms some conclusions of other European studies that the geographical provenance of the wine and local terroir transmits identity, authenticity and is preferable for the consumers. We find also that there is no difference between the Generation X, Generation Y and Generation Z in Bulgaria in the attitudes towards natural wines. To our knowledge, this is the first study in Bulgaria, which draws some basic conclusions about the level of consumer knowledge on organic and biodynamic wines and represents a key future challenge for the production and marketing processes of winemakers in Bulgaria.

Keywords

Organic wine, biodynamic wine, sustainability, generations Z, X and Y, Bulgaria.

DOI: 10.24818/BASIQ/2021/07/066

Introduction

Winemaking is facing important environmental challenges during the last decades such as high water and energy consumption, use of fertilizers, cumulation of acids, emissions of greenhouse gasses and CO₂. Biodynamic and organic wine productions are the natural response due to the desire for wider environmental sustainability. Both are strongly affected by damaging risks as sustainable branches of agriculture. Undoubtedly, the ecological orientation of global wine producers towards organic and biodynamic production is an important step in several directions: First, in terms of reducing chemicals in agriculture; secondly, in connection with raising the culture of winemakers and last but not least in the direction of refining consumer preferences for potential health benefits in consumption.

At the same time, there is a confusing terminology about the exact differences between organic and biodynamic wines in their quality as natural wines. There is limited scientific literature and still no serious accumulations of practical experiences with similar confirmatory results for existing significant distinctions in the production of biodynamic wine and organic wine. The questions that arise are: how

consumers can distinguish organic from biodynamic wine?; are there international regulations for organic and biodynamic production such as eco-labels, environmental certifications or does each winemaker independently declare to regional branch organizations or national authorities its responsibility for natural wine production?; how consumers from different generations react to the deepening trend towards the production of natural wines?

In 2012, the European Commission adopted rules on "organic wine", which allow winemakers to label "organic wine". This change is considered to complement the scope of Regulation 834/2007 and now covers the whole wine production chain - from grapes to the final product or in other words organic wine must be produced from organic grapes. The change is made in response to the growing expectations of the European wine consumer to be protected by European logo, in this case with EU-organic-logo with the code number of certifier, as well as in response to the already well-established practices and standards for organic wines in competitive destinations such as the United States, Chile, Australia and South Africa. According to the Regulation 834/2007 on organic production and labelling of organic products the technical characteristics and the allowed substances in the organic wine are: maximum sulphite content set at 100 mg per litre for red wine (150 mg/l for conventional wine) and 150mg/l for white/rosé (200 mg/l for conventional wine), with a 30mg/l differential where the residual sugar content is more than 2g per litre.

As Cravero (2019) mentions unlike organic wine, biodynamic wine production does not comply with any regulations, labels or laws, although some countries apply their own labels - e.g. France ("La Renaissance d'Appellation") and Italy (Demeter/Biodynamic®). The main issue is the cultivation to follow the principles of biodynamic agriculture and to receive certification by private association based on the self-declaration of the individual wine producer. The biodynamic method of production was formulated in 1920 in Austria under the anthropology and lunar calendar influences. Its purpose is to guarantee a fertile and naturally cultivated area, where healthy and high quality crops are developed. Usually, the quantities produced from the respective biodynamic product are limited due also to the lack of producer ability to strictly follow the laws of biodynamics. Long-term observations on controlled production of organic and biodynamic wine do not show any significant differences in the quality of the grapes (Parpinello, et al, 2019, Reeve, et al., 2005). The only exception is found in biodynamic wine in terms of higher sugar content, polyphenols, tannins and anthocyanins, lower alcohol content and lower color saturation (crystals).

Limited research provokes the authors' interest on this topic, mainly in two directions- in terms of empirical research study on natural wines and in terms of behavioral attitude of different generations towards organic and biodynamic wines. Bulgaria is among the world-famous countries for its wine production, but a brief review of scientific papers shows that there are still no significant achievements in the field of research related to the knowledge for organic and biodynamic wines in Bulgaria. Moreover, the statistical information for Bulgarian wine producers is not accumulated according to their production method.

The focus of our study are consumers in Bulgaria with their attitudes towards various economic, environmental and social aspects related to the consumption of organic, biodynamic and conventional wines. The goal of this study is to examine whether there are differences in consumption between generations in Bulgaria and what are the main reasons that affect their consumer preferences. For this purpose, a survey was conducted among 627 users and its results were subjected to statistical analysis, verification and data processing. In order to analyze better the specifics of the generations, we mainly focus on generation Y and generation Z. Generation Z is expected to represent the largest consumer base through to 2030. According to Hodgson (2018) Generation Z is quite environmentally concerned generation which prefers innovative and sustainable products with high value. In comparison, Generation Y which represents 22 percent of the world population according to Euromonitor international (2020) includes socially conscious and environmentally responsible consumers, attracted by products that are considered less harmful to the environment. In a specific way both Generation Y and Generation Z are expected to have a strong behavioral attitude towards wine sustainability and terroir.

The paper is structured as follows: general review of current publications related to the topic, research methodology used for this study in Bulgaria, discussion of some significant results and summaries of the most important conclusions for the generations and recommendations to be implemented by wine producers towards consumers.

Literature review

Studies on biodynamic and organic wines show that consumers do not have strong preferences for one or the other wine. This finding is associated with the similar and lower health risk that organic and biodynamic wine have compared to conventional wine. Nevertheless organic wine with its characteristics and consumers requirements is much more studied by researchers than the biodynamic wine. Organic wine production is becoming a better known type of sustainable wine production which focuses on the avoidance of agrochemical vineyard inputs as synthetic fertilizers, pesticides and herbicides. According to Lernoud and Willer (2018), this specific winemaking created in the period 2010-2016 only a small and stagnating market of 5 % in comparison with the conventional one.

Many research studies and programs of international vine and wine institutions recently started to calculate the environmental impact of winemaking and production as a Life Cycle Assessment (LCA) approach, environmental footprints (as carbon, water, land, etc.) in order to find good examples in wine sustainability. Technical study in Romania by Soceanu, et al. (2021) analyzing three different types of grapes in the Murfatlar area, confirms the encouragement regarding recovery of viticulture by-products and wastes which represent 18-20 % of the amounts of processed grapes. Hence, wine producers can increase their potential to administrate sustainable processes by converting by-products and wastes in natural fertilizers. Furthermore, they can avoid the significant EU disposal costs and penalties, often reaching 30 000 – 40 000 euros. Another technical study analyzes the negative effects of global warming for winemaking. Morales, et al. (2020) announce that the damaging global warming affects the high level of ethanol content in wines (regardless of the proximity of two geographical regions) which is in contrast with the consumer perceptions of quality wine tasting. Their study in six different wineries in Spain reveals the significance of new biotechnological experiments regarding the biological aging of flour yeast and its ability to reduce the ethanol content by 2 % for one month, as well as other acid and acetic acid esters contents.

Indeed the consumers are becoming more and more interested in environmentally friendly products and foods regarding health, naturalness and high quality. Different studies confirm that the positive preference of the consumers towards organic wine production depends on the geographical origin, price level and quality label (like terroir). A part of these studies confirm that “quality” is an equivalent of appropriate geographical origin and good price, as well. A study of Janssen, et al. (2020) in the framework of the German Federal program to organic agriculture and the other forms of sustainable agriculture, with a sample of 600 consumers in Germany, shows that the organic wine production method has a relatively strong influence on the wine choice of organic food consumers. The analysis reveals that organic wines at medium price levels are strongly preferred and the purchasing choice is based on the country of origin, i.e. Germany. At the same time, the total rate of organic wine purchases in the country remains low. This fact draws attention to further recommendations and consideration of additional influence factors.

According to Wen and Leung (2021) sustainability preferences in wine tasting are different for younger and older generations as Generation Y and Generation Z. From one hand, the consumers of Generation Y demonstrate favorable wine purchases as a part of their social experience. From another perspective, the consumers of Generation Z perceive willingness for a wine as a part of their multisensory experience (including appearance, aroma, taste). This conclusion has a crucial impact on future marketing strategies of those organic wine producers that examine the opportunities of gastronomic and organic wine tourism (including also virtual reality tours) as a significant promotion tool. The current experiment of Wen and Leung confirms some previous studies of Eustice, et al. (2019) and Barber, Taylor and Strick (2009) that the higher is the consumer knowledge of sustainable winemaking, the greener and better is the consumer approach for wine purchases. A research funded by the Italian region Veneto (Capitello, et al., 2021), focused on consumers’ wine choice of Generation Y in Italy

applies five attributes and their nineteen levels of sustainable experimental design as “Quality label” (carbon reduction label, PDO label, producer’s association label), “Label style” (natural, sophisticated, contrasting, minimal), “Brand” (winery brand, product brand, winery name, social media name), “Back label information” (soil, family history, grape variety, production process) and “Price” (all in euro: 8.90, 13.90, 18.90, 23.90). The results show that Generation Y is mainly driven in its choice by terroir cues on the back label and visual content. The young females are looking for original terroir wines while the young males are more price-sensitive and are looking for traditional wine production. Future research study on Generation Z perceptions is programmed in Italy.

The sustainability assessment of wine products is often related not only to experiences, but also to international or national initiatives and fund programs. The results of one of these initiatives based on Italian TERRITORY framework (a part of National Viva- Sustainability culture program), show that when environmental, social and economic dimensions are well-identified within the wine strategies, the wine producers are more orientated to environmental issues and have higher engagement to their consumers implementing carbon level programs or circular economy initiatives. One of the most critical points mentioned in the TERRITORY framework is the lack of effective communication with consumers about the producer's commitment to sustainability, including health, risks, wine tasting, agrochemical treatment etc. (Luzzani, et al., 2021).

Research methodology

The instrument we use is an online questionnaire with 27 questions (we use the snowball method for respondents), covering several aspects of the perceptions about wine - environmental (biodiversity, balanced use of resources, clean technology etc.), social (health and wellbeing, taste etc.) and economic (frequency of purchases, overpricing etc.). The questionnaire contains mainly multiple-choice questions, but there are also few questions with twin comparisons. We deliberately avoid questions with a quantitative dimension, because of the primary design of the study - we attempt to explore some less known aspects of perceptions of wine, and in such situations respondents are more inclined to have only vague ideas about the exact nature of the terms and therefore they are quasi unable to make precise assessments. Thus we limit our scientific interest to exploring mainly the differences in answers between generations.

We explore the confusing terminology in biodynamic and organic wines, as well as the behavioral attitude of different generations towards biodynamic and organic wines. Therefore our choice of statistical measuring is limited to the chi-square tests, as we envisage to obtain more robustness in the results.

Our sample consists of 627 Bulgarians, aged 18-75, of which 411 women and 216 men. 44 of the respondents live abroad, 449 live in cities in Bulgaria and 134 in small towns and villages in Bulgaria. Of our sample, 234 respondents belong to the "X" generation, 89 to the "Y" generation (millennials), and 264 to the "Z" generation. For our purposes, we stick to the most widely used limits of these generations: "Z" being formed of people born after 1996, "Y" of people born between 1981 and 1996, and "X" of people born between 1965 and 1980.

The survey was conducted in February-March 2021.

Results and discussion

General tests (Table no.1) show that differences in income and drinking habits between younger people (generation "Z") and the other two generations do exist, whereas there are no differences between generations "X" and "Y", and this is a plausible result - we can expect younger people to have more modest income and to share non matured drinking habits, i.e. are more likely to experiment with drinks.

Table no. 1. P-values of Chi-2 tests about generational slices of the sample

	Z vs X	Z vs Y	Y vs X
Income	0	0	0.61
Household	0.13	0.62	0.17
Drinking preferences	0	0.01	0.07

Source: Personal elaboration of the authors

Our most important results emerge from the tests on possible differences in the answers on the main questions about wines. The p-values from chi-square tests presented in Table no.2 show that no significant differences exist between the structure of the answers of Generation Z and the other two generations studied, with practically no exceptions, if we don't take in consideration the small differences in views about trusting the labelling.

Our initial expectations were that the young generation will be more demanding in their green preferences and will know better the European policy for organic products, however this could not be confirmed within the study. Therefore we claim that being part of a specific generation in Bulgaria does not imply a difference of views about organic wines. We reckon that taking the whole population as a relatively homogenous group in concern with the attitudes towards organic or biodynamic wines is a plausible assumption. It can be added that obviously the weaker awareness in Bulgaria about sustainable winemaking confirms the slower orientation of Bulgarian consumers towards green wine purchases, which is in line with the conclusions of Eustice, et al. (2019) and Barber, Taylor and Strick (2009) about the general trends. As a direct outcome from our findings, elaborating common marketing strategies on organic and biodynamic wines directed to different generations in Bulgaria seems to be an appropriate strategy.

Table no.2. P-values of Chi-2 tests on major questions and groups of respondents

	Z vs X	Z vs Y	Y vs X	BG vs. abroad	BG small vs. others	Income	Sex
Do you buy wine?	0.98	0.06	0.07	0.03	0.03	0	0.94
How often do you buy organic wine?	0.21	0.57	0.24	0.41	0.15	0.78	0.71
What is the main reason for you to buy organic wine?	0.71	0.15	0.33	0.10	0.53	0.03	0
What is the main reason for you to buy biodynamic wine?	0.23	0.11	0.19	0.01	0.81	0.11	0.51
What is the main reason for you to buy conventional wine?	0.69	0.06	0.14	0.35	0.13	0.14	0.04
Production of organic wine mostly... (several options)	0.37	0.55	0.98	0.25	0.84	0.44	0.14
Production of biodynamic wine mostly... (several options)	0.58	0.90	0.93	0.96	0.01	0.45	0.38
Do you think the following wine has an advantage towards the others (conventional vs. organic vs. biodynamic)?	0.64	0.53	0.94	0.01	0.34	0.70	0.04

If you compare two organic wines, the one from Bulgaria and the other from Germany, which one do you trust more?	0.57	0.59	0.18	0.94	0.94	0.75	0.46
Willingness to pay more for organic wines vs. conventional wines	0.13	0.24	0.83	0	0.93	0.12	0.06
Willingness to pay more for biodynamic wines vs. conventional wines	0.77	0.66	0.65	0.75	0.47	0.24	0
Willingness to pay more for biodynamic wines vs. organic wines	0.47	0.71	0.90	0.08	0.19	0.74	0.11
It is believed that the taste of the organic wine can not be "tailored"... so that taste strongly depends on the terroir and the meteo conditions of the respective year. How important is it for you that the taste of wine matches your prior expectations?	0.10	0.22	0.49	0.01	0.04	0.32	0.02
Organic wines and biodynamic wines are believed to be more healthy. How important is this to you?	0.19	0.03	0.26	0.14	0.88	0.04	0.11
Do you trust the notification of "organic"?	0.06	0.03	0.13	0.50	0.38	0.18	0.03
Do you trust the notification of "bio-dynamic"?	0.10	0.29	0.89	0.63	0.76	0.69	0

Source: Personal elaboration of the authors

A closer look on several questions from the questionnaire sheds further light on views about organic labelling and consumer preferences in general.

From the result of the question on the main reason to buy biodynamic wine we can conclude that it is very common for respondents who live abroad to consume biodynamic wine compared to Bulgarian consumers, who are not that much aware of the difference between those two types. The reason for this could be that there is no specification as "biodynamic" for the products sold domestically or there is no import of such products at all (Table no.3).

The question on preferences about country of origin reveals that the respondents do trust in the specification of the wine as "organic" and "biodynamic" no matter the country of origin. This means that they do trust the system of certification for the whole EU.

Only respondents from abroad as a contrast of local ones show preference for organic instead of conventional wines as far as the taste is concerned. This is an additional evidence that the local market and consumers are not too much aware of the features of natural production and taste. They would rather consume wine because of the taste and to a lesser extent because of the logo, be it "organic" or "biodynamic" and the possible advantage from this label.

Over 2/3 of our respondents claim organic and biodynamic wines are better or rather better than conventional wines, 1/4 of the respondents treats all types of wines as equal, and only about 1/6 of the

respondents have their preferences towards conventional wines. These results are strongly in line with the views about trust, only ca. 1/6 of the respondents distrust organic labelling, with ca. 2/3 expressing trust (Table no.4). This finding is in line with the conclusion of Janssen et al. (2019) that for the consumers the organic origin is an important attribute and "organic" is socially desirable as a label.

Table no.3. Percentage of answers to the question "What is the main reason for you to buy ... wine?" (organic/biodynamic/conventional)

	Superior taste	Lower price	Trusted geography	Healthier	Better promoted	Superior method of production
Organic	16.4	4.0	15.5	25.7	8.5	30.0
Organic (F)	17.0	4.4	13.1	24.8	6.6	34.1
Organic (M)	15.3	3.2	19.9	27.3	12.1	22.2
Bio-dynamic	17.1	4.5	18.0	25.2	8.0	27.3
Conventional	15.2	37.0	18.3	5.3	13.9	10.4

Source: Personal elaboration of the authors

Table no. 4. Percentage of answers to the question "How much more are you willing to pay (ceteris paribus) for ... vs. ... wine?"

	0%	10%	20%	30%	50% and more
Organic (vs. conventional)	19.5	30.8	27.9	15.0	6.9
Bio-dynamic (vs. conventional)	20.4	30.1	25.2	16.4	7.8
Conventional (vs. organic)	31.3	32.1	20.4	12.1	4.2

Source: Personal elaboration of the authors

Only few of our respondents (8.8%) reject the mere idea of organic products, although there are 18.3% who find the "bio" ideas being exaggerated because of the same effect on health, and other 27.9% who think that "bio/organic" is just another marketing move and that there is no difference to conventional products.

One of the questions which still remains unanswered in society's agenda is the perception of organic products as products of luxury. Willingness to pay more for organic and biodynamic wines supports the perception that these products are luxury products (Table no. 5).

Table no. 5. Percentage of answers to "Do you consider organic products as luxury products?"

	Yes, definitely	Rather Yes	Rather No	No, definitely
All	19.1	45.0	27.4	8.5
Women	20.7	46.0	25.5	7.8
Men	16.2	43.1	31.0	9.7
Never buying wine	23.1	28.8	19.2	28.8

Often buying wine	24.0	44.8	24.4	6.8
Considering health aspects of bio wine as not important	14.3	27.0	27.0	31.7
Trusting to organic logo	20.0	54.9	20.8	4.3
Trusting to biodynamic label	21.9	51.2	23.6	3.3
Not willing to pay more for organic wine	18.8	32.0	28.7	20.5
Not willing to pay more for biodynamic wine	18.0	37.5	26.5	18.0

Source: Personal elaboration of the authors

The chi-square tests did not reveal the existence of differences among different groups of respondents, with the exception of the comparison between respondents who declared that they never buy wine and the rest of the sample.

Clearly visible is that in general organic products are considered to be luxury products. Respondents who trust the organic logo express stronger views to organic products as luxury products. On the other hand respondents who are not willing to pay more for organic wines consider these products to a lesser extent to be luxury products.

Conclusions

In Bulgaria, consumers' preferences for wine production change over time as the ecological focus becomes an important part of the final purchase decision. The attention to eco-friendly or ethically produced wines is already part of the personal drinking preference of Bulgarians as is the orientation in other European wine-producing countries. Definitely the environmental aspects of organic and biodynamic winemaking, studied with this research, have a leading role for the consumers in Bulgaria in contrast to the incomplete knowledge about social and economic aspects of the natural winemaking such as health effects and price positioning on the Bulgarian market. Furthermore, we arrive at the conclusion that the confidence in the geographical origin as a part of ecological environment and biodiversity, is high enough - Bulgarian wine is preferred by generations, by males and females.

Our study confirms some conclusions of Capitello, et al. (2021) that the geographical provenance of the wine is more than a "sense of place" and already the local terroir transmits symbols, identity, distinctiveness and authenticity. Another conclusion of Capitello, et al. (2021), related to the consideration that a consumer can only handle a limited amount of information, is also confirmed for Bulgaria. Bulgarian consumers do not know the complexity of the wine making process associated with organic wine production - costs, prices, technical issues etc. The same conclusion can be applied to biodynamic wines. For Bulgarian consumers the pursuit of natural wine production is not directly linked to additional economic costs or competitive advantages. Therefore, much more extensive information on sustainability-related attributes and terroir-related attributes of organic and biodynamic wines is needed. We can add that there is no difference between the Generation X, Generation Y and Generation Z in Bulgaria in their attitudes towards natural wines, despite our expectations that the young generation will be more demanding in their green preferences and will know better the European policy for organic products.

Although this study suffers some limitations, the originality of this research is to shed light on the preferences of the different generations in Bulgaria towards conventional and natural wines. To our knowledge, this is the first study in Bulgaria, which draws some basic conclusions about the level of consumer knowledge on organic and biodynamic wines and represents a key future challenge for winemakers in Bulgaria.

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Danube Delta Tourism Resilience and Sustainability Test During COVID-19 Pandemic

Romeo Cătălin Crețu¹, Raluca Florentina Crețu² and Ioan Iulian Alecu³

¹⁾³⁾ *University of Agronomic Sciences and Veterinary Medicine of Bucharest, Bucharest, Romania.*

²⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: creturomeocatalin@yahoo.com; E-mail: raluca.cretu@cig.ase.ro

E-mail: iulian_alecu_2000@yahoo.com

Please cite this paper as:

Crețu, R.C., Crețu, R.F. and Alecu, I.I., 2021. Danube Delta Tourism Resilience and Sustainability Test During COVID-19 Pandemic In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 528-534
DOI: 10.24818/BASIQ/2021/07/067

Abstract

World tourism faced the worst year ever in 2020, with the World Tourism Organization (UNWTO) announcing a 74% reduction in the number of international arrivals as a result of the COVID-19 pandemic. Destinations around the world last year saw a decrease of one billion in the number of international visitors, compared to a decline of only 4% during the economic crisis of 2009. The HoReCa industry in Romania had in 2019 revenues of 5 billion euros, and in 2020 it lost about 3 billion euros, of which 1 billion is just the losses of hoteliers. This research focuses on two main aspects, each equally important for tourism actors. First, we analyzed the impact of the Covid-19 pandemic on tourism in the Danube Delta in 2020 and whether the resilience and sustainability test was passed. The second aim of the research was to identify solutions for the relaunch and development of tourism in the Danube Delta. Several research methods have been used to meet our objectives, such as analysis, synthesis, comparison, observation or documentary research. The quantitative research methodology used is limited to the questionnaire-based survey. The questionnaire contained 16 questions and was administered online between 10-25 March 2021. We had a number of 35 respondents, owners or administrators of classified accommodation units in the Danube Delta. The analysis of the results shows that the pandemic had a neutral to positive effect for tourism in the Danube Delta and that, for the most part, the resilience and sustainability test was passed. We consider that this study is very useful for tourism entrepreneurs, for local and central public authorities and the conclusions and recommendations extracted from the questionnaires can suggest valuable ideas for the relaunch and development of tourism in the Danube Delta.

Keywords

Danube Delta, tourism, resilience, sustainability, Covid-19, HoReCa industry.

DOI: 10.24818/BASIQ/2021/07/067

Introduction

In 2019, travel and tourism were some of the most important sectors of the world economy, almost 10% of global GDP, with over 320 million jobs worldwide and a value of nine trillion dollars. In Europe, the tourism sector accounts for 10% of EU GDP (up to 25% in Croatia, 22% in Cyprus and 21% in Greece, if indirect impact is included) and generates, directly and indirectly, 23 million jobs. However, the COVID-19 pandemic puts the European tourism industry under unprecedented pressure: there has been a 60% to 90% drop in bookings over the same periods in previous years. 2020 was an atypical, difficult and unusual year, it changed the way we live, work and many of the values we thought were

important (Brouder, 2020). Both human health and activity in all industries were mainly negatively affected by the coronavirus pandemic. The tourism industry was no exception, as it was one of the most affected by the dreaded virus and restrictions (Volkmann, et al., 2021). Destinations around the world last year saw a one billion drop in the number of international visitors, compared to a decline of only 4% during the global economic crisis of 2009. In Romania, the arrivals registered in the tourist reception structures in 2020 amounted to 6335.4 thousand, decreasing by 52.3% compared to 2019. Of these, 92.8% represented the arrivals of Romanian tourists and 7.2% represented the arrivals of tourists foreigners. (Table no. 1). The arrivals of foreign tourists - from Europe 78.4% of the total foreign tourists, and of these 74.2% were from the E.U countries.

Table no. 1. Arrivals registered in the tourist reception structures in Romania 2019-2020

Tourist arrivals in Romania	2020	2019
Romanian tourists	5,879,251	10,597,000
Foreign tourists	456,149	2,671,000
TOTAL	6,335,400	13,268,000

Source: www.insse.ro

The overnight stays registered in the tourist reception structures in 2020 amounted to 14444.7 thousand, decreasing by 51.6% compared to those in 2019 (Table no. 2). Of these, 93.1% represented the overnight stays of Romanian tourists and 6.9% the overnight stays of foreign tourists. The overnight stays of foreign tourists - from Europe 77.2% of the total foreign tourists, and 73% of them were from European Union countries.

Table no. 2. Overnight stays registered in the tourist reception structures in Romania 2019-2020

Overnight stays registered in the tourist reception structures	2020	2019
Romanian tourists	13,448,015	24,612,000
Foreign tourists	996,685	5,258,000
TOTAL	14,444,700	29,870,000

Source: www.insse.ro

The tourism industry in Tulcea County recorded, in 2020, losses of 17.55 million euros, in the context in which the number of those who visited the county was 29% lower than the previous year, due to the health crisis, according to data offered by the Danube Delta Tourist Destination Management Association (AMDTDD). Last year, 119,019 tourists arrived in the county, 29% less than in 2019, when 168,412 tourists were registered, but more by about 15% than in 2018, when the county was visited by 100,430 people. The biggest losses in the industry in the county were registered at the level of tourism with river cruise ships, given that over 95% of the ships scheduled to arrive in the county last year canceled their arrivals, due to the health crisis. Another cause was the cancellation of the festivals in the Danube Delta, which in previous years attracted many Romanian and foreign tourists. Certain sectors of the tourism industry may never be able to return to pre-crisis levels, in particular due to the digital transformation that was already under way and was accelerated by the situation (Sârbu, et al., 2020). An example is the MICE sector, where virtual meetings have shown that there is no need for international travel to attend conferences.

This research focuses on two main aspects, each equally important for tourism actors. First, we analyzed the impact of the Covid-19 pandemic on tourism in the Danube Delta in 2020 and whether the resilience and sustainability test was passed. The second aim of the research was to identify solutions for the relaunch and development of tourism in the Danube Delta.

We consider that this study is very useful for tourism entrepreneurs, for local and central public authorities and the conclusions and recommendations extracted from the questionnaires can suggest valuable ideas for the relaunch and development of tourism in the Danube Delta.

Review of the scientific literature

Used in disciplines such as psychology, ecology or engineering, resilience is a term that, in recent years, is increasingly used in connection with the success of an organization. Organizational resilience can be defined as the ability to recover or adapt quickly to adverse situations or changes. Whatever definition or term we adopt, after numerous corporate scandals and a financial crisis that has shaken the entire globe, it is considered that a successful organization must be able to withstand shocks, remain as strong as a result of these shocks, adapt to change and even more, take advantage of the opportunities that any change brings. But how can an organization gain resilience? A well-known theory published in 2011 by a well-known UK association, AIRMIC (Association of Risk and Insurance Managers in Industry and Commerce), is the theory of the 5 Rs: Risk Radar, Resources, Organization Relations, Rapid Incident Response, and Reviewing and adapting the organizational environment (Gössling, Scott and Hall, 2020). Some specialists in the field of organizational resilience wonder if we are not wrong when we consider that the state of normalcy is represented by stability and maintaining the status quo. If we considered that normalcy means permanent change and adaptation, and a period of stability would be just an accident, a short period of time that we must not be deceived? Perhaps this approach is indeed the secret of a resilient organization. The tourism industry has evolved rapidly in recent decades. In addition to the positive effects of generating growth in the destination areas, there are also negative effects with an impact on areas such as the environment, culture, politics, social and economic (Duțescu, Popa and Ponoriță, 2014). The new policy framework for European tourism, adopted by the Commission in 2012, includes the promotion of sustainable, responsible and quality tourism. The key issues involve limiting the environmental impact of transport related to tourism, as well as limiting the negative impact on tourist destinations (Țală and State, 2020). The growing need for sustainability is also a result of the high volume of knowledge and concern about the impact on tourism and environmental issues in general. The development of tourism without sustainability can lead to serious deterioration of society, but also of the environment and the entire tourism industry. Tourism activities have repercussions on the economy, on the natural environment and on the local population of the destination (Glaser-Segura, Nistoreanu and Dincă, 2018.). Tourism activities generates multiple impacts, the range and variety of production factors needed to produce these goods and services purchased by visitors and the range of agents interested or affected by tourism, it is necessary to adopt an integrated approach to tourism development, management and control (Amicarelli, et al., 2020). This approach is recommended for the formulation and implementation of national and local tourism policies, as well as the necessary international agreements or other mechanisms on tourism (Nistoreanu and Hadad, 2020).

Research methodology

This research focuses on two main aspects, each equally important for tourism actors. First, we analyzed the impact of the Covid-19 pandemic on tourism in the Danube Delta in 2020 and whether the resilience and sustainability test was passed. The second aim of the research was to identify solutions for the relaunch and development of tourism in the Danube Delta. Several research methods have been used to meet our objectives, such as analysis, synthesis, comparison, observation or documentary research. The quantitative research methodology used is limited to the questionnaire-based survey. The questionnaire contained 16 questions and was administered online between 10-25 March 2021. We had a number of 35 respondents, owners or administrators of classified accommodation units in the Danube Delta. In order to have a more accurate picture about the impact of the Covid-19 pandemic on tourism in the Danube Delta, we asked questions to tourism entrepreneurs in localities that cover almost the entire Danube Delta: Crișan, Mîla 23, Caraorman, Letea, Somova, Sfântu Gheorghe, Chilia, Dunavăț, Murighiol, Sulina, Maliuc, Gorgova.

Results and discussion

The questionnaire was administered online between 10-25 March 2021. This study was answered by 35 owners or administrators of classified accommodation units in the Danube Delta. When asked about the impact of the pandemic on tourism in the Danube Delta, 69% of respondents believe that the impact was positive or neutral and only 31% believe that the impact was negative. The figures are spectacular, if we make a comparison with the huge negative effects produced at the level of world and national tourism by the pandemic -Figure no. 1.

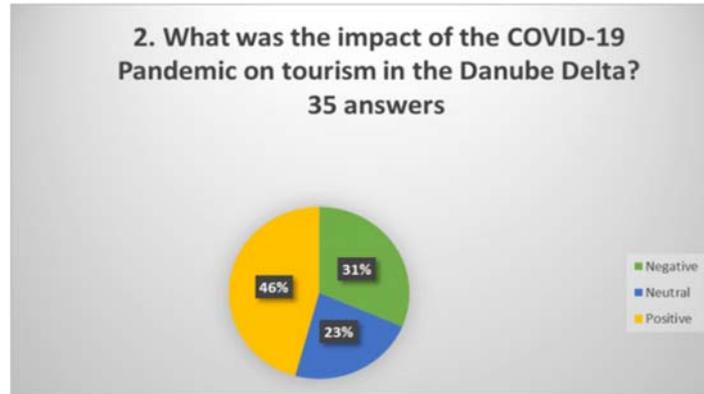


Figure no. 1. The impact of the COVID-19 Pandemic on tourism in Danube Delta
Source: Own processing of the data from the questionnaire

The same neutral to positive aspect emerges from the answers related to the impact of the pandemic on tourism in the Danube Delta, when we talk about tourism businesses, affected jobs or closure – Figure no. 2, 3 and Table no. 3.

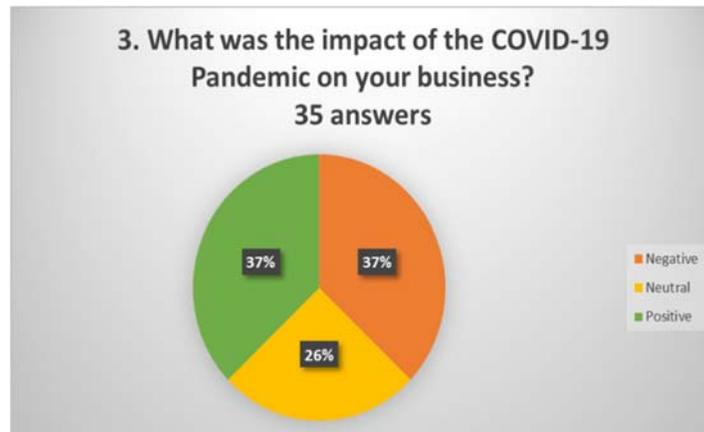


Figure no. 2. The impact of the COVID-19 Pandemic on business
Source: Own processing of the data from the questionnaire

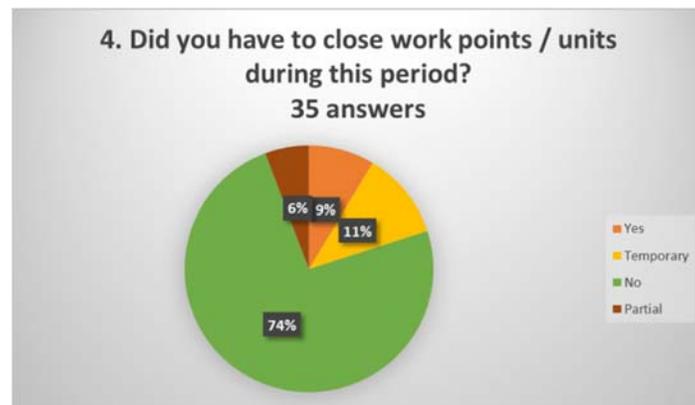


Figure no. 3. The impact of the COVID-19 Pandemic on tourism
Source: Own processing of the data from the questionnaire

Table no. 3. Questionnaire on the impact of the COVID-19 Pandemic on tourism in Danube Delta

Nr.	QUESTIONNAIRE QUESTIONS	ANSWER VARIANTS / ANSWERS
1	What was the impact of the COVID-19 Pandemic on tourism in Romania?	Negative – 97% Neutral – 3% Positive – 0%
2	What was the impact of the COVID-19 Pandemic on tourism in Danube Delta?	Negative – 31% Neutral – 23% Positive - 46%
3	What was de impact of the COVID-19 Pandemic on your business?	Negative – 37% Neutral – 26% Positive – 37%
4	Did you have to close work points/units during this period?	Yes – 9% Temporary – 11% No – 74% Partial – 6%
5	Did you have to lay off staff during this period?	Yes – 11% Temporary – 20% No – 66% Partial – 3%
6	What losses did you have or estimate you will have?	Very big – 23% Big – 14% Minimal -17% Nothing – 46%
7	In this crisis, the Government's assistance was:	Big - 0% Small – 43% Medium – 6% Nothing – 51%
8	In this crisis, the help from the local authorities was:	Big - 0% Small – 0% Medium – 49% Nothing – 51%
9	What steps would you like the government and state institutions working in the field of tourism to take to help you overcome the pandemic crisis?	State funds – 29% Guaranteed/subsidized loans – 6% Exemptions or postponements of taxes and duties – 31% Insistent promotion of the Danube Delta – 34%
10	What steps do you take to minimize the impact of Covid-19 on your company's business strategy, sales and cash flow?	Reduction of staff – 3% Loans – 6% Adding other services for tourists – 30% Sale of certain products obtained locally-24% Promoting offers in agencies in other countries – 19% Aggressive promotion – 18%
11	When do you expect a stabilization of the Romanian tourism industry?	2021 – 5% 2022 – 60% 2023 – 32% 2024 – 3%
12	When do you expect a stabilization of the tourism industry in the Danube Delta?	2021 – 40% 2022 – 32% 2023 – 28% 2024 – 0%
13	Did Romanian tourists choose the Danube Delta as a tourist destination in 2020, because they had the opportunity to use holiday vouchers?	Majority – 26% Small majority – 46% They came anyway, even on their own money – 28%
14	Tourists have chosen the Danube Delta as a tourist destination in 2020:	Because they are passionate about the wild – 9% To know the local culture and traditions – 14%

		To protect yourself from Covid-19 – 71% For the local gastronomic offer – 6%
15	Tourists who visited the Danube Delta in 2020 preferred accommodation in the reception structures:	Maximum 8 rooms – 63% Between 9 and 15 rooms – 23% Up to 15 rooms – 14%
16	For the development of tourism in the Danube Delta, the authorities must:	Develop transport infrastructure – 23% Promote more aggressively the Danube Delta - 25% Organize several events – 26% Grants tax exemptions to classified accommodation owners – 26%

Source: Own processing of the data from the questionnaire

Conclusions

From the on-site analysis, from the interpretation of the data in the questionnaire, as well as from the comparative analysis with other tourist areas in Romania, it results that the pandemic had a neutral to positive effect for tourism in the Danube Delta and that, for the most part, the resilience and sustainability has been passed. In 2020, tourists were looking for safe, secluded destinations with smaller accommodation units, and the Danube Delta came first. From the findings made last summer on the spot, official statistics do not provide an accurate picture of the actual number of tourists who visited the delta. Many Romanian tourists stayed at unclassified guesthouses, locals or tents. There were periods from July to August, when the boat traffic on the canals of the Danube Delta was very crowded. Another aspect concerns the traditional fish meals. We must mention that many units had to offer meals from aquaculture fish, brought from Bulgaria or other countries, because the fishermen in the delta could not offer for sale the quantities requested by tourists. At this level, the balance between nature's supply and tourist demand was very fragile. Another aspect found during this period was that the aid promised by the central and local public authorities was very small, sometimes non-existent. Regarding the proposals from those who have invested in the Danube Delta, we must say that very few hope for state aid and believe that the development of transport infrastructure, intensive promotion of the delta and the organization of festivals will lead to attract more of tourists. Other accommodation units have intensified their links with travel agencies abroad, in order to attract ecotourists and lovers of traditions and gastronomy from European countries, but also from Israel, USA, Australia and Japan. We consider that this study is very useful for tourism entrepreneurs, for local and central public authorities and the conclusions and recommendations extracted from the questionnaires can suggest valuable ideas for the relaunch and development of tourism in the Danube Delta.

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Responsible Consumption from a Fair-Trade Perspective

Cătălina Sitnikov¹, Ionela Staneci (Drinceanu)², Silvia Mioara Ilie (Troii)³ and Alina Mădălina Belu⁴

¹⁾²⁾³⁾⁴⁾ University of Craiova, Craiova, Romania

E-mail: inasitnikov@yahoo.com; E-mail: eladrinceanu@yahoo.com

E-mail: silviailie28@yahoo.com; E-mail: alina.bbelu@gmail.com

Please cite this paper as:

Sitnikov, C., Staneci, I., Ilie, S.M., and Belu, A.M., 2021. Responsible Consumption from a Fair-Trade Perspective, 2021. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 535-541

DOI: 10.24818/BASIQ/2021/07/068

Abstract

The promise of private luxury cannot be fulfilled for everyone: we have neither the physical space nor the necessary ecological resources. But growth must continue: this is the pervasive political imperative. The consumer society appears in developed societies, the term suggesting that these societies are organized around the consumption of goods and leisure activities, rather than around the production of material goods and services. The consumer society is associated with the development of a materialistic culture, with the emergence of consumer sectors and consumer cleavages, with individualism, growing privatism and the consolidation of a mass culture. Planned wear and tear, an economic policy that originated during the American recession at the beginning of the last century in order to revive the economy by encouraging consumption, has meanwhile proved to be a generator of an unsustainable and irresponsible growth model. The sustainability of products today is influenced both by the dramatic changes that have taken place in the global economy, and by the perception of consumers and their expectations regarding the lifespan of a product. If *individual consumption* is the level at which the forms of social affirmation are manifested (in the logic of emulation and competition for prestige and power), when we talk about *fair-trade* we are referring to the social needs of individuals. We can say from the research study that fair-trade organizations seek to increase the positive development impact for small producers. Organizations are concerned with developing the skills and competencies of their employees and members. Organizations that work directly with small producers, develop specific activities to help them develop their management skills, production capacity and access to local, regional, international markets, depending on the situation. The main objective of the article is to analyze how managers perceive fair-trade in agriculture from the perspective of responsible consumption.

Keywords: fair-trade, consumption, traders, consumers.

DOI: 10.24818/BASIQ/2021/07/068

Introduction

We live in a world where workers toil in dangerous conditions and exploitation is still in full swing. Huge problems, such as climate change, are still waiting for solutions. Nowadays, the learning of consumer roles takes place at an increasingly young age. The abundance specific to the consumer society, associated with the cheapening of goods and services, has supported the development of wasteful behavior among consumers. The value attributed by consumers to a product has a significant impact on its lifespan. In other words, the durability of a product is also related to how to use it. A consumer who considers a product to be valuable and long-lasting tends to take more care of it, increasing its durability. Just as consumers are willing to pay a premium price for a high quality product, which they then use carelessly, speeding up its deterioration, so are consumers who buy standard quality products and use them as much as possible. Fair-Trade is probably the most dynamic of the many movements and initiatives that have developed in response to the negative effects of

globalization. In addition to anti-exploitation movements in the textile industry (anti-sweatshops) or the promotion of ecological certifications in the wood industry, Fair-Trade aims at a model of sustainable development and social justice. Part of the *new globalization*, the Fair-Trade movement aims to shape international trade and change the expansionist processes of corporations in the global economy, which have often undermined social and environmental conditions in the world (Barros, et al., 2015). Thus, activists in developed countries (Global North) work with producers, workers and other sectors in the world's poorest countries (Global South) and use market strategies to mobilize consumers to increase the income and capacity of producers and workers in the South (Goff, 2016). In this way, Fair-Trade seeks to redirect the transforming powers of globalization in order to achieve greater social equity on a global scale. The International Fair-Trade Network has emerged as a form of organizing groups of citizens to solve problems insufficiently managed by local authorities, government or supra-state organizations, since the 5th decade of the 20th century. Technological progress, expansion the global economy, low costs for long-haul flights, the development of telecommunications networks and the Internet, the establishment of English as a working language worldwide, the globalization of the media, all have enabled people from various social classes and places in the world to develop business relationships remote cooperation (Bartles, et al., 2019). A particular feature of these transnational movements is that they mobilize people from different countries and cultures around common goals. Fair-Trade is a trade partnership based on dialogue, transparency and respect, which seeks greater fairness in international trade. Fair-Trade contributes to sustainable development by providing better trading conditions and ensuring the rights of marginalized producers and workers, especially those in poor and developing countries. Fair-Trade organizations, supported by consumers, are actively involved in supporting producers, raising public awareness of economic inequalities and in campaigns to change the rules and practices of conventional international trade. Fair-Trade proves that greater justice is possible in world trade. Fair-Trade highlights the need to change the rules and practice of conventional trade and demonstrates the complex way in which a successful business can put people first.

The decision-making problem from which we start our research approach is the answer to the question: what is the perception of the principles that govern fair-trade? Thus, the purpose of the article is to try to clarify how managers perceive the fair-trade system in relation to rational consumption.

Review of the scientific literature

Consumption has been defined by utilitarian economists as the activity of individuals seeking to meet needs and maximize utility through market exchanges, with consumer activities taking place mostly in private space (Lodziak, 2002). In the 19th century, the industrial revolution and capitalist development were initially organized around the commodity and industrial infrastructure sector (mining, steel production, oil extraction, transportation, communications, and financial networks) and, secondarily, commodities agricultural and other essential consumer products, as well as commercial activities. At the same time, planned wear practices are being developed, which make the lifespan of a product much shorter, predetermined and designed from the production process. The development of fashion also participates in this intensification of consumption, which accelerates the depreciation of a good long before its physical wear and tear. Financial planning and lending tools are developing in parallel with the intensification of consumption, and credit bureaus are appearing in large stores (Ritzer, 2010). We use the term *responsible consumption* to refer to the approximate content of terms such as *sustainable consumption* or *sustainable consumption*, *green consumption*, *critical consumption*, *ethical consumption* or *value-based consumption*. All of these terms encapsulate a critique of mass consumption society and propose an alternative set of *Fair-Trade* criteria and practices (Raynolds, Murray and Wilkinson, 2007). Fair-Trade is a tangible contribution to the fight against poverty, climate change and the economic crisis. Initially, Fair-Trade products were distributed almost entirely by organizations that had Fair-Trade at the center of the business (Liberti, 2017). In the 70's and 80's, Fair-Trade products were sold to consumers mainly in *world shop* type units or in dedicated stores. In the second half of the 1980s, a new way of marketing them was developed, through conventional food distribution chains, with the help of the *FairTrade* product certification system (Raynolds, Murray and Wilkinson, 2007). In 1988, the Max Havelaar label was implemented in the Netherlands to certify Fair-Trade products, especially coffee. In the following years, similar nonprofit certification organizations were developed

in other European and North American countries. In 1997, the International Labeling Association was established. Beginning in the second half of the 20th century, the Fair-Trade movement began to develop in Western countries, aiming in particular at counterbalancing the injustice of international trade by protecting producers in developing countries in the South and raising awareness in the North globally (among citizens of developed countries). *The right pay for the right job!* one of the slogans of the Fair-Trade movement, criticizes the fact that often the market price is built to the disadvantage of the poorest and most vulnerable of the participants (Serreau, 2010). In addition to offering a fair price, the Fair-Trade network is committed to maintaining certain minimum price quotas, to pay in advance for raw materials ordered in developing countries and to reduce the dependence of small credit producers (Patel, 2017). FairTrade certified working conditions meet labor law standards, the environmental impact of production processes is minimal, and producer organizations adhere to democratic principles (workers are often organized into small producer associations or cooperatives).

The main stages of the evolution of Fair-Trade (Ritzer, 2007):

1. After 1945, several American NGOs launched the Self Help Craft program, to support the poor and war victims, by developing their professional skills and importing their production;
2. In the late 1950s, Oxfam in the United Kingdom did the same to support Chinese refugees.
3. In 1967, the first European importer of Fair-Trade products (the Netherlands Fair-Trade Organization) began operations, opening the first Fair-Trade stores in Switzerland and the Netherlands.
4. In 1988, the organization certifying some of the food products from the Fair Trade: FLO-Fair-Trade Labeling Organization was developed.
5. In 1989, the first International Fair-Trade Network - IFAT was developed, an organization currently called the WFTO. The World Fair-Trade Organization (WFTO) is a global community of Fair-Trade enterprises.

The main actors involved in Fair-Trade are (Goleman, 2009):

- producers or producer cooperatives, which produce products that are the subject of Fair Trade
- product certification bodies and Fair-Trade organizations
- distributors of Fair-Trade products Traders, among whom we find a special category of world shop stores (these are specialty stores, which sell and promote Fair-Trade products and the solidarity economy. Often, these stores are involved in educational programs and are managed by non-governmental organizations, supported by the work of volunteers.)

There are a large number of Fair-Trade and ethical marketing organizations that use different marketing strategies. Most Fair-Trade traders consider it necessary to sell products through supermarkets in order to obtain a sufficient volume of trade to affect the developing world (Ritzer, 2007). Fair-Trade ensures the best possible remuneration of producers, on a stable basis and taking into account the minimum income necessary to ensure a decent life, determined by producer organizations and trade unions in each country and region (Stiglitz, 2008).

Research methodology

The purpose of the research is to analyze the Fair-Trade system practiced by organizations in Romania. In the research study were involved managers of organizations in the field of agriculture having as objectives: *cultivation of plants for textile fibers, cultivation of vegetables, cultivation of fruits, cultivation of cereals.*

The data collection took place between November 2020 and February 2021, with the help of the questionnaire, a quantitatively structured research tool. A number of 523 valid questionnaires were obtained and the duration of completing the questionnaire was approximately 20 minutes.

In the analysis of the organizations subject to the research study, several practices of the Fair-Trade system were highlighted:

P1. Working conditions: organizations ensure a safe and healthy work environment for all employees. The activity carried out in conditions of maximum safety is beneficial for both the employer and the employee. The benefits are primarily due to the fact that productivity will increase considerably but also to the fact that workers will be able to perform their duties.

P2. Commercial practices: the organization is involved in traditional relationships that aim at the social, economic and ecological development of small producers and that do not maximize profit on their behalf.

P3. Transparency: the organization is transparent in the management act and in the commercial relations. It is transparent to all interested parties and it ensures the confidentiality of the commercial data provided.

P4. Environment: Manufacturing organizations maximize the use of raw materials from sustainably managed sources, purchased locally, where possible.

In the modeled socio-economic universe, the problems of assisting the economic decision are generated by the multicriteria decision-making processes that we used in the study of the research of the *maximum utility method*.

Modeling seeks to make the most of the information base scientifically, and the procedures for imitating the rational mode of decision-making are, in more or less elaborate forms, the conceptual essence of models.

The steps of the global utility method are as follows:

Step 1. Build the utility matrix with the elements, $i = 1, \dots, r$ $s_i j = 1, \dots, n$.

Each element of the matrix is calculated for the maximum criterion with the expression:

$$x_{ij} = u_{ij} = \frac{x_{ij} - x_{i\min}}{x_{i\max} - x_{i\min}} \quad (1)$$

and for each minimum criterion with the expression:

$$x_{ij} = u_{ij} = \frac{x_{i\max} - x_{ij}}{x_{i\max} - x_{i\min}} \quad (2)$$

where:

x_{ij} = the value of indicator i associated with indicator j ;

$x_{i\max}$ = the minimum value of indicator i ;

$x_{i\min}$ = the maximum value of the indicator i .

Step 2. Calculate the overall utility for each project as the sum of the products in the element of the utility matrix (the column vector corresponding to the project) and the important coefficient given for each indicator.

$$UG_j = \sum_{i=1}^r \alpha_i u_{ij}, \text{ where } \sum_{i=1}^r \alpha_i = 1 \quad (3)$$

Step 3. Choose the project that corresponds to the maximum global utility.

$$\max\{UG_j\} \Rightarrow V_j, j = 1, \dots, n \quad (4)$$

For the division of some decision V_i variants (n variant) and for the selection of the best one offered by the simultaneous consideration of several criteria of appreciation ($C_j, j = 1, \dots, n$) and the global utility.

Finding the best combination of attributes (characteristics of a variant) forms the object of the multi-attribute problem.

This involves the transformation of all numerical values a_{ij} (expressed in associated units of measure) and qualitative characteristics into utilities u_{ij} , ie numerical values located in the interval [0, 1]. The basic assumption in the correct function of the weighted sum method is the independence of the criteria. The largest of the synthesis utilities indicates the best option.

Results and discussion

Table no. 1 presents the informational basis of the study, respectively the share of importance that managers give to each Fair-Trade practice.

Table no. 1. The importance of Fair-Trade practices

FAIR-TRADE PRACTICES	FIELD OF ACTIVITY			
	Cultivation of plants for textile fibers % (v1)	Growing vegetables % (v2)	Fruit cultivation % (v3)	Cereal cultivation % (v4)
Working conditions - C1	16.45	22.35	27.5	12.5
Commercial practices - C2	10.55	15.15	11.9	23.61
Transparency - C3	8.9	13.25	9.8	10.54
Environment - C4	23.45	16	11.82	23.55

Source: developed by the authors based on the collected data

The results obtained indicate that the managers who participated in the research study first consider the environmental practices (C4) and, finally, the transparency practices (C3) necessary to strengthen shareholder confidence - Figure no. 1

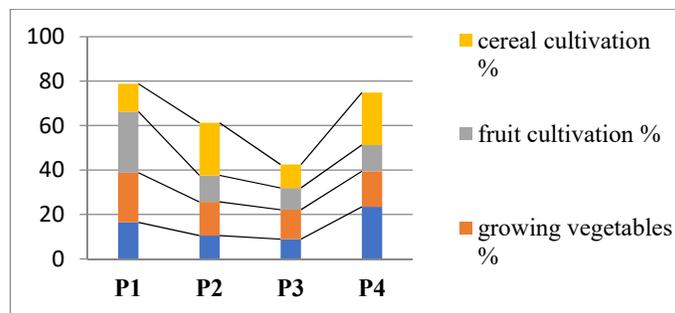


Figure no. 1. The share of commercial practices

Source: developed by the authors based on the collected data

Going through the calculation algorithm involved:

Step 1 - building the unit matrix with the elements x_{ij} Figure no. 2

$$\begin{bmatrix} 0,26 & 0,66 & 1,00 & 0,00 \\ 1,00 & 0,65 & 0,90 & 0,00 \\ 0,00 & 1,00 & 0,21 & 0,38 \\ 0,99 & 0,36 & 0,00 & 1,00 \end{bmatrix}$$

Figure no. 2. The matrix of units

Source: developed by the authors based on the collected data

Step 2 - Calculation of global utilities for each organization (Table no. 2):

Table no. 2. Results of the calculation of global units

FIELD OF ACTIVITY	RESULT
CULTIVATION OF PLANTS FOR TEXTILE FIBERS	2.25
GROWING VEGETABLE	2.66
FRUIT CULTIVATION	2.10
CEREAL CULTIVATION	1.38

Source: developed by the authors based on the collected data

Step 3 - From Table 2 is observed by the calculation of global utilities, the highest global utility of agricultural organizations that deal with the growing vegetables.

Therefore, following the application of the algorithm for calculating the maximum global utilities method, it can be concluded that the vegetable cultivation organizations best assessed the importance of Fair-Trade from the perspective of rational consumption.

We can say that the transition from traditional agriculture to agribusiness is causing disaster in rural areas, both in developed and developing countries. In addition, international trade contributes to the relocation of the food production function to the countries with the lowest production costs. Poverty reduction through trade is an essential principle of intervention. Fair-Trade supports small producers, whether they are in the form of family associations or grouped in producer associations or cooperatives. It aims to support them in moving from poverty and insecure income to a state of economic security. Manufacturing organizations use production technologies that aim to reduce energy consumption and, where possible, use renewable energy technologies that minimize greenhouse gas emissions. At the same time, producer organizations aim to minimize the environmental impact of waste. Farmers minimize their impact on the environment by using organic pesticides or light pesticides whenever possible. The members of the Fair Trade Network give priority to products made from raw materials that come from sustainably managed sources and have the lowest possible impact on the environment. All organizations use recyclable or slightly biodegradable materials for packaging, and goods are shipped by sea whenever possible.

Conclusions

Organizations undergoing the research study are participating in raising awareness of the objectives of Fair-Trade and the need to ensure greater justice in international trade. Fair-Trade organizations have information on the health and safety conditions of the producer groups from which they buy the products. They shall constantly seek to draw attention to and improve the health and safety of producers in producer groups. Organizations will provide its consumers with access to information about their business, about the products they sell. The various parties involved in trade relations aim to increase the volume of trade between them, as well as the value and diversity of product supply, in support of producers, thus ensuring an increase in revenue. Organizations find the best ways to involve employees, members and manufacturers in the decision-making process. This ensures that relevant information is provided to all trading partners. Communication channels operate at all levels of the distribution chain. Organizations are participating in raising awareness of the objectives of Fair-Trade and the need to ensure greater justice in international trade. The fair price is one that has been mutually agreed by all actors involved, through dialogue and participation, that ensures a fair payment of producers and that can be supported by the market. Where there are pricing mechanisms, they are used to a minimum. Fair pay means ensuring a socially acceptable wage (in the local context), considered by the producers themselves to be fair and taking into account the principles of equal pay for equal work done by men and women. Marketing organizations and importers of products support the development of the ability of manufacturers to set a fair price. Organizations that purchase Fair-Trade products from producer groups, either directly or through intermediaries, will ensure that forced labor is not used in the production process and that producers comply with the regulations set out in the United Nations Convention on the Rights of the Child and the laws national / local authorities on child labor. Organizations do not discriminate in the process of employment, remuneration, access to training, promotion, dismissal

or retirement on the grounds of race, caste, ethnic origin, religion, disability, gender, sexual orientation, trade union membership, political affiliation, or age.

In conclusion, Fair-Trade is a trade partnership based on dialogue, transparency and respect, which seeks greater equity in responsible consumption. It contributes to sustainable development by providing better trading conditions and ensuring the rights of marginalized producers and workers. Consumer behavior regarding responsible consumption is shaped by its historical, economic and socio-cultural context and on the other hand the consumer uses consumption to position himself in the family, community, workplace or society and to build / assert identity.

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Innovation and Business Development in the Current Market Economy

Costinel Cristian Militaru¹, Mariana Paraschiva Olaru (Staicu)², Aurel Dincă³ and Ionuț Riza⁴

¹⁾²⁾³⁾⁴⁾ *University of Craiova, Craiova, Romania.*

E-mail: cristianmilitaru2005@gmail.com; E-mail: mariana.staicu@icloud.com

E-mail: aureldinca@yahoo.com; E-mail: rizaionut@gmail.com.

Please cite this paper as:

Militaru, C.C., Olaru, P.M., Dincă, A. and Riza, I., 2021. Innovation and Business Development in the Current Market Economy. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 542-549 DOI: 10.24818/BASIQ/2021/07/069

Abstract

Managers, if they want to develop, must step out of their comfort zone and think from new perspectives. There has been a lot of talk about innovation lately and there will be a lot of talk from now on. Progress is defined by the difference between creativity and innovation. In any business, creativity is used to generate ideas, while innovation is the same tool it uses to put ideas into practice. To innovate means to adapt to the trends that are shaping up in the local business environment and to generate ideas that will help you make a difference. To innovate means to be one step ahead, to make progress, to obtain good results, to outline a team that thinks in unison and to emphasize, first of all, on promoting the values of the organization. Exploiting new ideas is certainly crucial for any business, because it improves the quality of services and products, creates better communication with customers, generates efficiency and, most importantly, helps increase profits. The main purpose of the research is to study the innovation process practiced by managers in today's market economy. In this study we used as a research method quantitative-comparative analysis, by presenting all the details regarding the business innovation process demonstrating the correlations between each element of innovation. The decision-making problem from which we start in our research approach is the answer to the question: is there a causal link between the elements of the innovation process? Regarding the contribution to the literature we can say that the innovation process integrates elements specific to management, focusing on defining and implementing the management system that ensures the achievement of a continuous flow of innovation in the organization.

Keywords: innovation, product, process, marketing.

DOI: 10.24818/BASIQ/2021/07/069

Introduction

A company that wants not only to stay on the market, but to constantly grow has the duty to constantly seek innovation. A true engine of business success and also a sure way to solve problems that occur unexpectedly in the life of the organization, innovation is the surest way to differentiate itself from the competition. Can a business grow only if it innovates? There are many cases in which revolutionary ideas have needed consistency to become reality.

The word *innovation* sounds beautiful, and it is based, first and foremost, on innovative culture. Thus, it is more than important to analyze the people who can form this culture (Richard, Bessant and Phelps, 2006). An innovation process cannot exist without people changing their thinking. The innovation process is a succession of activities that try to turn one or more ideas into products or services for the market, ie money (Stroeva, et al., 2014). It is obvious that not all ideas can turn into products that the market can accept, so pay for them. For this reason, in order to have a sufficiently rich portfolio of

ideas, to have a choice, we must have several sources of ideas and a mechanism for selecting them, before we can hope that they will be found. Some of which can later be turned into money. Business innovation can start from a single successful idea, whether it is a new service or a new product. Innovation can be based on a series of small but significant changes for the development of the organization. In any case, innovation should be part of the company's development strategy (Hidalgo and Albors, 2008). In order to develop a business, it is more than essential to know who the direct competitors are and in which areas they operate. Almost exclusively the prerogative of industry leaders, innovation consists in transforming a new idea into a product or service that brings benefits to both consumers and companies. Whether we are dealing with a revolutionary change or a moderate one, an innovation has as its only role the progress in one or more fields. Once the direction of continuous innovation is set, the company that chose this path benefits from a much improved productivity, considerably lower costs and better competitiveness on the market. With services and products adapted to market demand, to which is added a solid communication strategy, any brand gains value, and opportunities for new partnerships appear on the horizon very quickly (Cormican and O'Sullivan, 2004).

The main objective of the article is to highlight the way in which managers from Romania perceive the innovation process. In order to obtain the most complex results, each process element was analyzed, respectively if there is a correlation between each innovation element.

Review of the scientific literature

A simple perspective on innovation in the organizational environment is that you must first create the space for expressing ideas. Some ideas will be new, innovative, while others may be from other registers: from banal to utopian. There are organizations that have implemented communication platforms, in which any employee can make their ideas public, then those ideas that are chosen and supported by as many people within the organization go further, reaching to be put into practice. Some organizations call this process the *Idea Exchange* (Blank & Dorf, 2020). At the same time, this approach shows some very subtle phenomena, which limit innovation and send us to the culture of the organization. There are not many people who have truly innovative ideas and there are not many who have the courage to make them known or even, a step further, to build a *business case* for their implementation (Kelley, 2016).

In principle, business innovation includes the following aspects (Drucker, 2016):

- improving or replacing business tools to achieve better results or to increase the organization's sales;
- development of new services or products, adapted to local trends and customer needs;
- promoting the company's values, so that you are different from the competitors.

Creating space for the expression of ideas is a step in the direction of a culture of innovation, but it is only the beginning. There are several organizations in which there is an employee, usually in a managerial position, who acts as a *catalyst* for innovation in that organization (Clayton, 2016). Even if there is a place where ideas gather or there is a manager who leads this process, the real organizational culture can encourage or discourage people's curiosity, courage, creativity, questioning current procedures, questioning the authority of managers, experimentation and mistakes (Scott et al., 2008). This behavioral perspective leads us directly to the environment, the atmosphere that was created in that organization, with all its beliefs and behaviors, less visible and accepted.

The challenges and themes for reflection for leaders who want to create a culture that facilitates innovation can be (Keeley et al., 2013):

- *What kind of organizational structure should we build to facilitate a culture of innovation?*
- *What kind of management style should we have in the organization to encourage questions, reflection, curiosity, experimentation, mistakes, courage?*

The changes are related to the creation of a vision shared by all members of the organization, a positive vision, in clear images, to inspire everyone to act as they may not have acted before. This vision will be the crucible, the framework in which innovation will appear. This vision will require a new structure and perhaps a new way of functioning in the organization: new processes that include reflection after action, which include the implementation of lessons learned by both leaders and specialists, work processes that include and allow the question mark of current modes of operation or which allow experimentation, curiosity, error and perseverance in taking it from the beginning. Collaboration and team spirit are what underpin learning and innovation in the organization, because learning is a team discipline (Scott et al., 2008). Dialogue thus becomes a central form of communication within the organization. Power games no longer make sense and no longer consume employees' energy, because they are no longer allowed and validated by team members, regardless of their level (Blank & Dorf, 2020).

Bringing innovation to the organization means creating a new way of leading people, so that they create new services, products, processes. Innovation will fundamentally change the way we understand leadership - it brings the understanding that leaders are the ones who create the right framework for specialists to stand out as much as possible and work well together. The challenge will be about seeing reality as a source of growth and development opportunities, not as a source of obstacles and difficulties.

Research methodology

The purpose of the article is to determine how managers from Romania perceive the business innovation process. The innovation process is structured on several process elements:

11) Product innovation: refers to goods and services with characteristics or intentions of use that differ significantly from previous products made by the organization;

12) Process innovation: occurs in both service and production sectors and includes new or significantly improved production methods: logistics, supply and distribution systems and back office activities such as maintenance, purchasing and accounting operations;

13) Organizational innovation: represents the implementation of a significant change in the company's business practices, the organization of responsibilities and decision-making in the workplace, which includes training or education to increase skills and responsibilities and the organization of external relations with other companies or public institutions;

14) Marketing innovation: refers to significant changes in the way an enterprise sells its goods and services, including changes in design and packaging.

Based on the purpose of the scientific research, the following objectives have been drafted:

1. Analyzing the innovation process;
2. Analyzing the process elements that make up the process;
3. Identifying the links between the process elements.

Data collection was performed between October 2020 and February 2021, using the questionnaire. A number of 512 valid questionnaires were obtained. In the processing, processing and analysis of the collected data, the special statistical research software S.P.S.S. (Statistical Package for the Social Sciences), with the help of which the Spearman rho Correlation Coefficient was calculated;

Results and discussion

To validate the objectives, we used the most common and by far the most useful, the Spearman rho correlation coefficient, with the help of the special statistical research software S.P.S.S. (Table no.1).

Table no. 1. The values of the correlation coefficient Spearman rho

Correlations				
Spearman's rho	I1. Product innovation	I2. Process innovation	I3. Organizational innovation	I4. Marketing innovation
I1. Product innovation	1.000	.921**	.837**	.823**
I2. Process innovation	.921**	1.000	.800**	.784**
I3. Organizational innovation	.837**	.800**	1.000	.895**
I4. Marketing innovation	.823**	.784**	.895**	1.000

Source: processing data obtained through SPSS program

Following the analysis of the Spearman rho correlation coefficient, we can observe the following correlations between the different process elements that make up the public management system:

1. There is a very significant positive relationship between *I1. Product innovation* and *I2. Process innovation* ($\rho = 0.92$, $df = 512$, $p < 0.001$). From the scatter plot (Figure no.1) it can be seen that the point spread is relatively limited, which indicates a strong correlation ($R^2 = 0.81$). The slope of the scattering of the results is a relatively straight line, indicating a linear rather than a curvilinear relationship.

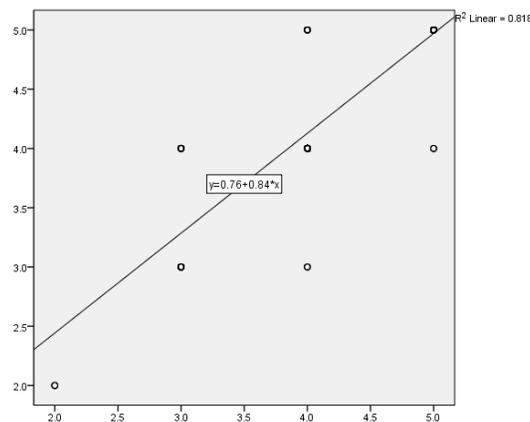


Figure no. 1. Dispersion diagram - the correlation between I1. Product innovation and I2. Process innovation

Source: processing data obtained through SPSS program

The correlation between *I1. Product innovation* and *I2. Process innovation*, appears as a reaction of several factors - for example, consumer needs are determined by social, cultural or economic factors, while at business and organizational level, product innovation is done when the goal is to expand to new market segments or gaining a competitive advantage.

2. It can be seen from Table no. 1, that there is a very large significant positive relationship between *I1. Product innovation* and *I3. Organizational innovation* ($\rho = 0.83$, $df = 512$, $p < 0.001$). The scatter plot (Figure no. 2) reveals that the point spread is relatively limited, which indicates a strong correlation ($R^2 = 0.67$). The slope of the scattering of the results is a relatively straight line, indicating a linear rather than a curvilinear relationship.

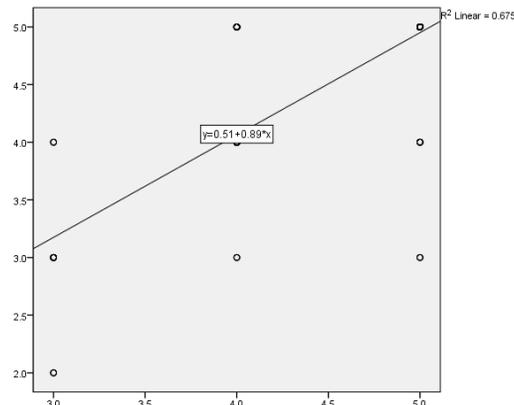


Figure no. 2. Dispersion diagram - the correlation between I1. Product innovation and I3. Organizational innovation

Source: processing data obtained through SPSS program

We can say that the correlation between *II. Product innovation* and *I3. Organizational innovation* is the most visible for the consumer and refers either to the improvement of older products in the company's history, or to the development of new products based on new technologies or solving new consumer needs.

3. Between *II. Product innovation* and *I4. Marketing innovation* there is a very significant positive relationship ($\rho = 0.82$, $df = 512$, $p < 0.001$). From Figure no. 3, the scatter plot reveals that the point spread is relatively limited, which indicates a strong correlation. The slope of the scattering of the results is a relatively straight line, indicating a linear rather than a curvilinear relationship.

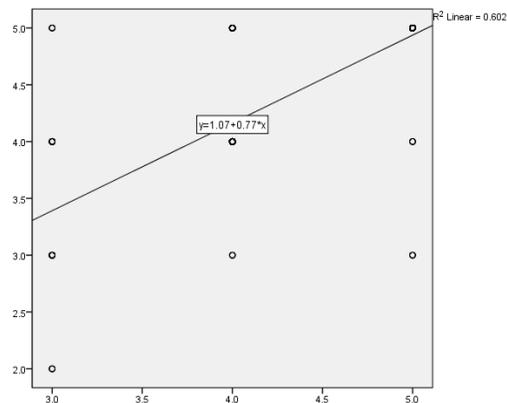


Figure no. 3. Dispersion diagram - between I1. Product innovation and I4. Marketing innovation

Source: processing data obtained through SPSS program

A strong correlation between *II. Product innovation* and *I4. Marketing innovation* can better meet customer needs, aims to open new markets or a new positioning of the company's products on the market, with the aim of increasing the company's sales.

4. Analyzing *I2. Process innovation* and *I3. Organizational innovation* results in a very large significant positive relationship ($\rho = 0.80$, $df = 512$, $p < 0.001$). The scatter plot (Figure no. 4) reveals that the point spread is relatively limited, which indicates a strong correlation ($R^2 = 0.61$). The slope of the scattering of the results is a relatively straight line, indicating a linear rather than a curvilinear relationship.

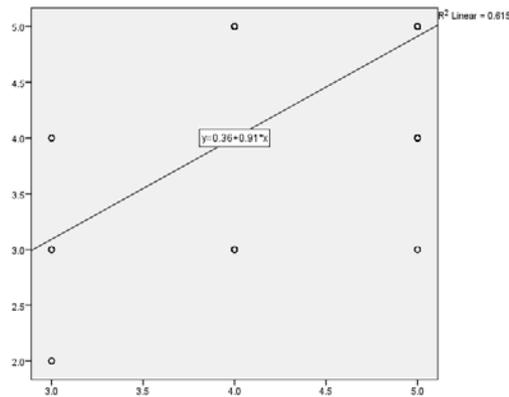


Figure no. 4. Dispersion diagram - correlation between I2. Process innovation and I3. Organizational innovation

Source: processing data obtained through SPSS program

A significant correlation between *I2.Process innovation* and *I3.Organizational innovation* ensures the increase of the company's performance by reducing administrative or transaction costs, improving job satisfaction or reducing supply costs.

5. Between *I2.Process innovation* and *I4.Marketing innovation* there is a very significant positive relationship ($\rho = 0.84$, $df = 512$, $p < 0.001$). The scatter plot reveals that the point spread is relatively limited, which indicates a moderate to strong correlation ($R^2 = 0.54$) - Figure no. 5 The slope of the scattering of the results is a relatively straight line, indicating a linear rather than a curvilinear relationship.

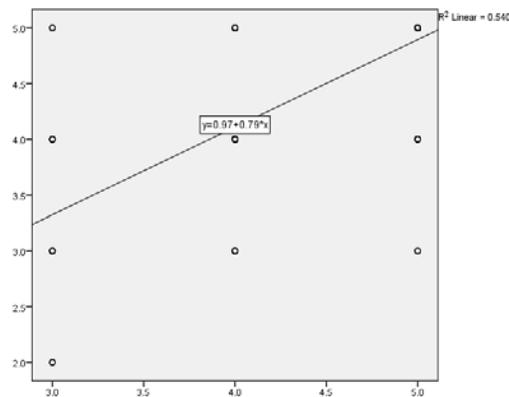


Figure no. 5. Dispersion diagram - correlation between I2. Process innovation and I4. Marketing innovation

Source: processing data obtained through SPSS program

Correlation between *I2.Process innovation* and *I4.Marketing innovation* applies when all the channels that a company has at its disposal and the way it uses them, to connect customers and users with new offers. This correlation is manifested by understanding the needs of consumers and by satisfying those needs through different offers, not only related to the product.

6. There is a very significant positive relationship ($\rho = 0.89$, $df = 512$, $p < 0.001$) and between *I3. Organizational innovation* and *I4. Marketing innovation* (Table no. 1). The scatter plot (Figure no. 6) reveals that the point spread is relatively limited, which indicates a moderate to strong correlation ($R^2 = 0.74$). The slope of the scattering of the results is a relatively straight line, indicating a linear rather than a curvilinear relationship.

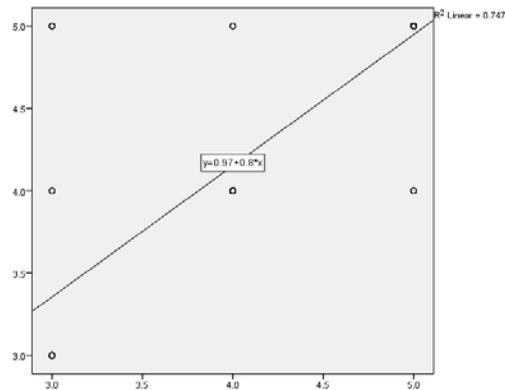


Figure no. 6. Dispersion diagram - the correlation between I3. Organizational innovation and I4. Marketing innovation

Source: processing data obtained through SPSS program

Correlation between I3. *Organizational innovation* and I4. *Marketing innovation* aims to analyze the economic situation on the market in order to develop market segmentation, to develop demand and to shape consumer behavior. Such a high correlation can aim to improve the efficiency of the company by reducing administrative or operating costs, increasing employee satisfaction or lowering supply costs.

Conclusions

In a competitive, ever-changing environment, innovation is an essential activity for the development / survival of any organization in any field. Being a creative process, the innovation can come both from the departments specially designed to generate it, and through the feedback provided by suppliers, customers, the media or specialized studies conducted by authorities or competition. Applied correctly, innovation leads to increased turnover and profit and can contribute to building an impeccable brand image, which is passed from one generation of employees to another. Success can come from simply filtering out these ideas and identifying effective ways for organizations to continually benefit from motivated employees who can carry out the most ambitious plans. Without an innovation-oriented vision, a business may face a loss of market share, declining production, migrating employees to competition or even disappearing.

Organizations on the road to innovation have several ways to achieve this:

- developing marketing concepts perfectly adapted to the market;
- adopting a sustainable business model;
- development of new services or products;
- rapid transition from idea to service or from prototype to product;
- improving production and maintaining its low costs;
- gradually building a consistent brand image.

Innovation should be manifested in all activities of the company: in the development of new technologies, products and services, in marketing, sales techniques, in organizational methods, new management techniques. Innovation is influenced by the depth of the knowledge process and the diversity of approaches at the organizational level.

In conclusion we can say that innovation in business is important because:

- helps increase productivity;

- helps reduce costs;
- helps to promote the company's values;
- helps to create new partnerships or business relationships;
- helps increase the company's profit.

Organizational efficiency, based on innovation, is achieved by reducing the distance between strategy, operation, structure and people - with a special focus on implementation. Organizational change should be thought through beforehand and be part of a conscious decision as part of a management to improve the performance of the enterprise. This does not mean that organizational change must be successful in order to be counted as an innovation only if there is a measurable change in performance, such as productivity or direct sales.

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The Effects of Fiscal Pressure on the Tourism Industry

Oana Oprisan¹, Ștefania-Rodica Hubel (Anghel)² and Gabriela Iuliana Paraschiv (Ganea)³

¹⁾ *Ovidius University, Constanta, Romania.*

²⁾³⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: oana.oprisan@yahoo.com; E-mail: anghel.st77@yahoo.com

E-mail: gabriela.iuliana.ganea@gmail.com.

Please cite this paper as:

Oprisan, O., Hubel (Anghel), S.R. and Paraschiv (Ganea), G.I., 2021. The Effects of Fiscal Pressure on the Tourism Industry. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 550-557

DOI: 10.24818/BASIQ/2021/07/070

Abstract

This article is a study on fiscal pressure, which, like any other economic phenomenon, involves a number of limits of tolerance on the part of taxpayers. This topic is of particular interest to the Romanian economy, which has faced a deep crisis manifested by numerous macroeconomic imbalances. Fiscal theories argue for increasing fiscal pressure by introducing new taxes and duties, or by increasing the size of existing taxes. The taxpayer agrees to pay the tax, but at some point, when they exceed certain limits of affordability, there are phenomena that bring serious disservice to the state's ability to collect this revenue. Out of a desire to oppose this phenomenon, the taxpayer tries in every way to evade the tax, hoping for a reduction in fiscal pressure. The increase of the fiscal pressure is related both to the economic and social role that the state has, and to its intervention in order to ensure the necessary sources to cover public expenditures.

Currently, tourism companies apply two taxation systems: (i) either the 3% income taxation system applied to taxable income, in the case of those entities that obtain revenues of up to 65,000 euros; (ii) either the profit taxation system at the rate of 16% of the tax profit, for the other taxpayers. For economic and fiscal reasons, it is intended to introduce the third taxation system, namely the tax specific to certain activities. We have chosen its analysis because any company paying profit / income tax must analyze at the end of the financial year before the entry into force of the new regulation the conditions imposed by the legislator and decide which is the taxation system for the next year,

Keywords: Fiscal policy, fiscal pressure, taxation system, economic agent.

DOI: 10.24818/BASIQ/2021/07/070

Introduction

The study of fiscal pressure has been of particular interest to many established theorists of economics, so there are several definitions in the literature given the term fiscal pressure. Academician Tulai Constantin claims that the fiscal pressure means how oppressive the taxes are or, in other words, how big is the fiscal burden that presses on the shoulders of the taxpayers. The entrepreneurial sector is not sufficiently developed to determine the increase of the taxable mass and of the fiscal incomes, the modest incomes of the population being those that ensure the increase of the taxation. In view of this recital, which will influence the level of taxation for a long period of time, as well as the negative consequences left by the Great World Financial Crisis, it is inevitable that the fiscal burden on taxpayers will increase gradually but continuously, until a balance is registered, also highlighted by a sustainable economic stability. In order to achieve its role in fiscal policy, it is necessary for the fiscal pressure to harmonize two opposite perspectives: from the state's perspective, it must be as high as possible in order to cover public spending, and from the citizen's perspective the fiscal pressure as low as possible.

According to some economists, a high degree of fiscal pressure has negative effects on the saving and investment process, as income tax affects registered savings, but also income from investments. So, Arthur Laffer stated that lower tax rates may be confronted with revenues from constant taxes or higher revenues than primary revenues. Around 1980 he reproduced in graphic form under the name "Laffer curve" the idea given by Adam Smith in 1776, according to which an exaggerated share of taxation can have negative effects on taxation. Arthur Laffer, in his attempts to determine the fiscal optimum, stressed that an increase in the tax burden does not mean at the same time an increase in tax revenues, the population considering taxes a withholding of their income and how a means of financing public spending. However, a decrease in the tax burden leads to a higher volume of tax revenues,

Review of the scientific literature

Taxation (Brezeanu, 2009) is the system of collecting taxes and fees through taxation, and the tax office is the state institution that establishes and collects contributions to the state, checking and tracking frequently those who have not paid these contributions. Thus, we can define taxation as the system of establishing the financial resources of the state, being considered by taxpayers as a form of coercion. In the literature there are several definitions given to the term fiscal pressure, its study being of special interest to several economists concerned with macroeconomic issues. Academician Tulai Constantin argues that "fiscal pressure means how burdensome taxes are or, in other words, how big is the fiscal burden that presses on the shoulders of taxpayers" (Tulai and Șerbu, 2005). In another approach, the tax burden is seen as a relative expression of the tax burden borne by the taxpayer. Another author, Professor Nicolae Hoanță, appreciates "the fiscal pressure is generally given by the tax rate, which is calculated as the ratio between the tax revenues (central level and that of local authorities) including the contribution to state social insurance in a certain period, usually one year, and the value of the gross domestic product, realized in the same period, by a national economy" (Hoanta, 2010).

Regardless of the terminology used, or the way it is defined, the fiscal pressure must be seen from two diametrically opposed perspectives, namely from the perspective of the state that wants it to be growing in order to cover ever-increasing public spending, but also from the perspective of the taxpayer who wants the fiscal pressure to be as low as possible (Văcărel, et al., 2008).

The term fiscal pressure is widely used in the literature and in fiscal policy to designate the extent of redistribution of national income (gross domestic product or even gross national product) through the payment/collection of taxes (Mosteanu, 2001). Sometimes the quality of taxpayers is disregarded (individual households, private private companies, state-owned companies, joint ventures). At other times, the fiscal pressure is limited only to individual taxpayers, payers of direct taxes. There are situations when in the appreciation of this pressure all kinds of state revenues, all sources of budgetary revenues (direct and indirect taxes, excises, taxes of all kinds) are taken into account.

In Romania, the problem of fiscal pressure is particularly current due to the fact that, on the one hand, we are still in the phase of modernizing the fiscal system, and on the other hand, because the Romanian economy feels the lack of available capital to be invested. Due to the situation of the economy, the incomes realized by the taxpayers are relatively low in order to be easily burdened by a taxation of the dimensions of the current one.

In the United States, for example, the federal tax burden is determined by taking into account the following: individual income taxes, sales taxes and excise taxes, social security taxes, corporate taxes, value added taxes (Samuelson and Nordhaus, 2000).

In order to calculate the fiscal pressure, in general, including at the level of the federal states, the taxes and fees paid to them are taken into account, such as: property taxes, inheritance taxes, certain taxes on the sale of goods, taxes on "vices", etc. (Yaple, 2015). In fiscal practice and statistics in some Western European countries, the fiscal coefficient or fiscal pressure is used by taking into account state tax revenues and local authorities from: taxes related to production and import, taxes on income and wealth, taxes on capital. Consequently, the fiscal pressure expresses and measures the share of taxes paid/collected in relation to the mass of gross value added in the country in a time horizon, usually one year (Fiscal pressure = Fiscal revenues / GDP).

In France, a distinction is made between this indicator and the more general indicator, which also includes social security contributions. The latter indicator measures the part of national income that is used socially or for social purposes. It is calculated by relating taxes and social contributions to the gross domestic product, expressing the percentage of compulsory levies in the broadest sense (by law), levies intended to cover the social needs of the population. In recent years, the tax burden in France has been about 25%, and social security contributions have accounted for almost 20% of gross domestic product.

In a general sense, fiscal pressure is a specialized term that expresses the average intensity of the burden or obligation of all taxpayers to pay taxes to the central government and to local authorities (Dictionary of Economics, 2001).

This relationship is also called the fiscal coefficient, which is calculated as a percentage ratio between tax payments / receipts and gross domestic product or a ratio of another macroeconomic indicator of results (gross national product, gross domestic product, national income).

The magnitude and dynamics of the fiscal pressure are measured and assessed by the tax rate. The size of this rate shows the share of the national income taken over by the state, an amount established by laws or fiscal regulations. A special form of this rate is the marginal tax rate, which consists in the ratio between the increase of tax obligations of taxpayers and the increase of national income. This can be higher, equal or lower than the previous average tax rate.

Both the average tax rate and the marginal tax rate are of great importance (Nouzille, 2000). Their dimensions and dynamics are integrated in the substantiation of the strategy of economic growth and social development, in the policies of ensuring economic stability and promoting social justice. In relation, the averages of these relatively long-term rates in a given country or group of countries, as well as the average rates existing at a given time (in a given period) in the countries at the top of the world economy, may exist. You can practice: low (low) rates, high rates and optimal rates.

The low tax rate implies a low pressure on taxpayers, so relatively low revenues to the state budget and local government budgets (Popa, 2009). According to some neoliberal authors, such a tax rate can stimulate the overall effort to achieve a stability of national disposable income, to accelerate economic growth and, therefore, to increase fiscal revenues to the budget.

The high tax rate, especially a rising marginal tax rate, could lead to tax evasion, tax fraud, a decrease in gross domestic product, and therefore, ultimately, a decrease in tax revenues to the state budget.

The optimal rate of taxation or tax pressure consists of that tax threshold to which and beyond which tax revenues are lower.

The analytical tool with which the optimal rate of taxation is presented is the Laffer Curve, after the name of the American professor who explained the optimal relationship between the tax rate and the size of revenues collected from the state budget (The MIT Dictionary of Modern Economics, 1992). American professor Arthur Laffer insisted that a rate that exceeds the optimal level has a discouraging effect on investors and employees.

Research methodology

A fiscal pressure over certain limits can create some dangers on the following levels: i) socially: general dissatisfaction, social disturbances; ii) on the economic-social level: the phenomenon of “undeclared work”, tax evasion and fraud, economic crime; iii) economically: it does not stimulate work, investments and savings, it does not achieve the intended increase of tax revenues.

According to some economists, a high degree of fiscal pressure has negative effects on the saving and investment process, as income tax affects registered savings, but also income from investments.

We conclude that the reduction of taxation must be made on the basis of a fiscal reform that must seek to increase the tax base, while reducing tax rates, but without limiting the revenues that the state budget needs.

In conducting the study, the following methods were used: analysis of data and information from a series of books and specialized materials in the field of taxation and finance, comparison between the tax doctrines of international and Romanian economic schools and deduction, formulating conclusions in the basis of the study.

Results and discussion

Tourism is an important economic activity, with an extremely positive impact on growth and employment in Europe. It also occupies an increasing percentage of the lives of European citizens, with the number of people traveling for personal or professional purposes becoming higher and higher. Tourism is an activity related to the cultural and natural heritage, as well as to the contemporary traditions and cultures of the European Union; it exemplifies the need to reconcile economic growth with sustainable development, including its ethical dimension. Tourism also plays an important role in strengthening Europe's image in the world, in protecting our values and in promoting the attractiveness of the European model, which is the result of centuries of cultural exchange,

Analysis of the fiscal pressure on types of levies in the field of tourism in Romania

The analysis of the fiscal pressure on the main components in the field of tourism in Romania brings us more information on the share of the main types of taxes in GDP. For a start, we analyzed the evolution of the fiscal pressure on direct taxes, indirect taxes and social contributions. The shares that direct taxes, indirect taxes and social contributions obtained in relation to gross domestic product are a reflection of the values that these taxes recorded in the years under analysis.

Table no. 1 (% GDP) - Comparative analysis between direct, indirect taxes and social contributions as a share of GDP in the field of tourism in Romania

The year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Until 30.04.2020
Direct taxes	17.8	17.1	17.6	16.8	16.8	16.8	5.7	6.7	6.4	6.3	5.7	2
Indirect taxes	11.7	11.2	11.3	11.2	11.1	11.2	11.7	11.8	11	10.3	11.6	3.8
Social contributions	10.9	10.8	11.6	10.5	10.4	10.4	9.8	9.9	9.4	9.5	8.9	2.9

Source: Ministry of Public Finance website

Direct taxes have a share in the gross domestic product, during the analyzed years, around 16-17%. In 2015, reaching approximately 5.7%, the lowest value on the analyzed interval, after which direct taxes enter a slightly upward trend.

In 2018 compared to 2017, the share of direct taxes in total budget revenues in the field of tourism decreased by 1.5%, registering a share of 26.34%. Compared to 2016, in 2018 the share of direct taxes in the total budget revenues in the field of tourism increased by 1.21%. In 2019, compared to 2018, the share of direct taxes in the total budget revenues in the field of tourism increased by only 0.21%, registering a percentage of 26.55%.

In the case of indirect fiscal pressure during the analyzed period, they enter a slightly downward slope, in the period 2009-2014, after which they are relaunched on a slightly upward slope, and in 2018 will decrease, registering the lowest value of indirect taxes. After this year, in 2019 the upward trend begins to appear again registering a value of 11.6%, a value close to that of 2016.

Regarding the situation of social contributions, their share is decreasing from 11% to 10%, as a result of the reduction of their quotas. In the period 2009-2014, the social contributions mobilized from the incomes of the presented tourism workers are approximately close, and the highest value registered in

2011 being 11.6% of GDP. In the following years, the social contribution will enter a slightly downward trend, the lowest value being 8.9% in 2019.

The detailing of the fiscal pressure on types of taxes shows which of them presses the most on the shoulders of taxpayers.

Table no. 2. (% GDP) - Analysis of VAT, excise duties and other taxes mobilized in the field of tourism

The year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Until 30.04. 2020
VAT	6.3	6.4	6.2	6.7	6.3	6.1	8.3	8	8	6.8	7.7	2.6
Excise	2.6	2.4	2.6	2.5	2.8	3.3	3.2	3.2	2.6	3.1	3.4	1.0
Other taxes	1.1	0.8	0.6	0.4	0.4	0.4	0.1	0.1	0.4	0.4	0	0

Source: Ministry of Public Finance website

Table no. 3. (% GDP) - Analysis of income and profit tax in the field of tourism

The year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Until 30.04. 2020
Income tax	3.4	3.2	3	3.2	3.2	3.5	2.9	3.7	2.8	3.7	3.5	1.1
Tax	2.6	1.9	2.2	2.1	2.2	2.2	2.4	2.7	2.5	2.4	2.0	0.9

Source: Ministry of Public Finance website

It can be seen during the analyzed period that the share of VAT increased from 6.3% to 8.3% in 2017, followed by a downward trend, so that in 2019 it will rise again to 7, 7%, growth driven by the 2010 tax reform, which has the effect of increasing consumption.

Excise duties have a lower share, being around 2-3% of GDP during the analyzed period, having a slight increase where the highest value was in 2019 with a percentage of 3.4% of GDP.

As we can see, the most insignificant decrease is registered in the case of other taxes. They have a subunit value in the analyzed period, except for the year 2009 where the value exceeds 1% of GDP.

A slight downward trend can be observed in the case of changes that have taken place at the level of direct taxes; the year 2014 and 2019 represent a turning point being the years with the most important decrease of the fiscal pressure, of the profit tax as well as of the income tax. In the next period, the profit tax has a slight relaunch, after which, starting with 2017, there are decreases again.

In the case of income taxes, they fluctuate very much during the same year. The highest value was registered in 2016 (2.7% of GDP) as we can see from the graph.

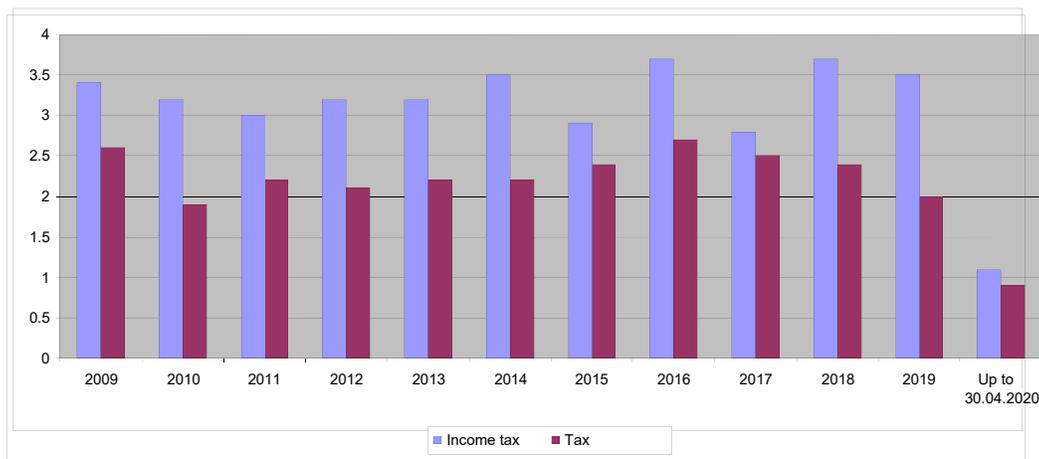


Figure no. 1. The evolution of the fiscal pressure in the case of direct taxes mobilized in the field of tourism

Source: Author's calculations based on data provided by the Ministry of Public Finance

Also based on direct and indirect taxes we can make an analysis of the absolute amounts as a comparison with the tax revenues presented in the following table.

Table no. 4. Absolute amounts of direct, indirect taxes and tax revenues mobilized in the field of tourism

The year	Tax revenues (thousand lei)	Direct taxes (thousand lei)	Indirect taxes (thousand lei)
2009	235,048.20	141,970	93,079
2010	144,688.00	44,294	100,374
2011	168,008.00	45,685	122,323
2012	523,968.00	313,941	210
2013	269,335.60	58,431	210,904
2014	49,748.40	8,688	31,101
2015	104,004.00	63,792	39,448
2016	76,365.80	26,319	46,061
2017	94,044.40	19,857	56,363
2018	88,324.30	31,830	52,072
2019	93,060.10	28,926	59,359
Until 30.04.2020	33,965.90	10,720	20,790

Source: Ministry of Public Finance website

From the analysis of the figures presented in the table we can conclude that the revenues brought to the fiscal revenues from direct and indirect taxes are different, most of them being offered by indirect taxes.

The percentages obtained from direct taxes and indirect taxes, related to tax revenues, reflect the value that taxes recorded in the analyzed period.

The amounts collected for these two taxes are easier to analyze when calculating their share in the amount of tax revenue. In the situation when we analyze the weights held by them, we notice that the highest weights are given by the direct taxes.

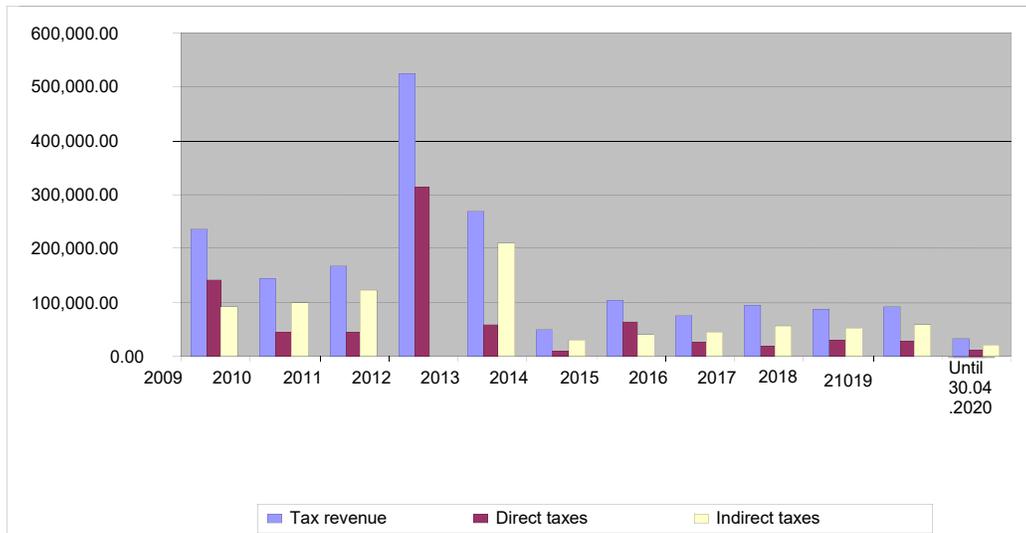


Figure no. 2. Share of direct and indirect taxes in total tax revenues

Source: Ministry of Public Finance website

The year 2012 is the one in which we find the lowest share of indirect taxes, and the highest share being found in 2013 (0.78%). The highest share of direct taxes is encountered in 2017 (4.74%), and the lowest being in 2015 below 2%. These fluctuations continued in the next period.

Increasing fiscal pressure is a source of conflict and does not generate a normal motivation for work. In the last year, tourism has worsened its negative balance, which fuels Romania's external balance of payments deficit. Tourism remains the weak link of Romanian services again this year, and the relevant ministry should act, because the lack of an internal promotion of tourism programs and high taxation are the main problems facing Romanian tourism.

Because we do not have an education system suitable for tourism, with several vocational training centers, because the work in this field is not supported fiscally, with facilities for seasonal workers, with the stimulation of the second part-time job, etc. , the private tourism business environment no longer finds the labor force to operate the existing units, as well as the new ones. The Ministry of Regional Development and Tourism claims that it will continue the actions of development and promotion of tourism, given that they have proved effective, but the data provided by the representatives of travel agencies do not show a way out of the crisis of Romanian tourism.

Conclusions

An essential role in the fiscal compliance of the enterprise has the fiscal pressure, ie the totality of the fiscal obligations (taxes and social contributions) that the agent has to pay. The fiscal pressure decreases depending on the level of taxation, the deductible expenses, the method of calculating the taxable income.

The existing fiscal pressure in a state must ensure a balance between the desire of the state, which wants the highest possible level to cover the need for financial resources, and the desire of the taxpayer who seeks to keep the level of fiscal pressure as low as possible. Low individual income levels, also accompanied by heavy tax pressure, do not provide taxpayers with the opportunity to save or the state the financial resources needed to cover public spending.

We conclude that the main causes of a suffocating tax pressure for taxpayers, individuals or legal entities, are due to the following situations: i) Romania's tax system is not very well developed, so there are not many loopholes to combat tax evasion ; ii) the need for fiscal resources determines the state to practice a rather oppressive fiscal policy; iii) recording a high level of collected revenues; iiiii) the formulation of long-term financial policies, which will ensure a stability of the business environment.

The causes of a suffocating fiscal pressure for the average taxpayer, natural or legal person, must be sought in the following realities:

- the need for constant fiscal resources from governments on the background of maintaining a challengingly high level of bureaucracy and an economy in a deep crisis (of structure, competitiveness, management, etc.);
- the existence of important revenues obtained either from the underground economy or from the surface economy whose products and revenues do not escape the authorities, but which, for various reasons, are not included by the tax authorities, in the mass of taxable revenues;
- the existence of a fiscal system, of a fiscal legislation and of a fiscal apparatus not yet developed, not adapted to the real situation of the current and perspective Romanian economy;
- smuggling and tax evasion in Romania, and the measures taken to limit this development were timid and did not have the intended purpose.

These economic and social phenomena have eroded and are eroding the real potential of the state budget, which is therefore "rehabilitated" through high taxation.

The taxes collected by the state from the economic agents in the field of tourism are constituted, from their point of view, in elements of fiscal pressure. This is all the more pronounced as their share in the value added achieved by taxpayers - economic agents - is higher. The fiscal pressure is also felt and amplified by indirect taxes (excise and VAT) which, although not borne by tourism companies, affect the volume of outflows (sales) and competitiveness through prices.

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Cruise Industry: Enhanced Health and Safety Protocols

Carmen Florentina Vlasceanu¹ and Gabriela Țigu²

¹⁾²⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: carmen_vlasceanu@yahoo.com; E-mail: gabriela.tigu@ase.ro

Please cite this paper as:

Vlasceanu, C.F. and Țigu, G., 2021. Cruise Industry: Enhanced Health and Safety Protocols. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 558-566 DOI: 10.24818/BASIQ/2021/07/071*

Abstract

SARS-CoV-2 pandemic swept every country in its path significantly affecting billions of people's lives, their health, income and lifestyle, threatening the global economy and irreversibly disturbing international markets and industry sectors. The cruise industry, once the largest and most profitable sector of the global tourism had been significantly impacted by the violent virus outbreak and its detrimental effects on the cruise operations and companies financial condition.

This study aims to provide an overview on the cruise industry state investigating the proactive response to the health crisis in the current global context of the tourism industry. The research methodology employed in the article was observational in order to support the identification and analysis of the empirical evidence derived from collecting secondary data. Exploratory research focused on specific cruise industry literature which was thoroughly reviewed favoring in-depth insights and interpretation of concepts, facts and expert opinions. Our qualitative research considers the chronological course of events from the moment of the virus outbreak, followed by suspension of cruise operations and continuing with the progressive evolution towards a safe recovery.

The empiric analysis highlights findings pertaining to some of the essential preventive measures designed to identify and reduce the transmission risk of COVID-19 virus on board the ships, as well as the progress made on strategy provisions intended to mitigate the risk of virus proliferation among the cruise passengers and port destinations.

Literature review shows that over the past year cruise industry displayed resilience and determination towards adopting efficient strategies that help combat the pandemic impact upon the cruise companies and its partners. The research underlines preventive and counteractive measures pertaining to the enhanced hygiene protocols adopted by the cruise industry. Conclusions are drawn pertaining to the efficacy of the cruise industry's current initiatives under the state of global uncertainty.

Keywords

Cruise industry, enhanced hygiene protocols, health, cruise operations, outbreak, cruise ships, risk.

DOI: 10.24818/BASIQ/2021/07/071

Introduction: Cruise industry on the road to recovery

Cruise ships are in fact floating hotels and because of their congregate settings and enclosed communal areas the rapid proliferation of the virus represents the major threat on board the passenger's vessels. Since the pandemic outbreak severe lessons have been learned as the cruise industry focused on innovation and research aimed at creating viable solutions that allow for action of risks mitigating as well as building sustainability and strengthen the resilience towards future recovery.

Over the past year all the countries have been focused on fighting the pandemic prioritizing salvation of people's lives and supporting the recovery by allocating funds aimed at protecting the population

from losing their jobs by assisting companies to avoid bankruptcy wherever possible. According to (IMF) International Monetary Fund, the projected detrimental impact of the pandemic on the economic growth decline was 3% in 2020. Although immediate action had been taken by the governments to alleviate the consequences of the outbreak, the long-term effects on the tourism have to be taken into consideration as countries are struggling to develop strategies to build a more resilient tourism environment on a regional level.

The entire cruise industry had been put to rest and the most important part of the recovery is planning for gradual reopening of operations under unprecedented conditions where testing of both passengers and crew is a pre-requisite among many other stringent measures designed to address Covid-19 safety related concerns. Safety of life at sea and protection of public health the industry had prioritized when all the cruise operators decided to voluntarily suspend the global cruise operations and extend the initial suspension term and that might play an important role in re-establishing consumer confidence and their level of engagement the future.

The industry's resilience to this unparalleled crisis is demonstrated by the bold approach of turning the challenges posed by the pandemic into opportunities and take advantage of this downtime to re-engineer the business models and restructure the internal cruise operations and crisis response mechanisms.

Cruise Lines International Association (CLIA, 2020) acknowledged that the intentional extension of the operations suspension is being well utilized by the cruise industry in order to focus on elaborating effective scientific health and safety measures. In addition to that the extensive preparation is essential to the successful implementation of the health protocols in alignment with the U.S. Centers for Disease Control and Prevention (CDC) framework for conditional sailing in order to ensure a safe and responsible restart of cruising.

Problem Statement: Cruise industry at crossroads

Over the last year the cruise industry received a lot of attention, particularly as it represents the largest sector within the global tourism, which had been dramatically impacted by the SARS-CoV-2 pandemic. The position of a vast majority of cruise line operators has been analysed in terms of their policy reform and operational implementation of Covid-19 protocols aboard the cruise vessels.

Due to the excessive negative publicity for the past year the cruise industry directed their efforts and performed a thorough hazard analysis - essential towards generating and boosting customers confidence in the cruise products and further encourage them to sail again in the near future.

With the current controversy pertaining to CDC's No Sail Order in U.S. waters, the cruise industry is faced with a decisional dilemma: should major part of the operations be moved to other countries and operate passenger's embarkation/ debarkation in foreign ports? The future months ahead will unveil the direction of the cruise industry however one thing is certain: the successful restart of the cruise operations depends on the active implication of all the stakeholders involved and the constant tracking of Covid-19 related activity on board and in cruise destination ports.

Research methodology

The research methods employed in this article focused on the empirical observation of the current state of the cruise industry. Previous existing literature in addition to the cruise operators official websites and industry news and articles have been researched in order to highlight the events evolution since the pandemic outbreak until present times.

Although the availability of scientific research in this field is limited the present paper aims to provide a thorough qualitative analysis pertaining to the health and safety measures adopted aboard the cruise ships. The use of comparative observation allowed us to explore the similarities and differences of cruise companies approach in terms of implemented health procedures and safety protocols aboard the cruise vessels, at cruise embarkation terminals and destination ports.

Our findings underline the specific elements of the enhanced hygiene protocols the cruise industry broadly implemented under the expert guidance of the scientific community and the national health and government authorities.

Results and discussions

Over the passing months under the CDC’s conditional No Sail Order issued in March 2020 the industry proved resilient (Vlasceanu and Tigu, 2021) and adopted bold business strategies, amongst it: selling some of the old ships, modernizing the fleet with new and efficient technologies designed to facilitate the reduction of pollutant emissions and improve the sustainable tourism management level. As the rapid spread of the virus continues to endanger the public health (Chinazzi, et al., 2020) there is an undisputed positive effect of reduction in pollution emissions recorded in most countries (Gualtieri, et al., 2020; Ghahremanloo, et al., 2021; Chatterjee, et al., 2020; Srivastava, 2020; Sharifi and Khavarian-Garmsir, 2020;) resulted from the reduced traffic.

The mobility restrictions and social distancing across the entire world accentuated the sudden shift of business operations into the online virtual environment (Assaf and Scuderi, 2020; Thomas and Chopra, 2020) and wherever possible technology is being utilized to ensure operational continuity and drive growth whilst avoiding physical contact.

By contrast, the tourism industry relies solely on human and social interaction and its revival will depend on boosting confidence in travelling and lessening the perception of risk involved (Assaf and Scuderi, 2020). Mao, et al. (2020) argued that gaining employee and consumer confidence is crucially important for the economic healing, as the impact caused by the global pandemic dramatically influenced consumers’ perception of tourism product and services (Yu, et al., 2020).

The UK Institute of Hospitality, 2021 highlights the findings of Sheffield Hallam University consumer loyalty report amongst 2,000 adults analysing customer behavior in order to project trends and opportunities within the hospitality sector for the months ahead. The study reveals that overall 39 per cent of the interviewed people intend to eat and drink out and visit hospitality venues a lot more often comparing to the times before the pandemic (table no.1).

Table no. 1. Consumer behavior report: Intention to visit hospitality venues in 2021

Consumer age groups / Region	Percentage
Age: 18-24	66
Age: 25-34	55
London	44
Yorkshire	45
North East region	55

Source: UK Institute of Hospitality, 2021

The road to recovery ahead is dramatically influenced by the restrictions the population suffered along the entire period of repeated lockdowns, drastic curfews, limitation of mobility, social and professional boundaries imposed by the pandemic. It appears that people’s intentions of wanting to go out, travel and socialize comes as a natural response to the drastic conditions that everyone had to comply with for the past year. Perhaps now more than ever, governments, industries, companies have to overcome the challenge of re-establishing trust and confidence in their entities, services and products and foster a safe and secure environment for their customers.

As tourists are eager to travel again, the hospitality industry must work diligently to create a safe and secure environment without altering the visitor experience across the regions; table no. 2 highlights customer’s cruise purchase intention and industry’s short-term projections.

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Table no. 2. 2020 Consumer behavior report and 2021 Projections

Consumer age groups / Region	Metrics
Willing to cruise in the next years	74%
Intl. people who never cruised before likely to cruise in the next years	58%
Willing to cruise within a year	2 out of 3 people
Number of cruise ships projected in operation in 2021	270
New cruise ships to debut in 2021	20

Source: CLIA, 2020

Precisely trust and confidence are the key factors towards a safe recovery of the global hospitality industry and CLIA's 2020 Qualtrics issued report on 4000 interviewed passengers from 8 countries highlights that 74% of them are likely to cruise in the next few years, 58% of people who never cruised before are considering taking a cruise in the next years and 2 out of 3 cruisers are eager to cruise within a year.

The overall optimistic sentiment among people represents cruise industry's outmost desire on the path to recovery, particularly as 20 new cruise ships are set to debut in 2021 and 270 vessels are projected to start their cruise operations this year. As such particular consideration had to be given to the customer experience aspect of cruising when designing the enhanced health protocols under the guidelines of CDC issued hygiene requirements. Cruises are considered the paradise of vacationers where limitations and restrictions do not interfere with such an amazing and truly unique holiday experience and therefore extreme thoughtfulness had to be invested in protecting this vulnerable cruise component. To successfully achieve a high level of customer experience some of the cruise lines turned to new technologies and introduced an onboard app to help internalize the onboard health and safety measures in a subtle manner in addition to complimenting and efficiently customizing the cruise product by allowing guests to book onboard events, adventure trips and order food and beverages.

Nevertheless, undisputable are the pandemic effects upon the cruise industry, particularly at fleetwide level the COVID-19 related costs are significant as the mega-liners have to be continuously sanitized and in perfect compliance with the latest hygiene-related protocols implemented across all brands in preparation of restarting the cruise operations.

In accordance with the U.S. Centers for Disease Control and Prevention's (CDC) Framework for Conditional Sailing Order the cruise companies respect the color-coding system with its four tiers of categorizing destinations according to their Covid-19 risk level. Tier one is considered as low level for which basic distancing and hygiene recommendations are issued, tier two – moderate level avoidance of all non-essential travel, tier three corresponding to a high level of risk and avoidance of non-essential travel and tier four - a very high level of risk with recommendations of all travel to be avoided in those regions.

For the entire industry is of paramount importance to protect against tier four high level of risk regions and implement emergency procedures that help counteract future outbreaks and continuously maintain a safe environment aboard the cruise ships.

Our research reveals that cruise operators have very strict contingency plans in case of high numbers of Covid-19 related illnesses recorded during a cruise and in case needed itineraries may be altered and the voyage may possibly end with the vessel's immediate return to the port of embarkation and further imposed quarantine of guests and crew aboard the ship.

Sadly, at the beginning of the outbreak there have been reports of Covid-19 related illness on some of the cruise ships that culminated with loss of life and long-term effects upon the passenger's health. To prevent these potential hazards of reoccurring the complete pause of the operations had served as an opportunity for better planning and aggressive action towards a safe resuming and gradual cruise operations.

CLIA member companies adopted a comprehensive protocol that incorporates a set of essential rules applicable to the cruise operations at the ports of embarkation/debarkation, as well as on board and also

in the visited ports. In addition to the core elements of the hygiene protocol there are a series of additional health measures that are likely to be adjusted and suffer modifications depending on the continuous developments of Covid-19 pandemic, the medical initiatives in terms of prevention and therapy in the transformational global context and the rapid evolution of events.

Medical crisis contingency planning includes besides the shipboard instant medical response in addition to the controlled cabin occupancy and specially allocated inventory for cabin isolation purposes, collaborative partnerships with shoreside private healthcare providers for treatment and quarantine in specialized facilities, as well as transportation from the ship to the local hospitals.

To ensure the safety of the passengers during their adventure trips in destination ports a strict selection of the shore excursions operators had taken place based on the health protocol requirements, going as far as potentially denying of re-boarding for the non-complaint passengers.

Table no.3 displays a detailed listing of the essential elements of the health and safety protocol in all three dimensions: at cruise terminal before boarding, during the voyage aboard the cruise ships and in ports of destination.

Table no. 3. 2021 Cruise industry’s enhanced health and safety protocols

Cruise Line	Safety measures at embarkation check in	Safety measures aboard the cruise ships	Safety measures in cruise ports and excursions
All	Mandatory compliance with all local port and health authorities’ regulations	Fever screening infrared system at the ship’s gangway	Mandatory mask-wearing during excursions
All	Online check-in: designated arrival time at cruise terminal to minimize congestion.	Mandatory mask-wearing by all passengers and crew onboard	Physical distancing during shore excursions and private sightseeing
All	Additional waiting areas in terminals to allow staggered times for passengers embarkation	-Physical distancing onboard the cruise ships of all guests and crew; -Time, size and flow management of groups at restaurants and entertainment venues	Availability of hydro-alcoholic gel during shore excursions
All	Pre-boarding health declarations, enhanced health screening questionnaires for all guests and crew	Daily temperature checks for all crew members Designated crew - use of appropriate Personal Protective Equipment (PPE)	Additional waiting areas to allow staggered times for cruise boarding in destination ports
All	Physical distancing at embarkation/debarcation terminals (6,5 feet/2m)	Rapid response and contact tracing methodologies in case of reported illness; health checks during the cruise for guests and crew	Adequate training tour operators following guidelines of the international health authorities
All	Before embarkation each guest and crew must provide proof of a negative COVID-19 test in the last 72 hours	- HVAC technologies for efficient air ventilation; - H13 HEPA (high-efficiency particulate absorbing) filtration systems in ship’s infirmary and assigned pax and crew isolation rooms; - MERV 13 (Minimum Efficiency Reporting Value) - removing 99.9% of airborne pathogens, including SARS-CoV-2 - Bi-polar ionization technology and individual climate control in each passenger and crew cabin	Tour vans and coaches operating at reduced capacity to ensure proper distancing
All	100% Covid-19 testing of passengers and crew prior to embarkation	-Redesigned restaurant space layout -Table service restaurant assigned seating meal times	Frequent cleaning and sanitization of tour buses

All	Touch-free temperature checks	Contactless Lido Bar and Buffet style food and beverage — served by waiters wearing visors, masks and gloves	Availability of disposal bins for used face masks and gloves
All	Abundant availability of sanitizer dispensers	Passenger’s and Crew Cabins: increased disinfection with U.S Environmental Protection Agency (EPA) certified cleaning products	Bio-Hazard materials, contaminated items – sealed and disposed according to health and safety guidelines
All	Bio-Hazard materials, contaminated items - sealed and disposed according to health and safety guidelines	- Quick removal of room service food waste to prevent bacteria development and growth. - Housekeeping cleaning and turndown service with linens disinfected at high temperatures	Other specific measures according to each location
All	Availability of disposal bins for used face masks and gloves (non-contaminated)	Sanitization of public bathrooms with heavy duty alkaline cleaning solution, (EPA) approved	
All	Disinfection of luggage	Training of crew on the new sanitary regulations, monitorization of health and symptoms of crew	
All	Fogging – spreading disinfectants in all embarkation terminal areas as fog or mist	High frequency sanitization and disinfection of passenger public areas and the high traffic walkways and gangway	
All	Intensive disinfection before and after each embarkation/debarkation	Additional waiting areas to allow staggered times for passengers debarkation in home port and destination ports	
All	Decontamination Zone - Disinfection/ Decontamination of all guests and crew personal belongings and all goods and merchandises	Intensive sanitization process of cleaning, fogging and wiping with hospital grade disinfectants in all public areas and on board facilities	
All		Higher frequency critical touchpoints sanitization in all public and communal areas (elevator buttons, door handles)	
All		Abundant availability of sanitizer dispensers in all guest and crew areas	
All		Cleaning and sanitization during and after service of all galleys, restaurants and bar areas – three times a day	
All		Adequate spacing for restaurant seating; disposable cutlery -available on request	
All		Restriction of supply procurement from tier 4, highly affected regions	
All		Controlled cabin capacity as to allow available cabins destined to be converted into quarantine rooms when required	
All		Availability of disposal bins for used face masks and gloves	
All		Bio-Hazard materials, contaminated items and medical waste – sealed and disposed according to health and safety guidelines	
All		PCR testing onboard following medical decision	
All		- Spa treatment protocol, use of gloves and visors during therapy	

		- Periodical sanitization of all gym equipment - Periodical decontamination of child care facility and playground	
NCL, Oceania Cruises, Windstar, etc		Mandatory Covid-19 Vaccination requirements of all guests and crew, at least 2 weeks prior to cruise departure date	
NCL, Oceania Cruises, etc		Public Health Officer - incharge with the sanitation of public areas and accommodations	
CCL, NCL, Princess, RCL, etc		In cruise app	

Source: Ponant, Carnival Cruise Lines, Princess Cruises, Paul Gauguin Cruises, Virgin Voyages, UN Cruise Adventures, Victory Cruise Lines, Windstar Cruises, Royal Caribbean, Regent Seven Seas Cruises, Oceania Cruises, Norwegian Cruise Lines, Hurtigruten Expeditions, Genting Cruise Lines, Croisi Europe Cruises, Bahamas Paradise Cruise Lines, American Cruise Lines

In order to enhance the cruise experience of the passengers and monitor their onboard health and safety in a seamless manner some cruise companies introduced an onboard app created to assist guests along the way from the point of embarkation where they can use the app for online check-in, complete the health and safety section and input their personal information. In addition to that, the app is designed to facilitate the dissemination of cruise information amongst all the guests pertaining to the daily schedule of onboard activities allowing guests to book certain events, shore excursions, entertainment, dining reservations, etc. Cruise industry had successfully implemented new technologies and besides complementing the guest’s cruise experience, it also gathers relevant information through the incorporated health related elements that allow for an efficient management of Covid-19 protocol on board the cruise vessels.

Conclusions

This article provides a comprehensive analysis of the extensive measures adopted aboard the cruise ships in compliance with the guidelines issued by the Centers for Disease Control and Prevention and recommendations of the World Health Organization in conjunction with the scientific community.

Given the socio-economic impact caused by the health emergency, the global response to mitigate the effects of the pandemic have been orchestrated reactively by the governments and in the long term it will prove to be precisely the determining factor responsible for the slow restart of the travel industry.

Besides the general stop of the economic activity which threatened the population’s overall wellbeing putting many families at severe risk, the lack of synchronicity and coordination in effective response mechanisms at the regional level triggers a long-term higher unemployment and poverty rates irreversibly affecting many industry sectors and lowering the countries’ GDPs.

Pertaining to the cruising industry as a major economic sector within the global tourism, recently CDC renewed their directives on April 2nd 2021 in relation to the Framework for Conditional Sailing in U.S. waters, which continues to be suspended until further notice. The order recommends a phased approach to resuming of cruise operations with clear specifications of guests and crew screening and the necessity of advanced collaboration agreements between cruise operators, port authorities and local healthcare facilities.

Although the industry had been for the past year in a survival mode, to adequately modify the ships with technological improvements designed to aid in the battle against the spread of the virus cruise companies allocated considerable funds in addition to the investments made in research and development to innovate and overcome this pandemic and prevent a dramatic impact of any such similar crisis in the future.

Extreme considerations ought to be given to the customers service quality aspect of the operation in such a way as to harmoniously blend the rigorous newly introduced protocols and make them part of the cruise ship travel experience. Further research may be exploring this topic.

Although significant advancements have been made in relatively short time span fighting the pandemic on both fronts: prevention and treatment of Covid-19 related illness, continuous improvement of protocols is required as the science, technology and knowledge evolves under the guidance of top expert advice.

Whether the sale of some of the old ships, the enhanced hygiene protocols, the staggered resumption of cruise operations, the controlled capacity and other effective business tactics, they all serve the highest purpose of the industry's resuscitation and its successful recovery.

With the recent creation of vaccines designed to provide immunity to the population in addition to the enhanced health protocols aboard the cruise vessels and cruise destinations, the gradual resumption of cruising in various regions around the world is expected to increase in the second part of 2021.

In the months ahead governments, policymakers, health specialists and business leaders around the world need to continue to prioritize the containment of virus proliferation by taking the necessary steps to ensure healthcare services for all citizens whilst rebooting the economic sectors.

The worlds interconnectedness implies that governments, leaders, researchers and global institutions establish partnerships to develop strategies to overcome the limitations imposed by the pandemic and accomplish social and economic restoration on a global level.

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Bioeconomy: the Sustainable Development Goals in our Days

Oana Oprisan¹, Maria Dumitrache (Serbanescu)² and Corina Aurora Marin (Barbu)³

¹⁾*Ovidius University Constanta, Constanta, Romania.*

^{2,3)}*The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: oana.oprisan@yahoo.com; E-mail: a.mariadumitrache@yahoo.com

E-mail: coribarbu@yahoo.com

Please cite this paper as:

Oprisan, O., Dumitrache (Serbanescu), M. and Marin (Barbu) A.C., 2021. Bioeconomy: the sustainable development goals in our days. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 567-576
DOI: 10.24818/BASIQ/2021/07/072

Abstract

The time period between the late 18th century and today marks the rise and global development of industrial civilization. With industrialization, a major transition occurred, from a social structure mainly dependent on renewable resources, to a society dependent on fossil-based raw materials.

The bioeconomy has been increasingly recognized in the sustainability debate over the last two decades, presented as a solution to a number of ecological and social challenges. Its premises include climate change mitigation, cleaner production processes, economic growth, and new employment opportunities. Yet, a transition to a bioeconomy is hampered by risk factors and uncertainties. In this paper, we explore the concept of bioeconomy, focusing on opportunities of achieving sustainability. Departing from an understanding of sustainability provided by the weak and strong sustainability paradigms, we first outline the definition and development of bioeconomy from a theoretical perspective.

The purpose of the article is to use Romania as an example of how a transition towards has been evolving in practice. The review indicates that the proposed direction and strategies of bioeconomy are promising, but sometimes contradictory, resulting in different views on the actions needed for its premises to be realized.

With human society, the process of economic development has had a huge rise. In all historical stages, people have capitalized on environmental factors through their quality of economic resources. Thus, there has always been an economic-environmental action plan designed to meet human needs and requirements. As time has passed, but more acutely in the last century, the problem of depleting these resources has arisen, but also of the more and more obvious degradation of the environmental quality. There is now scientific evidence that global climate change has reached a critical juncture.

Keywords: Bio-based economy, innovation, sustainability, renewable concepts, economic development.

DOI: 10.24818/BASIQ/2021/07/072

Introduction

According to recent chronology of the evolution of the concept of sustainable development from an international, European and national perspective, as well as how it has gradually materialized both in UN and EU programmatic documents and in Romania's public policies. Romania, as a member of the United Nations (UN) and the European Union (EU), has expressed its support for the 17 Sustainable

Development Goals (SDGs) of the 2030 Agenda, adopted by UN General Assembly Resolution A / RES / 70/1, at the UN Summit on Sustainable Development in September 2015 (Gjorgievski, et al., 2021). The EU Council conclusions, adopted on 20 June 2017, “A sustainable future for Europe: the EU's response to the 2030 Agenda for Sustainable Development” is the document policy taken by the EU Member State on the implementation of the 2030 Agenda for Sustainable Development (Fahed and Daou, 2021).

One of the definitions of sustainable development most commonly referred to was introduced by the World Commission on Environment and Development: “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Bodea, 1999). It is a contested definition with many interpretations, able to accommodate fundamentally different assumptions about human well-being, and the role of economic growth and natural resources in achieving sustainability (Al-Mawali, et al., 2021).

Review of the scientific literature

The expanding bioeconomy is creating local and global environmental and social problems, including climate change, biodiversity loss, pollution, and geopolitical tension. With increasing awareness of the impacts of human activities on planet Earth, there is a growing consensus on the need for a large-scale transition towards sustainability. There is, however, no consensus on the root causes of sustainability issues, nor on how to address them (Carlson and Maffi, 2004). Thereafter, the development and modern understanding of the bioeconomy concept from a theoretical perspective, and identify aspects that may be paradoxical in regards to achieving sustainability. We use Romania as a case study to substantiate the theoretical discussion, providing an example of a country that is increasingly promoting a transition. Part of the novelty of the paper resides in framing the propositions of the bioeconomy within two opposing sustainability paradigms. Beyond endorsing the potential or rendering the limitations of the bioeconomy, raises the fundamental question of what the bio-based economy might imply for sustainability under the different definitions, and provides a basis for understanding or evaluating arguments in the debate on potential transition pathways for the future (Davidson-Hunt, 2008). The concluding discussion outlines some major uncertainties and questions to be addressed in order to facilitate a transition to a sustainable bioeconomy.

One area of debate is whether to adhere to a conception of sustainability belonging to the weak or the strong sustainability paradigm. In the weak sustainability paradigm, based in neoclassical economic thinking, the well-being of future generations is accommodated by ensuring that economic output is non-declining over time (Georgescu, 1995). In this paradigm, human well-being is equal to economic realization, and utility is derived from consumption of goods and services. In the strong sustainability paradigm, having its roots in ecological economics, the well-being of future generations is assumed to be dependent on sustaining the biophysical basis of the economy, and on values and attributes of human institutions that are non-marketable (Bodea, 1999).

It is therefore important and timely to implement guidelines to develop bioeconomy in a sustainable way. The increasing potential of interest in bioeconomy must be oriented in the right direction in order to make sure bioeconomy works for people, sustainable economic growth, while preventing climate change and not harming the environment (Hoff, et al., 2018). This will require significant efforts in terms of knowledge, policies and institutions, both at national level and through international collaboration (European Academies' Science Advisory Council (EASAC), 2018).

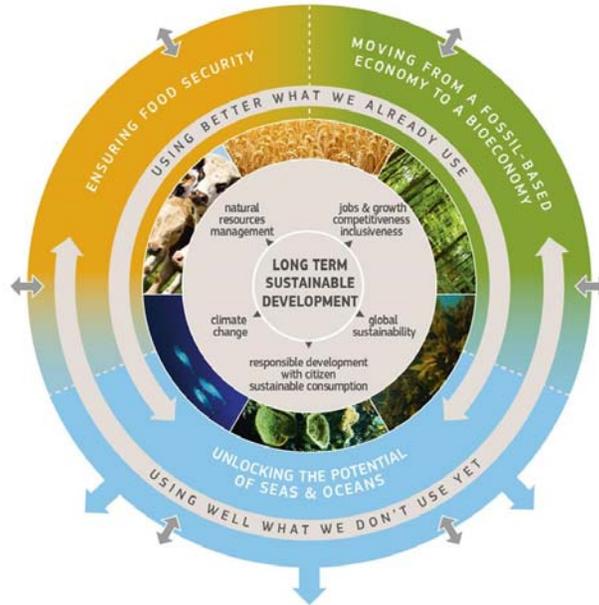


Figure no. 1. Long term sustainable development

Source: European Commission, 2018 Updated Bioeconomy Strategy

Research methodology

In the realization of this paper was used a mixed research that involves an analysis of quantitative and qualitative methods regarding their possibilities to be integrated into a whole or a coherent system that would lead to the achievement of a well-defined research objective.

The research methods used are better suited to this process, and others less so. Also, certain methods are useful to achieve specific objectives at different stages of a complex research. The analysis of classical qualitative and quantitative methods in the perspective of their integration in complex, mixed methodological structures represents an important and topical research objective.

Several analytical-descriptive methods are used, and their choice was made to achieve a double objective. On the one hand, it is about the evaluation of specific elements of these methods, in relation to the perspective of mixed methodologies. On the other hand, it is desired to analyze these methods in relation to the empirical part of the paper, where they will be used to test certain hypotheses regarding the use of research methods in the field of sustainable development.

As a result, the research applied of this paper is methodological in nature and focuses on the presentation of specific elements regarding the following research methods: qualitative method and meta-analysis, as a quantitative method.

Results and discussion

The Development and Modern Understanding of the Bio-Based Economy

The notion of a bio-based economy has its roots in the Chemurgic movement of the 1920s and 1930s. Over the last two decades it has become increasingly used and recognized in the sustainability debate and the status of the bio-based economy is often described as emerging or rapidly developing. Developments towards a bioeconomy include the formation of actor networks and the setting of research agendas. Innovation strategies and roadmaps have been published at sectorial, national, and regional levels, a development tracing back to the European Commission introducing the “knowledge-

based bioeconomy” (Romania's National Strategy for SUSTAINABLE DEVELOPMENT, 2019). Reflecting the broad reach of the concept, and the multitude of actors in bio-related sectors of society, efforts to facilitate a transition to a bio-based economy differ in scope and focus. Definitions of the concept are, to a large extent, formed by policy action, and range from including all advancements in life sciences and the biotechnological sector to only focusing on the application of biomass resources to phase out fossil-based raw materials in the production of electricity, heat, fuels, chemicals, and materials.

The notion of the bio economy is developing in a broader context of “bio”-related concepts, allowing for interlinkages and interpretations of the meaning of the term. Other closely-related economic concepts include the green economy, the sharing economy, and the circular economy. The bio-based economy has been conceptualized as an integral part of the circular economy, or as an opportunity to support the development of a more circular economy. Another way to conceptualize the link between these emerging economic concepts is to consider the sharing economy, the bio-based economy, and the circular economy as tools to lower the intensity of resource use of human economic activity, while all concepts fall under the umbrella of the green economy (Brasileiro, et al., 2021).

The bio-based economy is expected to bring socio-economic benefits. However, while it has the potential to support rural development and new employment opportunities, a shift to a bioeconomy might also crowd out certain types of production and consumption, and lead to a redirection of labor, capital, and investments from other sectors of the economy to bio-based sectors.

Environmental Impact

While green issues are driving the development of the bio-based economy, bio-based value chains are still having an impact on the surrounding environment, and productivity is, furthermore, dependent on the availability of production inputs, such as arable land, fertilizers, energy, and water. Considering the potential expansion of bio-based activities, concerns have been raised about environmental pressures, such as soil erosion, pollution of water sources, and biodiversity loss. Other issues include uncertainties regarding greenhouse gas performance, biosecurity, green washing, and invasive species introduced by the use of novel crops. A lack of indicators, measurements, and concrete actions to ensure the ecological sustainability of the bio-based economy have been identified, even though tools and methodologies, such as life cycle analysis and footprint accounts are sometimes mentioned. Additionally, it seems that while potential conflicting uses of production inputs and biomass are noticed, there are no clear procedures to deal with such trade-offs, and that priority often is given to economic aspects of a transition. Moreover, while the bioeconomy by the means of industrial symbiosis, the cascading use of biomass, and other novel ways of structuring the production process may reduce the risk for resource use conflicts, there is no clear way to determine what values to prioritize (e.g., a reduction in greenhouse gas emissions, economic prospects and local needs, or efficiency in biomass use), neither is it clear how to determine by whom these priorities should be set.

European Context of Sustainable Development

Within the EU, since 2006, the concept of sustainable development has been integrated into the Strategy for an Enlarged Europe, in a unitary and coherent strategic vision, with the general objective of continuously improving the quality of life for present and future generations. , for the creation of sustainable communities, able to manage and use resources efficiently and to capitalize on the potential of ecological and social innovation of the economy, in order to ensure prosperity, environmental protection and social cohesion. In 2010, as a continuation of the EU's sustainable development, the Europe 2020 Strategy was adopted to promote smart growth (based on: education, research, innovation), sustainable (based on reducing carbon emissions, energy efficiency, renewable resources) and inclusive (creating new jobs, reducing poverty, etc.). Together with the Member States and respecting the principle of subsidiarity, the EU is committed to becoming a leader in the implementation of the 2030 Agenda and, implicitly, of the 17 Sustainable Development Goals. The EU's response to the 2030 Agenda is to integrate the 17 SDGs into the Union's public policies, in order to support the global effort to build a sustainable future in collaboration with its partners. The 17 SDGs are already pursued by many of the European Union's policies, and Romania, as a member of this

community, aims through this strategy to integrate the objectives of the 2030 Agenda for Sustainable Development.

Romania's Perspective on Sustainable Development

Starting from the idea that the benefits of economic development must outweigh the costs, including those related to environmental conservation and improvement, Romania's first Sustainable Development Strategy in 1999 aimed at progressively improving and maintaining the well-being of the population in line with the requirements. rational use of natural resources and ecosystem conservation. Accession to the European Union in 2007 adjusted national priorities through the National Strategy for Sustainable Development. Horizons 2013-2020-2030 (SNDD), approved by the Romanian Government on November 12, 2008, aiming to reduce the socio-economic gap compared to that of the member states of the European Union. For sustainable development to succeed in Romania and, therefore, the 2030 Agenda, in accordance with the European Union's rules, this strategy is built around the citizen and the needs of future generations.

The strategy starts from the premise that sustainable development presents a framework of thinking that, once mastered by the citizen, will help to create a more equitable society, defined by balance and solidarity and that can cope with the changes brought about by global, regional and national levels, including demographic decline. The care of the state towards the citizen and the respect of the citizen towards the institutions, towards his neighbor, about the moral values and the cultural and ethnic diversity will lead to a sustainable society.

Economically, it is necessary to guarantee a long-term economic growth that will benefit the citizens of Romania. Although a country's economy is often measured by figures that do not take into account the potential of the citizen, transforming the economy into a sustainable and competitive one requires a new course of action that focuses on innovation, optimism and resilience of citizens. Such an approach will create a culture of entrepreneurship in which the citizen can achieve materially and aspirationally.



Figure no. 2. THE 17 GOALS | Sustainable Development

2020 *Source: Romania's Sustainable Development Strategy,*
2021 DEPARTMENT OF SUSTAINABLE DEVELOPMENT

The 17 sustainable development goals to transform our world:

GOAL 1: No Poverty Globally, the number of people living in extreme poverty declined from 36 per cent in 1990 to 10 per cent in 2015. But the pace of change is decelerating and the COVID-19 crisis risks reversing decades of progress in the fight against poverty. New research published by the UNU World Institute for Development Economics Research warns that the economic fallout from the global pandemic could increase global poverty by as much as half a billion people, or 8% of the total human population. This would be the first time that poverty has increased globally in thirty years, since 1990.

More than 700 million people, or 10 per cent of the world population, still live in extreme poverty today, struggling to fulfil the most basic needs like health, education, and access to water and sanitation,



to name a few. The majority of people living on less than \$1.90 a day live in sub-Saharan Africa. Worldwide, the poverty rate in rural areas is 17.2 per cent—more than three times higher than in urban areas.

For those who work, having a job does not guarantee a decent living. In fact, 8 per cent of employed workers and their families worldwide lived in extreme poverty in 2018. One out of five children live in extreme poverty. Ensuring social protection for all children and other vulnerable groups is critical to reduce poverty.

GOAL 2: Zero Hunger After decades of steady decline, the number of people who suffer from hunger – as measured by the prevalence of undernourishment – began to slowly increase again in 2015. Current estimates show that nearly 690 million people are hungry, or 8.9 percent of the world population – up by 10 million people in one year and by nearly 60 million in five years.

The world is not on track to achieve Zero Hunger by 2030. If recent trends continue, the number of people affected by hunger would surpass 840 million by 2030.

According to the World Food Programme, 135 million suffer from acute hunger largely due to man-made conflicts, climate change and economic downturns. The COVID-19 pandemic could now double that number, putting an additional 130 million people at risk of suffering acute hunger by the end of 2020.

With more than a quarter of a billion people potentially at the brink of starvation, swift action needs to be taken to provide food and humanitarian relief to the most at-risk regions.

At the same time, a profound change of the global food and agriculture system is needed if we are to nourish the more than 690 million people who are hungry today – and the additional 2 billion people the world will have by 2050. Increasing agricultural productivity and sustainable food production are crucial to help alleviate the perils of hunger.

GOAL 3: Good Health and Well-being Ensuring healthy lives and promoting well-being at all ages is essential to sustainable development. Currently, the world is facing a global health crisis unlike any other — COVID-19 is spreading human suffering, destabilizing the global economy and upending the lives of billions of people around the globe.

Before the pandemic, major progress was made in improving the health of millions of people. Significant strides were made in increasing life expectancy and reducing some of the common killers associated with child and maternal mortality. But more efforts are needed to fully eradicate a wide range of diseases and address many different persistent and emerging health issues. By focusing on providing more efficient funding of health systems, improved sanitation and hygiene, and increased access to physicians, significant progress can be made in helping to save the lives of millions (D'Amato, Veijonaho and Toppinen, 2020).

Health emergencies such as COVID-19 pose a global risk and have shown the critical need for preparedness. The United Nations Development Programme highlighted huge disparities in countries' abilities to cope with and recover from the COVID-19 crisis. The pandemic provides a watershed moment for health emergency preparedness and for investment in critical 21st century public services.

GOAL 4: Quality Education Education enables upward socioeconomic mobility and is a key to escaping poverty. Over the past decade, major progress was made towards increasing access to education and school enrollment rates at all levels, particularly for girls. Nevertheless, about 260 million children were still out of school in 2018 — nearly one fifth of the global population in that age group. And more than half of all children and adolescents worldwide are not meeting minimum proficiency standards in reading and mathematics.

In 2020, as the COVID-19 pandemic spread across the globe, a majority of countries announced the temporary closure of schools, impacting more than 91 per cent of students worldwide. By April 2020, close to 1.6 billion children and youth were out of school. And nearly 369 million children who rely on school meals needed to look to other sources for daily nutrition.

Never before have so many children been out of school at the same time, disrupting learning and upending lives, especially the most vulnerable and marginalised. The global pandemic has far-reaching consequences that may jeopardize hard won gains made in improving global education.

GOAL 5: Gender Equality Gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world.

There has been progress over the last decades: More girls are going to school, fewer girls are forced into early marriage, more women are serving in parliament and positions of leadership, and laws are being reformed to advance gender equality.

The effects of the COVID-19 pandemic could reverse the limited progress that has been made on gender equality and women's rights. The coronavirus outbreak exacerbates existing inequalities for women and girls across every sphere – from health and the economy, to security and social protection.

Women play a disproportionate role in responding to the virus, including as frontline healthcare workers and carers at home. Women's unpaid care work has increased significantly as a result of school closures and the increased needs of older people. Women are also harder hit by the economic impacts of COVID-19, as they disproportionately work in insecure labour markets. Nearly 60 per cent of women work in the informal economy, which puts them at greater risk of falling into poverty.

The pandemic has also led to a steep increase in violence against women and girls. With lockdown measures in place, many women are trapped at home with their abusers, struggling to access services that are suffering from cuts and restrictions. Emerging data shows that, since the outbreak of the pandemic, violence against women and girls – and particularly domestic violence – has intensified.

GOAL 6: Clean Water and Sanitation While substantial progress has been made in increasing access to clean drinking water and sanitation, billions of people—mostly in rural areas—still lack these basic services. Worldwide, one in three people do not have access to safe drinking water, two out of five people do not have a basic hand-washing facility with soap and water, and more than 673 million people still practice open defecation.

The COVID-19 pandemic has demonstrated the critical importance of sanitation, hygiene and adequate access to clean water for preventing and containing diseases. Hand hygiene saves lives. According to the World Health Organization, handwashing is one of the most effective actions you can take to reduce the spread of pathogens and prevent infections, including the COVID-19 virus. Yet billions of people still lack safe water sanitation, and funding is inadequate.

GOAL 7: Affordable and Clean Energy The world is making progress towards Goal 7, with encouraging signs that energy is becoming more sustainable and widely available. Access to electricity in poorer countries has begun to accelerate, energy efficiency continues to improve, and renewable energy is making impressive gains in the electricity sector.

Nevertheless, more focused attention is needed to improve access to clean and safe cooking fuels and technologies for 3 billion people, to expand the use of renewable energy beyond the electricity sector, and to increase electrification in sub-Saharan Africa.

The Energy Progress Report provides global dashboard to register progress on energy access, energy efficiency and renewable energy. It assesses the progress made by each country on these three pillars and provides a snapshot of how far we are from achieving the 2030 Sustainable Development Goals targets.

GOAL 8: Decent Work and Economic Growth Sustained and inclusive economic growth can drive progress, create decent jobs for all and improve living standards.

COVID-19 has disrupted billions of lives and endangered the global economy. The International Monetary Fund (IMF) expects a global recession as bad as or worse than in 2009. As job losses escalate, the International Labor Organization estimates that nearly half of the global workforce is at risk of losing their livelihoods.

Even before the outbreak of COVID-19, one in five countries – home to billions of people living in poverty – were likely to see per capita incomes stagnate or decline in 2020. Now, the economic and financial shocks associated with COVID-19—such as disruptions to industrial production, falling commodity prices, financial market volatility, and rising insecurity—are derailing the already tepid economic growth and compounding heightened risks from other factors.

GOAL 9: Industry, Innovation and Infrastructure Inclusive and sustainable industrialization, together with innovation and infrastructure, can unleash dynamic and competitive economic forces that generate employment and income. They play a key role in introducing and promoting new technologies, facilitating international trade and enabling the efficient use of resources.

However, the world still has a long way to go to fully tap this potential. Least developed countries, in particular, need to accelerate the development of their manufacturing sector if they are to meet the 2030 target, and scale up investment in scientific research and innovation.

GOAL 10: Reduced Inequality Reducing inequalities and ensuring no one is left behind are integral to achieving the Sustainable Development Goals.

Inequality within and among countries is a persistent cause for concern. Despite some positive signs toward reducing inequality in some dimensions, such as reducing relative income inequality in some countries and preferential trade status benefiting lower-income countries, inequality still persists.

COVID-19 has deepened existing inequalities, hitting the poorest and most vulnerable communities the hardest. It has put a spotlight on economic inequalities and fragile social safety nets that leave vulnerable communities to bear the brunt of the crisis. At the same time, social, political and economic inequalities have amplified the impacts of the pandemic.

On the economic front, the COVID-19 pandemic has significantly increased global unemployment and dramatically slashed workers' incomes.

GOAL 11: Sustainable Cities and Communities The world is becoming increasingly urbanized. Since 2007, more than half the world's population has been living in cities, and that share is projected to rise to 60 per cent by 2030.

Cities and metropolitan areas are powerhouses of economic growth—contributing about 60 per cent of global GDP. However, they also account for about 70 per cent of global carbon emissions and over 60 per cent of resource use.

Rapid urbanization is resulting in a growing number of slum dwellers, inadequate and overburdened infrastructure and services (such as waste collection and water and sanitation systems, roads and transport), worsening air pollution and unplanned urban sprawl.

GOAL 12: Responsible Consumption and Production Worldwide consumption and production — a driving force of the global economy — rest on the use of the natural environment and resources in a way that continues to have destructive impacts on the planet.

Economic and social progress over the last century has been accompanied by environmental degradation that is endangering the very systems on which our future development — indeed, our very survival — depends.

GOAL 13: Climate Action 2019 was the second warmest year on record and the end of the warmest decade (2010- 2019) ever recorded.

Carbon dioxide (CO₂) levels and other greenhouse gases in the atmosphere rose to new records in 2019.

Climate change is affecting every country on every continent. It is disrupting national economies and affecting lives. Weather patterns are changing, sea levels are rising, and weather events are becoming more extreme.

Although greenhouse gas emissions are projected to drop about 6 per cent in 2020 due to travel bans and economic slowdowns resulting from the COVID-19 pandemic, this improvement is only

temporary. Climate change is not on pause. Once the global economy begins to recover from the pandemic, emissions are expected to return to higher levels.

Saving lives and livelihoods requires urgent action to address both the pandemic and the climate emergency.

GOAL 14: Life Below Water The ocean drives global systems that make the Earth habitable for humankind. Our rainwater, drinking water, weather, climate, coastlines, much of our food, and even the oxygen in the air we breathe, are all ultimately provided and regulated by the sea.

Careful management of this essential global resource is a key feature of a sustainable future. However, at the current time, there is a continuous deterioration of coastal waters owing to pollution, and ocean acidification is having an adversarial effect on the functioning of ecosystems and biodiversity. This is also negatively impacting small scale fisheries.

Saving our ocean must remain a priority. Marine biodiversity is critical to the health of people and our planet. Marine protected areas need to be effectively managed and well-resourced and regulations need to be put in place to reduce overfishing, marine pollution and ocean acidification.

GOAL 15: Life on Land Nature is critical to our survival: nature provides us with our oxygen, regulates our weather patterns, pollinates our crops, produces our food, feed and fibre. But it is under increasing stress. Human activity has altered almost 75 per cent of the earth's surface, squeezing wildlife and nature into an ever-smaller corner of the planet.

GOAL 16: Peace and Justice Strong Institutions Conflict, insecurity, weak institutions and limited access to justice remain a great threat to sustainable development.

The number of people fleeing war, persecution and conflict exceeded 70 million in 2018, the highest level recorded by the UN refugee agency (UNHCR) in almost 70 years.

In 2019, the United Nations tracked 357 killings and 30 enforced disappearances of human rights defenders, journalists and trade unionists in 47 countries.

And the births of around one in four children under age 5 worldwide are never officially recorded, depriving them of a proof of legal identity crucial for the protection of their rights and for access to justice and social services.

GOAL 17: Partnerships to achieve the Goal The SDGs can only be realized with strong global partnerships and cooperation.

A successful development agenda requires inclusive partnerships — at the global, regional, national and local levels — built upon principles and values, and upon a shared vision and shared goals placing people and the planet at the centre.

Many countries require Official Development Assistance to encourage growth and trade. Yet, aid levels are falling and donor countries have not lived up to their pledge to ramp up development finance.

Due to the COVID-19 pandemic, the global economy is projected to contract sharply, by 3 per cent, in 2020, experiencing its worst recession since the Great Depression.

Strong international cooperation is needed now more than ever to ensure that countries have the means to recover from the pandemic, build back better and achieve the Sustainable Development Goals.

Conclusions

A transition to bioeconomy has cross-sectoral reach, and has been introduced as a way of meeting multiple sustainability objectives. However, it seems that visions and strategies of the bioeconomy are sometimes contradictory, resulting in different views on the priorities and actions needed for the premises of the bio-based economy to be realized. Thus, as the main results, there is no uniform answer to the question if the bio-based economy can prove a viable alternative to the current fossil-based economic system. From an understanding of sustainability adhering to the principles of the weak

sustainability paradigm, there is not necessarily a conflict between these objectives, given the assumptions of the ability of technological change to mitigate environmental impacts and the role of market-based instruments in achieving sustainability. The strong sustainability paradigm assumes that different forms of capital are non-substitutional, that there are biophysical limits to growth, and that technological change cannot address the root causes of unsustainable consumption patterns.

As for the case of Romania, it illustrates a situation where the concept of a bioeconomy is receiving increasing attention, and where biophysical and socio-economic preconditions for a transition are considered favourable. Even so, there are challenges and uncertainties, particularly when considering the prospects of the bioeconomy from the perspective of the strong sustainability paradigm. The vision for a bioeconomy in Romania entails increasing the use of bio-based resources in different societal sectors, while optimizing the value of ecosystem services. Yet, the developments to date have been much in line with the weak sustainability paradigm, promoting a production oriented view of biomass, and technological and market-based interventions to facilitate a transition.

Acknowledging different understandings of sustainability may help broaden the debate on the bio-based economy, and allow for the exploration of multiple transition pathways and their potential implications. Using the frame of weak and strong sustainability could also help uncover the underlying premises of seemingly contradictory visions and strategies, in Romania and elsewhere. Yet, there is a need to operationalize these concepts, and to develop methods and tools that could support the discussion on the viability of the bioeconomy as a whole. Efforts are underway, but there are still no clear ways to determine priorities and address trade-offs in the context of conflicting sustainability paradigms.

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Creativity Pressure Under Workplace Discrimination

Andreea Ștefan¹, Andreea Marin-Pantelescu² and Gabriela Țigu³

¹⁾²⁾³⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: andreea.stefan65@yahoo.com; E-mail: marin.andreea@com.ase.ro

E-mail: gabriela.tigu@ase.ro

Please cite this paper as:

Ștefan, A., Marin-Pantelescu, A. and Țigu, G., 2021. Creativity Pressure Under Workplace Discrimination. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. 7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 577-584 DOI: 10.24818/BASIQ/2021/07/073

Abstract

Is there any discrimination in the workplace? Research conducted by numerous authors (Ding, et al., 2019; Munro and Phillips, 2020; Tahir, 2020) indicates that it is. Also, discrimination affects employees' performance, innovation and creativity. Talking about creativity, it is broadly defined as an individual or group process that involves the production of results that are considered both new, original or useful and appropriate in a social context. This research aims to prove the pressure felt by employees when they feel discriminated from the workplace.

By applying quantitative research, our results highlighted the following: most employees feel discriminated on the basis of age, gender, social origin, political opinion and sexual orientation. Women between ages of 21 and 30 feel very discriminated in terms of development and promotion in their current job; and 11% of all respondents feel intimidated by their superiors. There is a direct and strong correlation between discrimination in the workplace and employee creativity, as evidenced by the application of the Pearson correlation coefficient to the undertaken research. Thus, the more discriminated they feel, the more employees will no longer use creativity to find innovative solutions for the company. Reducing discrimination in the workplace will have beneficial effects on employee innovation and creativity, as evidenced by our research.

Keywords: discrimination, creativity, creative performance, innovation, teamwork

DOI: 10.24818/BASIQ/2021/07/073

Introduction

Starting from the effects of discrimination felt by employees, we analyzed, in this case, the impact on the creativity of employees from different work environments. Our research's goal is to indicate the impact on employee creativity affected by the various discriminations encountered every day. We think each of us has heard or even taken part in an act of discrimination. We know the impact of these actions, but we believe that we should be aware of the negative effects felt by both individuals and companies. Thus, the objects of this research aim at a brief presentation of the types of discrimination and an analysis, built on a quantitative and qualitative certification, meant to highlight the way in which creativity influences. We look for this research, first of all, to expose the economic and social impact, but most importantly, we are looking for helping to combat cases of discrimination.

The most common conflicts in the workplace are related to discrimination, misunderstandings and preferences; this classification has been quite controversial over the years, and scientists, through their work have managed to perfectly outline these boundaries. The antagonism between employees, has been proven by researchers, is represented by contradictions related to tasks and relationships. In the case of tasks, there are many disputes related to divergent opinions and perspectives that have an action point, the distribution of tasks, the company's policy and procedures.

It is known that these conflicts can have both negative and positive effects, delimited by the type of conflict. Conflict is very well associated with learning, creativity and innovation, characteristics that

engage employee performance. On the other hand, the conflict causes confusions, interpersonal tensions, because the emotional toil disrupts the accomplishment of the daily tasks. As we have argued this topic has been very controversial over the years, so some researchers believe that consecutive conflicts decrease employee's satisfaction and performance, on the other hand, more positively, it has been argued that this action stimulates employees to adapt and learn. to analyze the distributed tasks. The psychological aspects related to the emotional conflicts developed by the employees, namely: frustrations, tensions, personality conflicts, disagreements regarding personal principles, but also interpersonal traumas, are not beneficial for the company, because employees' efforts will focus on resolving personal conflicts, not solving daily tasks in the field of work (Transparency International, 2021). We need to delimit the concepts of conflict between tasks and that between relationships. Thus, relational conflict has an effect on many individual outcomes, such as performance, satisfaction, and creativity.

Discrimination is the most common conflict among both private and state-owned companies. Gender ideology is ubiquitous at every level and thus influences initiatives that shape gender relations and determine the division of labor in society. If the ideology operating in the organizational culture strengthens the company's patriarchy, it will result in the disadvantage of women by not recognizing their contributions and in turn will produce inequalities. Discrimination occurs in various forms, but the available literature lists a variety of discriminatory practices reported by women, in the case of employment, during working hours and most importantly during professional assessment and performance. Liberal feminists claim that the absence or improper implementation of gender-specific policies increases women's vulnerabilities to jobs in unequal regimes, but European literature states that women are more likely to be supported for professional endeavors. Although states claim to incorporate 'gender' into their legal framework, the outcome varies around the world: in Europe, South Asia, South Korea and Malawi. "Genre" as a relevant tool.

To continue our study, the next starting point is a quote from 1999, in which Einarsen defined aggression as: "when someone at work is systematically subjected to aggressive behavior from one or more colleagues or superiors over a long period of time" (Einarsen, et al., 2003). In this concept we can follow two levers, which will lead us in the same direction, namely, discrimination and harassment. Although there are well-established legal provisions in both criminal and civil law, these forms of violation of rights must be proven.

Review of the scientific literature

The current workforce is becoming increasingly diverse in terms of gender, ethnicity, religion, and sexual orientation. Sexual orientation is the "last acceptable and remaining prejudice" (Asirvatham and Humphries-Kil, 2021) in modern societies and organizations. Thus, gay, lesbian, bisexual and transgender employees continue to face a variety of challenges. It is clear that traditional research in diversity management has focused limited attention on discrimination against sexual orientation. In fact, the subject was almost ignored. So far, very few researchers have examined this notion as a particular aspect of diversity management in the own workplace. Today, the changing nature of the workforce palette is indicated by the diversity of sexual orientation compared to what is widely considered a heterosexist. Employers, trade unions, human resources managers and public authorities can interpret this as a large-scale challenge that requires new implementations and compromise. Although race, ethnicity and gender are the most well-known types of discrimination, there are other forms that offer important implications, namely sexual orientation (Asirvatham and Humphries-Kil, 2021). Contemporary researchers of workplace discrimination have developed a substantial literature examining the effects of the workplace and racial and ethnic composition on organizational attachment. In general, previous research suggests that ethnic similarity with colleagues and managers promotes closer social relationships and increases organizational engagement. Starting from the perspective of organizational demography, the previous literature indicates that having the ability to develop intra-racial ties with colleagues tends to strengthen social ties and increase organizational attachment (Munro and Phillips, 2020). Thus, we can say that the higher the composition of the same breed, the lower the chances of a firm exit. In addition, as the proportion of colleagues of the same race decreases, profit increases, so that the level of satisfaction and creativity is higher in homogeneous groups than in inhomogeneous groups (Stainback and Irvin, 2012).

Employee rights are violated, even in large companies, in one case, an Amazon employee who had constant productivity for years had to cut hours when she learned that her father had cancer. At that moment, her supervisor told her, "When you fail to work 80 hours a week, it means you have a major weakness", (Asirvatham and Humphries-Kil, 2021) the employee said. A woman lost her pregnancy due to her work environment, she was forced to go on a business trip the day she returned to work. Several fathers said they left or intended to give up their current job because their bosses and colleagues pressured them to give up their time with their families. Thus, a study shows that 38% of employees reported being assaulted in the previous year and 84% experienced at least one assault at work, figures that worry us (Bereczki and Kárpáti, 2021).

In recent years, the development of the creative competence of fresh employees has evolved to become a key educational goal around the world due to its economic, social and personal benefits. Creativity in any field requires both generalized skills and specific to the field of activity, but also well-defined skills. In general, researchers synthesize and validate creativity along the four Ps: creative person, process, product, and place of activity (Bereczki and Kárpáti, 2021). Many researchers argue that creativity focuses on activities with a high degree of technological development because they shape and encourage higher-level thinking and stimulate creative processes (using imagination, modeling, aiming, being original, evaluating value). Technology-enhanced creative activities include developing ideas, establishing connections, creating and realizing, collaborating and communicating, and evaluating creative outcomes (Broshi-Chen, and Mansfeld, 2021). Other researchers see the role of digital technology in supporting creativity in connection with human-computer interaction. As we have argued, creativity is used in all fields, another conclusive example is related to the crises in the field of tourism, which are more and more common, and if we refer to the current situation, the pandemic has forced all areas of activity to resort to creativity for to save his company (Broshi-Chen and Mansfeld, 2021). Because creativity is a significant tool for expanding thinking and behavior and is at the heart of the innovation process, it seems appropriate to deal theoretically and applied to the tourism crisis. Innovation, although a vague notion, essentially results in a new and improved state of affairs. Thus, it increases productivity and improves competitiveness (Ding, et al., 2019).

The devastating impact of pandemic is one of the reasons why the limited profits made in recent decades in terms of gender equality risk being nullified (Ozeren, 2014). This is hindered by the failure and neglect of many countries to promote laws or address gender discrimination in response to the pandemic (Pelau, Ene and Pop, 2021). Corruption, sustained by the pandemic, is likely to worsen gender discrimination. Even in less critical times than this, some forms of corruption affected women in an unbalanced way (Pitafi, Liu and Cai, 2018; Pitafi, 2020). Recent reports have published concrete data on the impact of corruption and discrimination on women. In Latin America and the Caribbean, for example, recent surveys have shown that, in several countries, most believe that anti-corruption complaints made by men are more likely to be resolved than those made by women. (Pitot, et al., 2021). The impact of corruption on women has taken on global proportions, although some commitments have been made to combat this crime, these measures have many gaps and need improvement (Silvia, et al., 2020). The current risks indicated by COVID-19 and corruption, for gender equality require prompt and urgent action (Tahir, 2020). While commitments and promises are a good starting point, if they are not translated into concrete actions, they lose their veracity.

Research methodology

In order to investigate discrimination in the workplace and its impact on employee creativity we administrated a research questionnaire with 26 closed questions, of which 4 demographic questions: gender, age, qualification and experience in the workplace. The demographics of the questionnaire were as follows: regarding gender 35.1% men, 62.4% women and 2.5% prefer not to say. Respondents age 20.5% up to 20, 53.7% between 21 and 30, 14.4% between 31 and 40, 8.2% between 41 and 50, 3.2% over 50. Regarding the level of studies, we had 36.1% bachelor's degree, 29.0% graduates, 25.7% master's degree, 9.2% Ph.D. The respondents work experience: 41.1% up to one-year work experience, 28.5% between 2-5 years, 9.9% with 5-10 years' work experience, 7.2% 10-15 years, 7.9% 15-20 years and 5.4% more than 20 years' experience in the workplace. A total of 404 questionnaires were completed which ensured the representativeness of the sample for a probability of 95% with an error of plus / minus 5% using the simple random sampling method. The questionnaire was administered

exclusively online through applications <https://www.surveio.com/survey>, the research being quantitative consisting exclusively of closed-ended questions. The questionnaire was administered between February 22, 2021 and March 19, 2021. The attitude scale used in our research was 5-step semantic differential (1 means to a very little extend and 5 to a very large extent).

Results and discussion

From the beginning, we wanted to see how the research respondents felt according to several characteristics, namely discriminated: social origin, marital status, physical disability, race and color, gender, age, political opinion, religion, pregnancy or potential pregnancy and sexual orientation. The results show us moderate scores for each characteristic, which demonstrates a positive, beneficial and comforting thing for the working environment in our country. Age was the most discriminatory factor with a score of 2.38 out of a maximum of 5. We can claim that in Romanian companies there is a discrimination based on age felt most strongly by employees at work. This is followed by gender-based discrimination in the workplace with a score of 1.72 out of 5. Discrimination between male and female has deep roots and is less attenuated nowadays. The perception that there are better paid men than women, men who predominantly hold management positions in companies before women is a specific thing to the working environment of companies in our country. The social origin and political opinion have scores close to 1.57 and 1.52, respectively, which highlights the importance of social levels in the organizational culture in Romania and the importance of the political environment that governs strategic areas of activity.

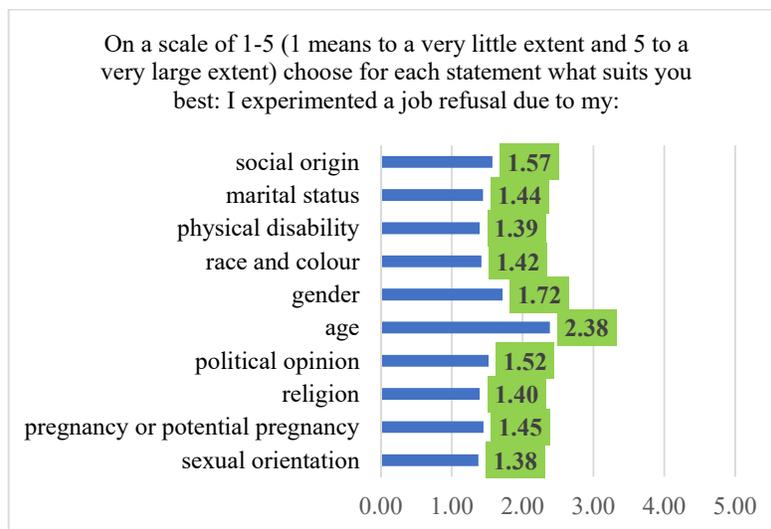


Figure no. 1. The respondents' perception of discrimination in the workplace according to different criteria

Source: results of the authors' research

Another objective of our research was to analyze the degree of discrimination felt by respondents regarding: "Denial of training opportunities, transfers and promotions", "Not being paid the same as someone doing the same job with the same experience and qualifications", "Exclusion and isolation by coworkers", "Having information you need to do your job deliberately withheld", "Being given impossible tasks", "Being subjected to taunts or abuse", "Being humiliated by superiors and colleagues" and "Being intimidating or threatening by superiors". The first point chosen chronologically that we want to discuss is "Denial of training opportunities, transfers and promotions", the answers are indicated on a scale from one to five, where one assumes very little felt and five indicates a strong feeling. According to the results, women aged between 21 and 30 feels very discriminated in terms of the evolution at the current job, out of the total respondents 35 women felt very discriminated compared to 9 men, out of a total of 404 respondents.

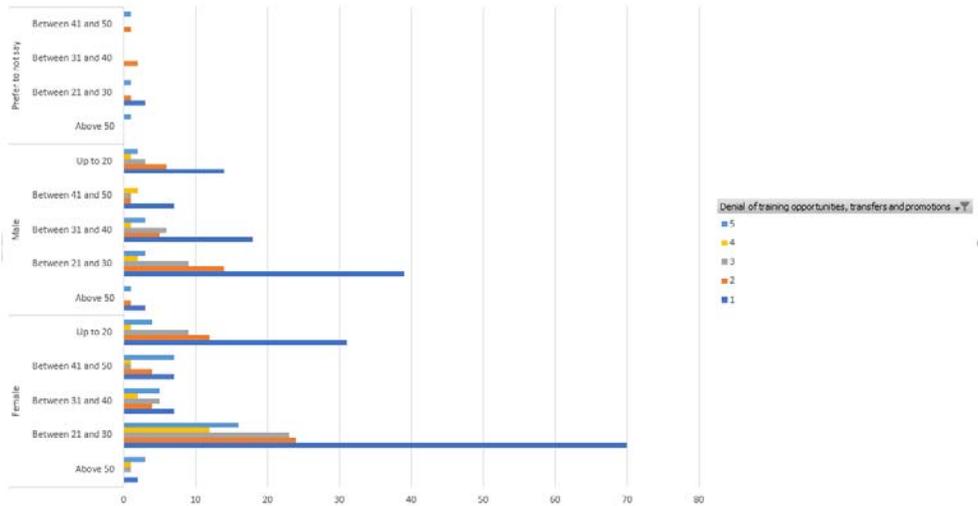


Figure no. 2. The respondents' perception of discrimination in the workplace according to Denial of training opportunities, transfers and promotions
 Source: results of the authors' research

Through the same question we wanted to highlight the people who feel the least discrimination, resulting that 117 female respondents did not feel this discrimination, the highest percentage is found in people aged 21 to 30, but the average age indicates that respondents are recently employed in companies and have also entered the labor market recently, without having the necessary experience.

The next criterion of discrimination was "Not being paid the same as someone doing the same job with the same experience and qualifications", 15% of all respondents consider that they felt more and more strongly this form of discrimination, of which the vast majority were of female sex. The highest percentage recorded, of 41.8%, did not feel this form of discrimination, the idea of a confidential salary, a global solution, we can say to combat discrimination, is to be pointed out. However, encouraging a confidential reputation does not combat discrimination, it is just a form of concealment and combating side effects.

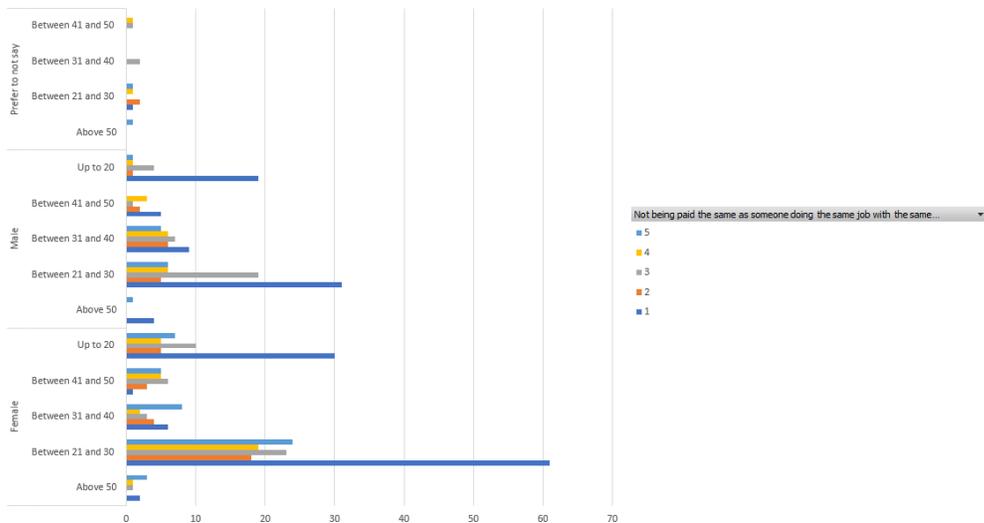


Figure no. 3. The respondents' perception of discrimination in the workplace according to Not being paid the same as someone doing the same job with the same experience and qualifications
 Source: results of the authors' research

Questions: "Exclusion and isolation by coworkers", "Having information you need to do your job deliberately withheld" and "Being given impossible tasks", as in the two cases specified above, the share of 50% is assigned to the first point, more precisely the respondents aged between 21 and 30 do not feel discriminated, and the gender ratio is predominant among women. Regarding the exclusion and isolation of people, the percentages are not significant, a cause being the pandemic, which brought many negative effects worldwide, we consider that it also brought certain disadvantages, namely reduced discrimination from this point of view, because all several companies have adopted work from home and daily team calls, so we believe it is a step forward in reducing discrimination and strengthening relationships between colleagues. "Having information, you need to do your job deliberately withheld", in this context only 7% of respondents feel that they do not have all the necessary information, but how we specified the current way of working adopted tends to strengthen communication in the company. Impossible tasks, presents a very deliberate topic in companies, 11% of respondents considered that they feel very disadvantaged by this aspect. The last three questions refer to abuse, humiliation and intimidation, being the most common and contentious forms of discrimination. According to the study, 11.1% of respondents feel intimidated by superiors. This form of discrimination is becoming more widespread, with all these facts being derogated from by the civil code, more and more superiors are resorting to these methods, and these can be validated following conclusive evidence. We can argue that all these actions have a negative effect on the creativity and performance of employees.

The next objective was to identify the link between discrimination in the workplace and employees' creativity (whether they feel involved in teamwork, whether their creative potential is affected by workplace conflicts, whether they are innovative under pressure from discriminatory attacks).

78% of respondents said that they are still involved in teamwork activities even if they feel discriminated against in the workplace. On the other hand, 22% of all respondents say they are no longer involved in teamwork due to discrimination in the workplace.

"I was no longer creative in finding solutions for the company" due to discrimination was supported by 26% of all respondents. On the other hand, 74% say they still found creative solutions for the company even if they felt discriminated against at work.

Out of the total respondents, 75.6% claim that they were innovative in solving tasks at work even if they felt discriminated and a percentage of 24.4% stated that they were no longer innovative and inventive at work in the cause of the discrimination they felt.

Regarding the creative potential and creative performance, approximately 30% of the total respondents stated that they were affected to a very large extent and by the discrimination actions at work. 70% of all respondents claimed that their creative potential and their creative performance were slightly affected by discrimination in the workplace.

The results of our research are justified by the age of the respondents (up to 30 years old 74.2% of the total respondents, between 31 and 40 years old 14.4%, between 41 and 50 years old 8.2% and above 50 years old 3, 2%) and through work experience (59.5% of all respondents have work experience up to 10 years, 7.2% have work experience between 10-15 years, 7.9% have work experience between 15-20 years and 5.4% of the total respondents have over 20 years of work experience and implicitly work experience. Being young and with an experience of 1-3 years of work the creative potential and creative performance is not affected and destroyed to a very small extent by discriminatory attacks in the workplace, which is gratifying and with great prospects in slowing down the destructive process of loss of creativity, involvement and innovation. Young people want to prove the opposite is true and they get involved even if they feel discriminated against because of their young age correlated with lack of experience. Employees with life and work experience feel affected by discrimination and this has strong effects in losing the desire to be creative, innovative, benevolent and a tutor for the new generation within the company.

The results of the research clearly show that discrimination in the workplace affects (to a greater or lesser extent) involvement in teamwork, innovation, creative potential and creative performance of all employees who have experienced discrimination of any kind.

Row Labels	Count of question 7 - Value					Count of question 7 - Percentage				
	1	2	3	4	5	1	2	3	4	5
Female	161	28	28	11	24	59%	68%	74%	61%	73%
Male	106	13	9	7	7	39%	32%	24%	39%	21%
Prefer to not say	7		1		2	3%	0%	3%	0%	6%
Grand Total	274	41	38	18	33	100%	100%	100%	100%	100%

Row Labels	Count of question 7 - Value					Count of question 7 - Percentage				
	1	2	3	4	5	1	2	3	4	5
Up to 20	55	11	8	3	6	20%	27%	21%	17%	18%
Between 21 and 30	152	23	23	10	9	55%	56%	61%	56%	27%
Between 31 and 40	41	7	2	2	6	15%	17%	5%	11%	18%
Between 41 and 50	19		3	2	9	7%	0%	8%	11%	27%
Above 50	7		2	1	3	3%	0%	5%	6%	9%
Grand Total	274	41	38	18	33	100%	100%	100%	100%	100%

Figure no. 4. The respondents' perception of discrimination in the workplace according to question: "Because of discrimination I no longer felt the need to get involved in the teamwork activities"

Source: results of the authors' research

For question seven, we chose to make a statistical interpretation, using the Pearson correlation coefficient for the four sub-points displayed in question seven. "Because of discrimination I no longer felt the need to get involved in teamwork activities", for this question we made a careful correlation on this question and the variable gender or sex. The closer the correlation coefficient is to the absolute value of one, the stronger the link between two variables. In the case of the sign above, the correlation is 0.107, which means that the link is weak, although the response rate for women is 59%, being a favorite percentage. For "Because of discrimination, I was no longer creative in finding solutions for the company" the correlation coefficient is 0.97, in this case we have a strong connection, so people aged between 21 and 30 will no longer approach innovative solutions for solving everyday obstacles, compared to people between the ages of 31 and 40. In this case the stability and monotony of a job, which adopts discriminatory practices, will not affect the creativity of employees who, we assume they have a family and job stability is a priority compared to young people, who want to evolve harmoniously in a creative environment. In the case of "Because of discrimination, I was no longer innovative in solving work problems" the correlation coefficient is 0.96 case similar to the one presented above.

Conclusions

In conclusion, we consider that age is very relevant to analyze the impact of discrimination on creativity in the workplace, according to the study. Thus, the desire for professional development is accentuated, even in the case of concrete situations of discrimination, it is observed that young people do not have the necessary experience in the field of work. A plus in this research is brought by the motto of companies to employ more and more graduates, to create jobs and to grow the economy. According to the research results, women feel much more discriminated against compared to men, even though feminists have fought and are fighting for gender rights around the world. The fact that this component is still felt and is worrying, we noticed this difference in relation to discrimination in the context of promotions or bonuses dedicated to employees as a result of performance. We have noticed that this type of discrimination is much more common in females. Women between ages of 21 and 30 feel very discriminated in terms of development and promotion in their current job; and 11% of all respondents feel intimidated by their superiors. There is a direct and strong correlation between discrimination in the

workplace and employee creativity, as evidenced by the application of the Pearson correlation coefficient to the undertaken research. Resolving the workplace discrimination should be the first goal for each company that looks for evolution through creativity.

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An Overview of EAFRD Allocation and Innovation's Role Towards a Competitive European Agriculture Sector

Cristiana-Ioana Șerbănel¹

¹⁾*The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: cristiana.serbanel@rei.ase.ro

Please cite this paper as:

Șerbănel, C.I., 2021. An Overview of EAFRD Allocation and Innovation's Role Towards a Competitive European Agriculture Sector. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 585-593
DOI: 10.24818/BASIQ/2021/07/074

Abstract

The present paper investigates the allocation of the European agricultural fund for rural development (EAFRD) at the European Union (EU) 's member state level and pursues to confirm or deny, subject to the case, the existence of symbiotic relation amid the amount of EAFRD absorption and the value of agricultural exports. Furthermore, the article introduces a visual scheme to explore the role of innovation, research and development, and technology in achieving competitiveness in the agriculture sector.

The analysis employed a quantitative approach and extracted data from the European Commission database– the 2014-2020 period – regarding the European Structural and Investments Funds and the Atlas of Economic Complexity database – for 2018 - to evaluate agricultural exports' value. As a general perspective of the EAFRD fund absorption, for the eleven axes encompassed, at the top of the rank were identified Italy, France, Germany, and Spain while, at the opposite pole, there are classified Malta, Cyprus, and Luxemburg. The results validated a direct relationship between the amount of absorbed EAFRD and the agricultural exports for France, Germany, Italy, Spain, Poland. Besides, there were discovered exceptions among Netherlands, Belgium, and Denmark. Since there are few research pieces conducted to analyze the allocation of EAFRD, the current paper enriches the scientific literature in this sphere. Moreover, the article proposes an original scheme model that emphasizes the factors required to stimulate agricultural competitiveness.

Keywords: EAFRD, agriculture, competitiveness, Europe, innovation, fund, trade.

DOI: 10.24818/BASIQ/2021/07/074

Introduction

World food outcome necessitates doubling by 2050 to meet the population expected growth and the evolving food habits. For the before-mentioned exponential rise, solutions must be designed to mitigate climate change, impacts in biodiversity, water, and soil quality, and find unprecedented resolutions to streamline and optimize the entire value-chains food production process. Europe is an essential player in the global agricultural industry regarding agricultural production and agricultural land. The agriculture segment can be split into three major sectors: farming, fisheries and aquaculture, and forestry.

The European Union has a leading position in global agriculture production with a total agricultural production of EUR 181.7 billion in 2018 (European Commission, 2020). Despite being the most prominent world producer, the European Union still has untapped agricultural production potential.

For almost 60 years, the Common Agricultural Policy (CAP) has been the EU's most essential common policy. The European Agricultural Fund for Rural Development (EAFRD) is one of the European

Structural and Investment Funds (ESIF), and it is the funding instrument of the second pillar of the EU's CAP. EAFRD aims to finance the member states' rural development programs. Along with the EAFRD, other funds, such as the European Regional Development Fund (ERDF) and the European Social Fund (ESF), impact rural development.

Although the announced EAFRD planned budget in the year 2014 for 2014-2020 was EUR 96 billion, according to the latest available data, by the end of 2020, the budget surged to EUR 150 billion. Nearly half of this budget was scheduled for investments through grants and financial instruments, in agriculture, forestry, environment and natural resources management, and sustainable development of the rural areas. (Fi Compass, 2021)

The European Union's funds for the agriculture sector cause reverberations on rural development and agriculture, support people in their development in education and job integration, and small farmers expand. Competitiveness represents an essential concern for the European agri-food sector as continuously argued by the European Commission (European Parliament, 2014), (European Commission, 2018), (European Commission, 2019), (European Commission, 2020a).

Literature review

Competitiveness is a substitute for development, performance, and convergence. Currently, the concept has been receiving progressing interest from policymakers, businesses, scientists, and the general population. The World Economic Forum, which has been assessing countries' competitiveness since 1979, defines competitiveness as "the set of institutions, policies, and factors that determine the level of productivity of a country." (World Economic Forum, 2016)

The concept can be both specifically and generally assessed, from individuals, companies, governments to countries' level. Several theories and indicators, which are under a continuous streamlining process, have been proposed to measure and foster competitiveness.

On the one hand, competitiveness can be measured as the computation of trade indices over a defined period. Several researchers have adopted this approach to estimate countries' competitive performance and/or sectors: (Gorton and Davidova, 2001); (Bavorova, 2010). On the other hand, other authors have measured competitiveness through the same indices and compared European countries with the extra-European ones (Wijnands, et al., 2008); (Qineti, et al., 2009). Another in-use approach to measure competitiveness is Porter's "Diamond Model" (Porter, 1990). In Porter's vision, competitiveness is supported by two axes: a significant volume of exports towards various cross-border partners and substantial investment in other markets based on the capabilities and resources created in-house. Some researchers used performance indicators (Liefert, 2002), others used profitability indicators (Davidova, et al., 2003), while others focused on efficiency and productivity (Brümmer et al., 2002).

Back to the present time, the modern business environment highlights the significance of RandD and technology investment as a generative source of efficiency and competitiveness. Considerations on the role of investments in RandD as a factor of economic development began in the '50s of the 20th century. There can be reminded neoclassical economists (Solow, 1956) and continued to (Romer, 1986), (Scerri, 1990), (Atzei, et al., 1999), (Dima, et al., 2018), (Lomachynska and Podgorna, 2018), (Lukovszki, et al., 2020), (Brancati, et al., 2021).

Innovation is recognized a strategic action that safeguards a competitive position in the global market (Freel, 2000), (Protogerou, et al., 2017), (Prokop, et al., 2019). This statement is particularly available for the agri-food sector, representing the largest manufacturing sector and one of the main drivers of the European Union's economy (Traill, 1998).

The agriculture sector advances in a dynamic environment: the demand is continuously increasing, consumers' preferences and food habits change. In response, companies, governments, universities, and RandD institutes should cooperate to innovate towards a continuously improving process among the agricultural value chain. Nevertheless, high-tech technology and solutions without well-trained users of technology may be powerless.

The concept of competitiveness in the agriculture sector represents a vivid source of interest among researchers. The subject is discussed at the international, regional, country, and type of crop level. Benesova, et al. discussed the competitiveness of the post-soviet countries' agricultural trade (Benesova, et al., 2020); Nurgazina, et al. examined the competitiveness of agriculture trade between China and Kazakhstan, (Nurgazina, et al., 2020); Lemus, et al. and Magana, et al. concentrated on Mexican agricultural competitiveness (Lemus, et al., 2020), (Magana, et al., 2020); while Erdem examined the competitiveness of the dried sector (Erdem, 2020) and Sheetal, et al. investigated the export competitiveness of major sugar economies with a focus on India (Sheetal, et al., 2020).

At the European level, several authors wrote about the effect of technology, innovation, and public funding in increasing the agriculture sector's competitiveness (Ramos and Au-Yong-Oliveira, 2018), (Bucci, et al., 2018), (Alarcon and Arias, 2018). Additionally, several research papers illustrate a general perspective of the agriculture sector's competitiveness at the European level (Bojnec and Ferto, 2018), (Matkovski, et al., 2019), (Forgacs, 2019), (Carraresi and Banterle, 2015).

The following authors enriched the specialty literature in terms of crop competitiveness or agricultural country's competitiveness as follows: (Greblikaite, et al., 2019) - berry farm's performance; (Hristov, et al., 2019) – Bulgarian sunflower; (Hochuli, et al., 2021) - the dairy farms in Switzerland; (Comanescu, et al., 2019) – Romania and the role of funding for a sustainable development; (Radzivil, et al., 2019) – Ukrainian agricultural sector and (Cosovic, et al., 2019) – wrote about the efforts Bosnia and Herzegovina are making to increase competitiveness in the agriculture sector.

Research methodology

The current research applies a quantitative approach to address the following research questions: What are the central directions EAFRD has been allocated between 2014-2020? Which are the European countries' priorities in the agricultural sector, considering the EAFRD fund allocation by axes? Is there any relationship between the amount of EAFRD absorption and the volume of agricultural exports?

The quantitative research consisted of extracting the latest available data from two databases: (1) the European Commission database (<https://cohesiondata.ec.europa.eu/>) for the 2014-2020 period regarding the EAFRD allocation and (2) the Atlas of Economic Complexity (<https://atlas.cid.harvard.edu/>) for 2018 (the latest available year) to evaluate the agricultural exports by member state.

Out of the first database (<https://cohesiondata.ec.europa.eu/>), the extracted raw data covered more than 530 programs and contained both the EU and national co-financing covered by the adoption decision. Data was collected from the adopted financial tables and was broken down by fund, program, priority axis, thematic objective, with an up-to-date update of the available information agreed between the European Commission and the member states.

Out of seven European Structural Funds, the EAFRD fund was selected for 27 European Member States even though the United Kingdom is not an EU member state at the moment of the research. The following measures dedicated to the agricultural sector were included: Climate Change Adaptation and Risk Prevention; Competitiveness of SMEs; Discontinued Measures; Educational and Vocational Training; Environment Protection and Resource Efficiency; Information and Communication Technologies; Low-Carbon Economy; Research and Innovation; Social Inclusion; Sustainable and Quality Employment; Technical Assistance.

For the analysis of the agricultural exports, the Atlas of Economic Complexity was selected. The Atlas of Economic Complexity is a data visualization tool that allows exploring global trade flows across markets to track every country's dynamics. The raw trade data on goods result from countries' reporting to the United Nations Statistical Division (COMTRADE). The Atlas uses both commodity trade classification types - Harmonized System (HS) and Standard International Trade Classification (SITC).

Results and discussion

According to Eurostat data, the agriculture sector contributed by 1.1% to the EU's Gross Domestic Product (GDP) in 2018 with a total agricultural output of EUR 434.3 billion in basic prices and an estimated gross value added of EUR 181.7 billion. (Eurostat, 2019) The CAP's contribution to the EU rural expansion is supported through the European agricultural fund for rural development.

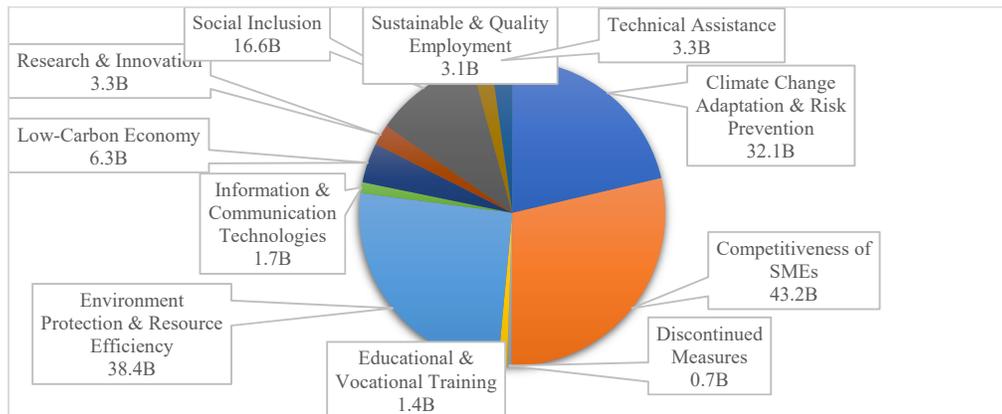


Figure no. 1. EAFRD Fund 2014-2020 by axes (EUR 150B)

Source: Author's calculations based on data extracted from <https://cohesiondata.ec.europa.eu/>

Figure 1 shows the distribution of the EAFRD by axes among the EU's member states. Competitiveness of SMEs in the agriculture area was the most important scheme with a budget of EUR 43.2 billion. This measure was focused mainly on animal welfare, basic services, COVID-19 crisis, farm and business development, organic farming, restoring agricultural potential, and risk management. The immediately following two directions were Environment Protection and Resource Efficiency and Climate Change Adaptation and Risk Prevention with a budget of EUR 38.4 billion, respectively EUR 32.1 billion. At the opposite pole, the dimensions of the EAFRD Fund that received the least of the EAFRD budget were Discontinued Measures (EUR 0.7 billion), Educational and Vocational Training (EUR 1.4 billion), and Information and Communication Technologies (EUR 1.7 billion).

Table no. 1. EAFRD Fund distribution by country and by type of measure (2014-2020)

	1	2	3	4	5	6	7	8	9	10
Austria	++	+++	+++	++	++	++	+++	+	++	+++
Belgium	+	+	+	+	++	+	+	+	-	++
Bulgaria	++	++	+	++	++	++	+	+	++	++
Croatia	++	+	+	++	++	+	+	++	-	+
Cyprus	+	+	+	+	+	+	+	+	+	+
Czechia	++	++	++	+	+	+++	+	++	-	+
Denmark	+	++	+	+	+	+	++	-	-	++
Estonia	+	+	+	+	+	+	++	++	-	+
Finland	++	+++	+++	++	+	+++	++	+++	++	+++
France	+++	+++	+++	+++	+++	+++	+++	++	+	+++
Germany	+++	+++	+++	+++	+++	+++	+++	+	+++	+++
Greece	++	++	++	++	++	+++	+	+	++	++
Hungary	++	++	++	++	+++	++	++	+++	-	++
Ireland	+	++	+++	+	+++	++	+	-	-	+++
Italy	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++
Latvia	+	+	+	+	+	+	++	+	-	+
Lithuania	++	+	+	+	+	+	++	++	+	+

Luxembourg	+	+	-	-	+	-	+	-	-	-
Malta	+	+	+	+	+	+	+	+	-	+
Netherlands	+	+	+	+	-	++	+	-	-	++
Poland	+++	+++	+	+++	-	+++	+++	+++	-	++
Portugal	++	++	++	++	+++	++	++	-	-	+
Romania	+++	++	+++	+++	++	+	+++	+++	-	+
Slovakia	++	++	+	+	+	++	++	++	+	+
Slovenia	+	+	+	+	-	+	+	+	+	+
Spain	+++	+++	+++	+++	+++	+++	+++	+++	+	+++
Sweden	+	++	++	+	+	+++	+++	+	+++	+++
United Kingdom	++	+++	+++	++	+++	+++	+++	+++	++	+++

Source: Author's calculations and interpretation based on data extracted from <https://cohesiondata.ec.europa.eu/>

Legend: [1]: Competitiveness of SMEs; [2]: Environment Protection and Resource Efficiency; [3]: Climate Change Adaptation and Risk Prevention; [4]: Social Inclusion; [5] Low-Carbon Economy; [6] Research and Innovation; [7] Technical Assistance; [8] Sustainable and Quality Employment; [9] Information and Communication Technologies; [10] Educational and Vocational Training;

Note: +++ first in rank, + least in rank, [-] lack of data

As a general overview, *Table 1* reflects a homogeneous distribution of EAFRD by country, respectively by axes. With few exceptions, countries ranked in the top for the ten included axes were Italy, France, Germany, Spain while, at the opposite pole, there are identified the same European countries, respectively Malta, Cyprus, Luxembourg. For Environment Protection and Resource Efficiency, which included agri-environmental climate, forest, organic farming, and basic services, France ranked first with a total amount of EUR 5.052 million. It was followed by Poland (EUR 4.588 million), Italy (EUR 4.014 million), and Germany (EUR 3.579 million).

Compared to other measures, the budget for Research and Innovation was modest, with the highest amount registered by Italy (EUR 726 million), Spain (EUR 291 million), and Germany (EUR 284 million). In terms of Educational and Vocational Training, as the figures show, Italy is again ranked first with a total amount of EUR 196 million, being followed by the UK (EUR 136 million), France (EUR 129 million) and Austria (EUR 115 million). Lastly, Information and Communication Technology area was mainly a priority for Italy (EUR 582 million), Sweden (EUR 411 million), and Germany (EUR 335 million).

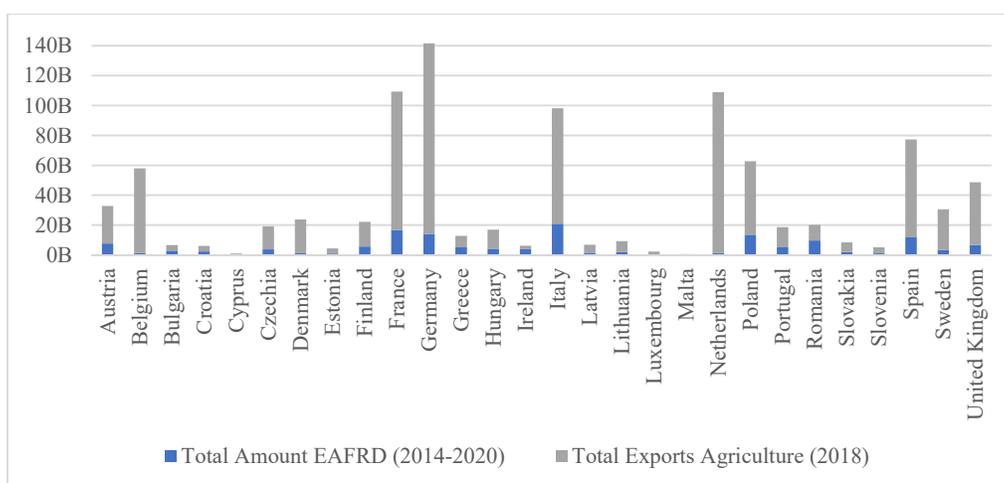


Figure no. 2. An overview of EAFRD Fund (total amount) and agricultural exports by country
 Source: Author's calculations based on data extracted from <https://cohesiondata.ec.europa.eu/> and from Atlas of economic complexity (<https://atlas.cid.harvard.edu/>)(2021)

Figure 2 aims to distinguish whether there is a direct relationship between the value EAFRD absorption and agricultural exports' value at the country level. Although there seems to generally be a direct correlation between the EAFRD fund and the value of exports, there are few exceptions: Netherlands, Belgium, and Denmark (there were selected only the European countries with an agricultural export up to EUR20 billion).

Although Italy had the most considerable amount in EAFRD Fund (EUR 20.9 billion), its agricultural export placed the country in 4th place (EUR 77.2 billion). Analyzing the top European agricultural exporter, Germany, it can be noticed that despite its EUR 127.4 billion in exports, the country registered EUR 14.1 billion in EAFRD total amount (3rd place).

As stated above, Netherlands, Belgium, and Denmark are the countries that disrupted a direct relation between the EAFRD fund. Although they have registered a modest EAFRD absorption amount (Netherlands: EUR 1.2 billion), (Belgium: EUR 1.3 billion), (Denmark: EUR 1.2 billion), the nations have a notable contribution to European agricultural exports as follows: Netherlands: EUR 107.6 billion, Belgium: EUR 56.6 billion and Denmark: EUR 22.6 billion.

A distinctive report between EAFRD Fund and agricultural exports was registered by Romania, which has almost the same report between the two of them: EUR 9.6 billion in EAFRD fund and EUR 10.5 billion in exports.

Competitiveness in the agriculture sector can be perceived as a direct sum of several comparative advantages (CA). The higher the CA sum-value, the higher the competitiveness score in the agriculture sector can be achieved.

There is an interconnectedness relationship between the CA identified below. This type of relation signifies that all the identified factors function together. *Land* represents the country's natural endowment, and the arable surface can be optimized through technology and innovation (e.g., Netherlands case for Tomato Production). The *input factors* directly impact the production quality and can be continuously optimized through RandD and technology investments. For a product to reach the final consumer, *human capital* is mandatory among the coordinated value chain. However, the employees ought to be highly trained in technology usage. Furthermore, the *production process* involves a mix of technologies and operations, which is directly influenced by the employed technology's quality. These are the main factors contributing to the *Agricultural Output* and implicitly determine the *Agricultural Competitiveness Score*. (See Figure 3)

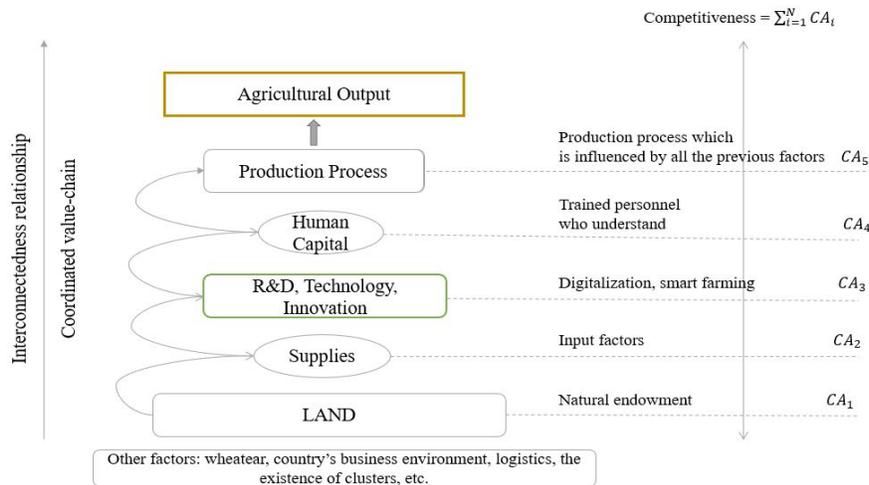


Figure no. 3. How is competitiveness in the agriculture sector built?

Source: Author's creation (2021)

Conclusions

Overall, the present study validates that there is a positive relationship between the amount of absorbed EAFRD Fund in the 2014-2020 period and the country's agricultural exports performance. The symbiotic relationship was found among France, Germany, Italy, Spain, Poland, and the exceptions among Netherlands, Belgium, and Denmark.

Another positive sign discovered during the present research paper was a total top-up of EUR 50 billion in the EARDF fund as the latest up-to-date data found on the European's Union database (<https://cohesiondata.ec.europa.eu/>) compared to the initial fund allocation proposed in 2014. This rise in budget highlights the agriculture sector's significance on the European Union's agenda and safeguards the EU's agricultural sector's increased competitiveness on the global board.

Competitiveness in the agriculture sector is stimulated by investments in RandD, technology, and innovation. At present, agricultural efficiency and sustainability are directly linked to terms such as smart-farming, precision-farming, digitalization, farming 4.0, concepts which all are based on innovation and technology. However, as the results indicate, during 2014-2020, the EAFRD budget was mainly directed to Competitiveness of SMEs (EUR 43.2 billion), Environment Protection and Resource Efficiency (EUR 38.4 billion), Climate Change Adaptation and Risk Prevention (EUR 32.1 billion), while a small part of the budget was orientated towards Research and Innovation (EUR 3.3 billion), Sustainable and Quality Employment (EUR 3.1 billion) and Educational and Vocational Training (EUR 1.4 billion).

All in all, as the results of the current research show, Europe is heading towards a more competitive agricultural sector. Still, the results measured in terms of financial terms, productivity per ha, and sustainability may appear in the medium/long term since competitiveness is not achieved in the short run. Competitiveness is built step-by-step and represents a long-term commitment.

Acknowledgment

The present study is part of the post-doctoral project "Analysis of the competitive sectorial position in the global business network. Romania and the agricultural sector" coordinated by the Post-Doctoral School of Economics and International Affairs.

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Implementation of Blockchain Technology in the Tourism Industry: A Systematic Literature Review

Roberto Leonardo Rana¹, Pasquale Giungato² and Caterina Tricase³

¹⁾³⁾ *University of Foggia, Foggia, Italy.*

²⁾ *University of Bari, Bari, Italy.*

E-mail: roberto.rana@unifg.it; E-mail: pasquale.giungato@uniba.it

E-mail: caterina.tricase@unifg.it

Please cite this paper as:

Rana, R.L., Giungato, P. and Tricase, C., 2021. Implementation of Blockchain Technology in the Tourism Industry: A Systematic Literature Review. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 594-602
DOI: 10.24818/BASIQ/2021/07/075

Abstract

- *Purpose/objectives:* in the last ten years, the implementation of blockchain (BC) technology offers many opportunities for all economic sectors such as finance, health, trade, agriculture, etc. This technology based on distributed digital ledger collects and stores data permanently and in an ordered way, allowing stakeholders to have access to information cryptologically protected. Since 2014, the blockchain technology has been introduced in the tourism industry with the goal to improve this sector. In this contest the present study intents to: 1) carrying out a systematic literature review (SLR) on the implementation of BC technology in tourism economic sector; 2) providing an analysis of its advantages and future challenges.
- *Design/methodology:* The SLR was conducted using detailed criteria to identify scientific papers. Moreover, specific keywords and databases were chosen. The time frame considered included the years 2017–2021 (31st March).
- *Findings:* the review analysis indicates that the use of BC technology contributes to increase transparency and safety of the services provided and decrease cost above all of tourist. However, some challenges remain open which further studies could try to solve.
- *Originality/value:* to date the academic literature published on this topic is limited, so these aspects have not yet been adequately analyzed. Therefore, the present article intends to show an update framework about BC technology and its impact on tourism industry.
- *Possible practical implications:* results might be helpful for stakeholders understand the potential impact of this technology on the business tourism ecosystem and for scholars to better define future research areas and trend less explored in this field.

Keywords

Blockchain; distributed ledger technology; tourism; systematic literature review; smart contract

DOI: 10.24818/BASIQ/2021/07/075

Introduction

Digitalization of the economy is one of the most currently dynamic changes, which opens new possibilities in creating business models. The new technologies such as information and communication technologies (ICT), blockchain (BC), internet of things (IoT) and artificial intelligence (AI) are transforming the way to share useful data among actors involve in the economics system. Among these technologies BC presents a whole new approach, drawing much attention from scholars

in many different application fields. Blockchain is a type of distributed ledger technology (DLT) that originally was part of bitcoin protocol, a cryptocurrency launched in 2009 by an anonymous inventor, known under the pseudonym of Satoshi Nakamoto (Giungato, et al., 2017). Its success has made this virtual money as a current currency in the financial transactions. Subsequently, BC is become revolutionary not only in the financial world but also in different economic sectors such as: industry, economic, health, agriculture etc., contributing for efficient, transparent and sustainable productions or services (Rana, et al. 2021). BC potentially reduces costs for both companies and costumers, increases process efficiency, improves personal data protection and the level of trust among business partners as well as reduces the role of intermediaries (Rashideh, 2020).

BC, often is connected with the other technologies, transforming and modernizing the industrial sector in the so-called industry 4.0. Presently, there is no univocal and shared definition of Blockchain. According to Treiblmaier (2018) it is defined as a digital, decentralized and distributed ledger where each transaction is added and logged in chronological order with the aim of creating tamperproof and permanent records. Consequently, BC is a new decentralized and distributed digital ledger that collects and stores information permanently and in an ordered way, allowing stakeholders to have access, cryptologically protected, to data.

Since 2014 BC has been applied also in the tourism and hospitality industry with the goal to increase safety and revenues of the stakeholders (Irannezhad and Mahadevan, 2020). The main function of this industry sector is serving travelers. Its business ecosystem is characterized by high competition, labor-intensive and, complex business relationships among its actors such as airline companies, hoteliers, tour operators, travel agents, insurance firms, government entities payment service providers, etc. (Treiblmaier and Önder, 2018). Currently, the introduction of technological innovations (i.e., ICT, AI, smartphones and mobile devices, etc.) has launched a new tourism business models (Consumer-to-Consumer or C2C) called “smart tourism” or “ambience intelligent tourism” or “etourism” which poses some challenges such as big data storage and its security (Buhalis, 2020; Wei et al., 2020; Yadav et al., 2021). Thus, BC could contribute to solve these disadvantages decreasing competition among stakeholders, improving costumers’ services and reducing service costs (Rashideh, 2020). Although introduction of BC in the tourist and hospitality industry is still in the early stage its importance is raising so much that only in the first quarter of 2019, 15.4 million of US\$ was raised by tourism blockchain-based startups (Irannezhad and Mahadevan, 2020). Some benefits, in fact, including both travel agencies and tourists. For instance, the former using BC technology can interact with multiple currencies or booking a tour easily and safety, while the latter can communicate directly with service providers, thus eliminating intermediaries (e.g., Airbnb, online travel agency – OTAs, platforms such as Tripadvisor and Booking.com, etc.).

To date no systematic literature review (SLR) was considered on these topics. Thus, it is important to investigate the applications of BC technology in the tourism industry in the perspectives on analyzing advantages and disadvantages of its use. To reach these objects, the present work is aimed at: 1) carrying out a SLR, offering an updating overview about BC technology applications from the perspective of improve quality and safety of vacation industry; 2) providing an analysis of current developments related to tourism and hospitality sector and BC technology, focusing on some examples of its advantages and challenges in the perspective of reducing cost and enhancing services provided by tourism industry actors.

Results, might be helpful for tourist operators to understand the potential impact of this technology on business model and for researchers to better define future research areas less explored in this field.

Research methodology

A SRL consists in a specific procedure for identifying, selecting, analyzing and synthesizing the relevant articles on given topic. To reach these goals it has to be performed in a rigorous, transparent and replicable way (Greenhalgh, 2014). This procedure leads to robust results which provide a deep analysis (Christofi et al., 2019) and a comprehensive and high-quality state-of-the-art review on the research area investigated. According to Giacomarra et al. (2020) this methodology has several advantages compared to traditional reviews, such as: a) it contributes to increase the reliability of the results; b) reduce errors, because of process is based on the replicability of process; c) allows for data

synthesis focusing on specific research area, and; e) provides a framework that can integrate extant knowledge. Thus, a specific protocol was made (Booth et al., 2016; Rana et al., 2021), assuring the quality performance of this method and reducing loss of scientific information (Vrontis and Christofi, 2019). In the SLR's first step, the conceptual boundaries were defined (Vrontis and Christofi, 2019; Giacomarra, et al., 2020). Nevertheless, due to the vast and increasingly expanding literature on the application of BC, SLR has focused on how this technology is employing in the tourism sector for improving agency services and tourist travels. In the second step, it was selected scientific papers using the Boolean OR/AND operator, creating a search string for the respective group (Giacomarra, et al., 2019) associate with the following keywords: blockchain AND tourism OR vacation OR leisure OR holiday AND industry. Because the application of BC into tourism sector is a new phenomenon, the time period considered for literature review was between 2017 and 2021 (31 March).

The third step consisted in defining the databases which supporting scientific research. Among several of them Scopus, Science Direct, and Web of Science databases were chosen. After downloading the papers, the authors selected the studies that fit the follow criteria: review article, research article, mini review, chapter of book. The authors excluded the other documents such as note, letter, conference article/review, editorials, interviews, etc. (Leonidou, et al., 2018; Christofi, et al., 2019; Cui, et al., 2021). Also, articles not published in English and duplicates were eliminated. In the figure 1 is shown the flowchart of the paper process selections.

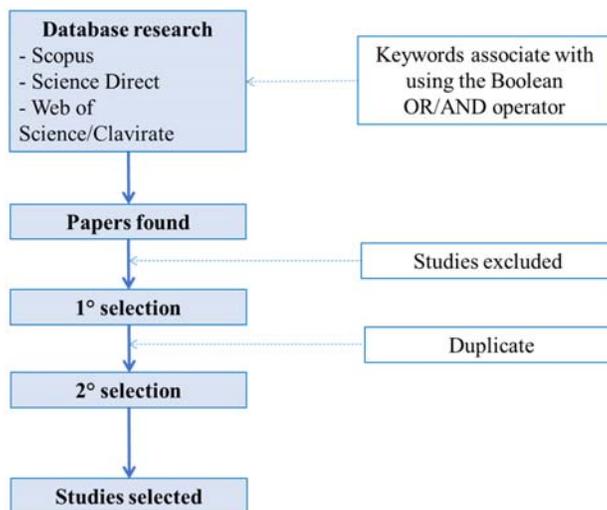


Figure no. 1. Flowchart of paper selection processes

Results and discussion

In this section we presented the results deriving from SLS's analysis according to the work's two major objectives. In particular, we have divided the paragraph into two subparagraphs that describe firstly the outcomes of SRL selection of papers and secondly the review process of studies chosen.

First review objective results

The first goal of this paper was to quantify the existing studies on the applications of BC technology in the tourism sector. In Table 1 are shown the results of SLR from 2017 to 31st March 2021. Regarding the studies in found in the Scopus database they were 45, whereas those in Web of science and Science direct were 4 and 6 respectively. After eliminating papers that did not fit criteria previously chosen, their number decreased to 25- Scopus, 4 - Web of Science and 6 - Science Direct. India is the nation with the most paper (4) published in this field, followed by Australia (3), Austria (3), United the Kingdom (3), USA (3), Italy (2), Russian Federation (2), Taiwan (2), Turkey (2) and other countries (4). The trend of publications indicates that research interest in topic has dramatically increased in the

last five years from 2017 (1 study) to 2020 (15 studies). In the last 3 months of 2021, 5 works have already been published.

Table no. 1. Number of papers found in the principal scientific literature databases using a specific group of keywords as on 31st March 2021

Keywords	Database		
	Scopus	Web of Science/Clavirate	Science Direct
Blockchain AND tourism AND industry: <i>Before selection</i>	45	4	6
<i>After selection</i>	25	4	6
Blockchain AND vacation AND industry: <i>Before selection</i>	1	0	0
<i>After selection</i>	0	0	0
Blockchain AND leisure AND industry: <i>Before selection</i>	6	0	0
<i>After selection</i>	0	0	0
Blockchain AND holiday AND industry: <i>Before selection</i>	42	0	0
<i>After selection</i>	0	0	0

Also, from the SLR emerge that only the term tourism was useful for the analysis since no papers were found using the others keywords.

Second review objective

In this section we analyzed the potential application of BC technology in the tourism sector and its advantage and future challenges. Presently, the introduction of new technologies (e.g., such as smart sensors, big data, machine learning) has launched new tourism business model called “smart tourism” (SmT) which uses different tools to improve connectivity, exchange information and mapping costumers’ choices (Yadav, et al., 2021). However, the introduction of SmT poses some questions about privacy, security and management of data by intermediary companies. For ensuring data authenticity, avoiding manipulation from unethical stakeholders, and protecting costumers’ privacy the BC technology might be a tool for solving these questions (Line, et al., 2020). Some travel companies, in fact, such as LockTrip, Globaltourist, Winding Tree (Yadav, et al., 2021) and Travel Chain (Line, et al., 2020) have carried out a platform or a system based on BC technology for protecting both their privacy and that of customers. For instance, Travel Chain has created a BC platform where travelers share safety their information such as gender, age, purchases, location, stays in accommodations, search history and other activities (Line et al., 2020). In exchange for this information, consumers receive a voucher, which can be spent for booking flights or hotels as well as renting a car. Also, tourist destinations can benefit from a digital ledger because it provides an immutable reputation and rating system where review data cannot be removed or altered by fake accounts (Karode, et al., 2020). In such a way, the online review system will increase its reliable thanks to a reputable and immutable information system of a tourist destination (Irannezhad and Mahadevan, 2020). As results BC technology can contribute to: a) obtain costumers true data; b) protect their personal data in a distributed ledger, c) offer a reliable review of a tourist service, and; d) offer empowering costumers by enabling them to own and control their personal information.

BC could also simplify and accelerate the procedure of travelers. In fact, during their journeys they are constantly requested their identification from booking airplane seat to hotel check-in. These processes can be easily done by applying blockchain so as digital identification by using secure biometric identity system (Line et al., 2020). This procedure can reduce potential security risks, such as terrorism or criminal attacks, revealing who travel with false documents. Rashideh (2020) illustrates the Sita company, leading specialist in application of new technologies in air transport sector (i.e., blockchain, communications and information technology, artificial intelligence, etc.), which has implemented a technology based on blockchain and secure biometric identity system that allows tourists do not use identification cards, passports, or drivers’ licenses but wearable or mobile tool during their journeys.

Also Explore carries out a similar service consisting in two-step authentication which prevents data leakage and its possible misuse. This is done by using smart contracts that allow access for only legitimate sources like passport offices, so that can add visa approval (Yadav et al., 2021). Smart contracts, is one of another area of application of BC in the tourism industry.

Tourism sector is characterized by a fragmented business nature with a high number of contracts and transactions among several actors, often lead to several security issues, disputes among parties, delay and high cost (Irannezhad and Mahadevan, 2020). The introduction of smart contracts has contributed to decreasing these issued. Its aim, in fact, is that to meet the consumer directly with the service providers by eliminating the intermediary from the tourism market, reducing thus cost, improving efficiency and accelerating services request by the travels (Karagoz Zeren and Demirel, 2020). Usually, in the traditional travel industry, intermediary have a fundamental role since it provide a service for clients and producers consisting in reservations and payments of airplane ticks, restaurant or hotel accommodations. For these services tour operator takes commission feeds. Thus, using cryptocurrency (i.e., Bitcoins, Ethereum, etc.) as a payment method and smart contract for business dealings or transactions between parties, travelers and producers can saving extra charges associated with intermediary services. However, the use of cryptocurrency for payment system depends on both internal and external companies' factors such as: 1) personal characteristics of owner/managers; 2) perceived ease of use; 3) perceived usefulness (Nuryyev, et al., 2020).

Currently, the use of cryptoalutes to purchase travel products is increasing worldwide (Ozdemir, et al., 2020). Examples in the tourism industry that accept cryptocurrency as a payment include CheapAir, Expedia, One Shot Hotels, and Webjet (Önder and Treiblmaier, 2018). In particular, Tourism Union International (TUI) a German-based travel company using blockchain technology and related cryptocurrencies has implemented a process for their clients to book and pay for their reservations or for obtaining other services (Rashideh, 2020). Moreover, TUI intends to solve other problems such as lack of transparency about the hotel's capacities, different rates at different source markets, manual communications and loss of information, introducing smart contract associate with BC technology (Irannezhad and Mahadevan, 2020). Some others private companies upcoming examples who are introducing this technology are Travelflex, Tripago, Roomdao (Yadav, et al., 2021), CryptoBnB application by AirBnB, UBER (Irannezhad and Mahadevan, 2020), Singapore airline (KrisPay project), Aeron (Karagoz Zeren and Demirel, 2020). Some public promotion tourism agencies have also started using cryptocurrencies to promote its local tourism industry. Specifically, Kwok and Koh (2019) underline that the small islands could take advantage from introducing digital ledger in the tourism sector. They affirm, in fact, the small territories due to their economies principally base on accommodation and tourism services they could be more receptive to this technology so that improving their services and product qualities. Consequently, they could enable to pass developed economies thanks to efficient leisure innovative services offered. For instance, in 2018 the Caribbean Aruba island launched a platform base on BC technology which help to connect the customers with the major airlines (i.e., Lufthansa and Air New Zealand) and hotels present on the island (Irannezhad and Mahadevan, 2020). Moreover, the small and poor territories often due to high corruption rate need a trusted system to over-come this plague. Ozdemir, et al., (2019), state that the adoption in Moldova of a digital ledger technology might eliminate the corruption, so increasing population income. Thus, BC could help shifting away from a restricted and fragmented nature of tourism business ecosystems to one more inclusive which allows providing equal opportunities to both bigger and small tourism players (Tham and Sigala, 2020).

The use of BC technology in the travel industry concerns also airlines companies. Lufthansa, Austrian Airlines, Swiss Air, Air New Zealand, Brussels Airlines and Eurowings are exploring the use the blockchain for their company to reduce human errors in their processing such as overbooking, double-booking, cutting reconciliation cost, etc. For instance, BC could be extraordinarily tool in monitoring the movement of baggage in airport preventing its stealing, lost, breaking or manumission. Yearly, airline companies spent 500 million dollars for these problems. A shared distributed ledger among different airports could allow accurately tracing bags as they move with a traveler throughout their journey, identify their mishandling or lost within airports (Irannezhad and Mahadevan, 2020). BC also offers the possibility for implementing interoperability. This could be used in the redemption of loyalty

points and airline miles, simplifying processes among all partners participants, enabling efficient payment to firms or travelers which are part of the loyalty scheme (Irannezhad and Mahadevan, 2020).

This new technology can synchronize and integrate inter-firm and intra-firm transactions in one-stop shop for tourists improving transparency, traceability and traceability of the service provide by hotel, airline company, car rental, etc. It can give connectivity among different tourist industry actors without a need for centralizing data in one single system. Also, in one-stop shop costumers could find all information that they need continuously updated (Irannezhad and Mahadevan, 2020). According to Treiblmaier and Önder (2018) reduction in transaction cost due to BC technology implementations, will have a substantial impact on organizational structures of tourism ecosystem, decreasing yield cost in some areas and increases in others. In any case its use could have a positive impact on the overall productivity of companies and organizations by better automating and reducing the load of routine processes (Valeri and Baggio, 2020).

Currently, BC is used in different economic sectors for automatic update of discounts, incentives and rewards. If it is applied in the tourist sector could help customers found less costly offers. This could be useful for hiring/renting cars, booking flights and hotels, and purchasing insurance in a more effective manner due to the flow of information is instantaneous. With this tool, travelers would participate actively to play is journey and if they cannot travel owing to some circumstances, they will exchange their bookings reducing cost (Irannezhad and Mahadevan, 2020). Some decentralized applications (DApps) connected with BC technology and currently in use are Travala and TravelCoin Foundation (Yadav et al., 2021). Moreover, BC could be also enabling the service providers to check the authenticity of the customers, so as to propose them tailored discounts or speed up rewards delivery (Rashideh, 2020).

Another potential application of BC is in the travel booking agencies. Since 2016 the Australian travel booking company called Webjet has adopted BC technology among its partners (e.g., European travel agency Thomas Cook, China's DidaTravel, Indonesia's Mitra Global and Singapore's Far East Hospitality) to minimize the costly errors that often occur in various stages of booking (Irannezhad and Mahadevan, 2020). Also, tourism associate with wine and food tasting might advantage from BC technology application. Food and beverage produced in specific territories, in fact, are becoming a good "recipe" to attract tourist and to promote an area. However, for this type of tourism to succeed it is fundamental assure that all food provenance is clearly certified. In this regard, Baralla et al., 2021 have developed system based on blockchain-based platform and smart contracts for tracking food items with transparency, efficiency and trustworthiness. The authors then have applied this system to some local products from Sardinia (Italy), in order to assure share information among all the actors involve in the food supply chain. In particular, thanks to the blockchain public ledger, tourists can access to the detailed information of a product, verifying its provenance and characteristics. Thus, this technology offering huge potential growth for local territories, cities, regional, and national economies.

The virtual reality market seems to be the next frontier in digital marketing and the tourism industry. Although it is still in early state the association between merged reality and distributed ledger technologies, is bound to revolutionize and disrupt the tourism business sector in the next years. A study carried out by Mofokeng and Matima (2018), suggest that this association of technologies can positively impact the tourism industry, providing an additional revenue.

In the table 2 are summarized the of BC intervention areas in hospitality and tourism industry.

Regarding future challenges on full adoption and expansion of BC technology in the tourism industry there is a need for creating a central agency which maintain a consistent network among the stakeholders while, at the same time, preventing the occurrence of any illegal activities (Rashideh, 2020). However, according to Irannezhad and Mahadevan (2020) the centralization of information could lead to new oligopolies or monopolies in tourism industry.

Table no. 2. BC intervention areas, mechanism involved and beneficiaries in tourism industry.

Intervention areas	Mechanism involved	Beneficiaries
Costs and speed efficiency	Reduce cost by implementing smart contracts elimination of paper records, manual communication and intermediary cost.	Customers and service providers
Improve the intra-firm processes	Enable to reduce human errors, double booking or baggage handling, manual and paper-based communication.	Airline companies
Enable integration, transparency, tracking and tracing	One-stop shop for customers by bundling several types of travel and tourism services	Customers
Inter-operability	Inter-operability of loyalty reward points and other services such as Wi-Fi	Airline companies
Enable trust and authenticity	Provide an immutable reputation and rating system where review data cannot be removed or altered and voting on the popularity of a destination can be compromised through fake accounts	Customers and tourist destination
Enabling the sharing economy	Provide the new type of peer-to-peer market without the need for intermediaries and expand the market by bundling several types of travel and tourism services.	Customers and destination tourists
Risk reduction	Address the holistic source of risk of fake identities, profiles and services such as verifying the provenance of rental accommodation ownership and validating the identities of individuals. Increase privacy by separating public and private keys and reduce the hacking threads given that the information is not stored with one company per se	All the stakeholders of the tourist industry
Food and wine tourism	A blockchain platform could guarantee the origin and provenance of food items in wine and food tourism context	Customers and food and wine industry

Source: modified from Irannezhad and Mahadevan, 2020

Another issue underline by Rashideh (2020) is that the adopting this technology requires substantial collaboration among tourism stakeholders such as governments, tourists, businesses and destination marketing organizations, but often this is not easy. Nevertheless, if BC is not fully recognized by tourism companies as well as stakeholders are not familiar with the use of this technology, changes in the industry sector will be very limited (Melkic and Čavlek, 2020). This problem has been underlined by Erceg et al. (2020) in a study carried out in Macedonia and Croatia where the diffusion of this technology is restricted for lacking of: a) national system regulation; b) awareness of the tourist actors in relation to the importance of BC technology; c) infrastructure and connectivity to implement blockchain ecosystem. Specifically, if this last aspect is not improved in many countries the introduction of this technology is destined to fail (Rana et al. 2021). However, Önder and Gunter (2020) state that the current COVID-19 pandemic could trigger a boost in digitization worldwide and consequently also to the implementation of BC technology.

Also, BC technology is not free from hackers' attacks. Irannezhad and Mahadevan (2020) underline that if there are flaws in the code associate with a smart contract it may be exploited by hackers to send its contents to their own accounts. This is particularly dangerous if these smart accounts are used to store large amounts of money or contain confidential information.

The loss or stolen of a blockchain user's private key is another issue since is hard in the cyber world to recovery it. Although it is necessary to implement a legislation against the previously mentioned risks, some scholars state that this may stifle the growth of blockchain. According to Thees et al. (2020) although currently there are any common regulations worldwide, each country is reacting differently in terms of legal regulations and frame conditions. Also, it is unclear whether legislation should precede the full adoption of BC or vice versa. These problems remain open, and only the time could tell us if this technology is suitable for the development of this sector.

Conclusions

With the growing dependence of the economy of many countries on the tourism industry there is an urgent need to improve this sector. However, whilst the innovation technologies enhance the quality of

tourism services offered on the other hands jeopardizes their data privacy and security. Distributed ledger technology could lead to improve transparency and safety in tourism services, encourage new market types where the action of the intermediation on the tourism industry is reduced. In this paper has been presented a SLR on the application of the BC technology on the tourism industry. The study has emphasized not only the advantages of blockchain technology, but also the disadvantages connected to its implementation in the tourism industry.

Results underline the early stage of the implementation of this technology which corresponds a limited number of studies. Moreover, the SRL show that all sectors of the hospitality and tourism industry can be positively affected by the BC technology. In particular could be a gamechanger tool in the tourism industry given its ability to improve several important aspects of this sector such as safety, transparency, immutability, inter-operability, peer-to-peer transaction. Moreover, it can help reducing cost for the stakeholder and in particular for tourists, as well as the risk of fake identities or fake review data. However, beside advantages some challengers have been identified. These are many and require a huge economic and scientific efforts to be sole, but the results could advantage many actors of tourism sector. To do so, future studies have the task to solve these problems, which concern private and public administrators as well as scholars. The former has the task of accelerating the implementation of BC technology in the tourism business ecosystem. This could be done facilitating the introduction of BCT in national regulations. About the scholars, they have to contribute to improve continuously services tourism so that to develop all the territories and particularly those disadvantaged.

Finally, we underline that it is not excluded that the choice of criteria may not have contributed identified all articles regarding the topic analyzed. Nevertheless, although this limit we believe that results are important to drive other researchers in identifying other papers on this subject.

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Application of QFD Methodology to Red Wine Sector

Irina-Virginia Dragulanescu¹ and Mihaela Cornelia Sandu²

¹⁾²⁾ *University of Bucharest, Bucharest, Romania.*

E-mail: irina.dragulanescu@faa.unibuc.ro; E-mail: mihaela.sandu@faa.unibuc.ro

Please cite this paper as:

Dragulanescu, I.V. and Sandu, M.C., 2021. Application of QFD Methodology to Red Wine Sector. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 603-609 DOI: 10.24818/BASIQ/2021/07/076

Abstract

Purpose/objectives: Foods by their nature constitute very complex systems; many ingredients interact with each other and can influence the process optimization. In the food chain, a distinction must be made between processed and non-processed products. Often the products do not have a brand and then the responsibility for the quality of the product is not as clear as it is for branded products. For processed products (branded), the processing industries make use of a quality system, often considering the entire production chain, from raw materials to distribution and consumption. The authors of this paper aimed to analyze the quality management of wine in general and red wine in particular.

Design/methodology: The authors designed an analysis based on a specific Quality Engineering methodology, namely "Quality Function Deployment" (QFD), which allows the translation of the beneficiary's wishes in technical and quality characteristics of the product, using the matrix diagram known in the literature as "House of Quality".

Findings: The authors have adapted this specific tool of quality engineering to the issue of wine quality management, in order to individualize the criticalities and identify the correlations between them.

Originality/value: Application of the "House of Quality" methodology of quality engineering in the food field.

Possible practical implications: Using the QFD methodology in case of negative correlations, which requires finding another solution which meets the intended purpose without adversely affecting other solution found.

Keywords: Quality Function Deployment, "House of Quality", food quality, food chain.

DOI: 10.24818/BASIQ/2021/07/076

Introduction

The Quality Function Deployment (QFD) is a methodology used to organize the product development process and is an adaptation of some characteristics of Total Quality Management (Benner, et al., 2003). Through this methodology ensures close collaboration between staff from different departments to design a new product that meets the needs of the consumer (Jongen, et al., 2002).

It was introduced by Yoji Akao in 1983 in the USA, where 3M Corporation was the first company to apply it. Since then the QFD has spread in many industries and has been introduced in the food industry since 1987 (Jongen and Meulenberg, 1998 ed). The QFD method consists in the construction of two or more matrices connected to each other, which at the end have the shape of a house, hence also its name "House of Quality" (Jongen and Meulenberg, 1998). In general, it can consist of many "rooms", each one containing information about the product. The main objective is the conversion of consumer needs into product requirements. The matrices describe correlations between what's and how's (or how the consumer's requests can be translated into measurable physical units). Therefore, the consumer's needs are evaluated in relation to each other, to quantify their importance in determining the success of the

product. These scales can serve importance to the construction of priority in the product development process and to provide guidelines to assign the necessary resources (Benner, et al., 2003).

Methodology

The authors analyzed the possibility to apply a specific Quality Engineering methodology, namely *Quality Function Deployment* (QFD) in agri-food industry, which allows the translation of the beneficiary's wishes in technical and quality characteristics of the product, using the matrix diagram known in the literature as "House of Quality". Therefore, we review the specific quality systems in the food industry, the properties and nutritional values of red wine and characteristics of some varieties of red wines.

The premises in applying QFD in the food industry

The strategic importance of a product development process makes companies unwilling to disseminate information in this regard. Foods by their nature constitute very complex systems, as many ingredients interact with each other and can influence the optimization of processes. This translates into a rather complicated relationship matrix. For trying to apply the QFD methodology in the food industry, the target values (HOW MUCH) must be replaced with target ranges, since the ingredients of a food product are active components and therefore subject to changes.

The consumer needs may be very different and variable (Jongen, and Meulenberg, 1998 ed) and this can result in a long list of WHAT and HOW, which are very difficult to summarize in a precise target value (HOW MUCH) (Figure no. 1).

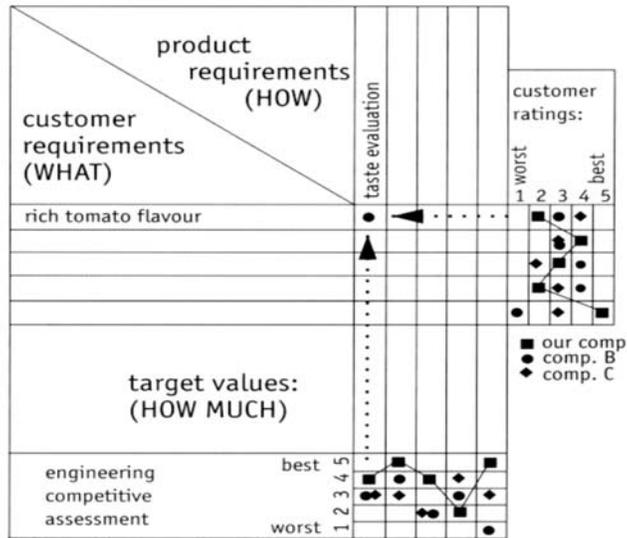


Figure no. 1. The "How Much" of the House of Quality
 Source: Jongen and Meulenberg, 1998

Once the House of Quality has been built, the next step is to design additional matrices (Benner et al., 2003). In the case of the food product, this first matrix will contain up to a hundred different WHATs and HOWs. The construction of the next matrix is carried out by placing the most important HOW of the House of Quality in the left part of the second matrix and the HOW MUCH in the right part. In this way, the HOWs of the first matrix become the WHATs of the second. Each matrix along the cascade process contains more detailed information on the product, compared to the one that precedes it. One of the most used models for the construction of the entire scheme is the Four Phase Model, also known as the ASI four-phase approach or Clausing model (Cohen 1995; Chan and Wu 2002b).

The model, as the name suggests, consists of four stages:

1. The product planning matrix (House of Quality);
2. The design deployment matrix;
3. The manufacturing planning matrix;
4. The production planning matrix.

Another system for the construction of the entire scheme is the Matrix / Matrixes model, also known as the Akao model, which consists in the construction of about thirty matrices, tables and diagrams. This model, however, does not find a diffusion in the literature, so it is not possible to give a more detailed description (Benner, et al., 2003).

Application of QFD in the food industry

In the literature, there are rare examples of the application of QFD in the food industry (Benner et al., 2003; Costa et al., 2001; Januszewska and Viaene, 1999), although QFD appears to be a potentially very useful for making food product development more efficient in the direction of customer satisfaction (Jongen and Meulenberg, 1998, ed.). The application of QFD within the food industry, is delaying for some reasons as:

1. although there are concrete benefits in the application of QFD in food industry, the literature is poor in examples, since the strategic importance of the product development process makes companies reluctant to disseminate information about it;
2. foods by their nature constitute very complex systems. Many ingredients interact with each other and can influence the process optimization. This leads to a rather complex relationship matrix.
3. to make the QFD applicable in the food industry, the target values (HOW MUCH) must be replaced by target ranges, as the ingredients of a food product are presented as the active substrates, which are therefore subject to change.
4. consumer needs can be very different and variable and this can give rise to a long list of WHATs and HOWs that are very difficult to summarize in a precise target value (HOW MUCH).

Specific Quality Systems in the Food Industry

A food chain is a basic network that shows the linear flow of nutrients and energy from one trophic level to another. Within the food chain it is necessary to distinguish between processed products and not. Typical examples of unprocessed products are the fruits and fresh vegetables, fresh milk, meat, fish and game. Often the products do not have a brand, and therefore the responsibility for the quality of the product is not as obvious as it is for branded products. For processed (branded) products, the processing industries are using quality system, often considering the entire production chain, from raw material to distribution and consumption. The food industry has a number of Quality Assurance (QA) systems available like GMP (Good Manufacturing Practices), HACCP (Hazard Analysis. Critical Control Points), ISO (International Organisation for Standardisation) standards. In fact, the HACCP system is mandatory for every company that deals with the transformation, packaging, transport and / or marketing of the food product, while it is not yet extended to primary production. For example, quality systems have developed in the Netherlands, ranging from *Good Manufacturing Practices* (GMP) and *Good Veterinarian Practice* (GVP) applied to the animal feed production sector, based on ISO-9002, to *Integrated chain control* or IKB (the system of quality adopted by the meat sector in the Netherlands is the *Integral Control of the Production Chain*) in the animal sector, to the *Chain Quality of Milk* or KKM, specific for milk production, up to the quality assurance systems for fruit and fresh vegetables, such as the *Integrated Quality Assurance System* or IKZ, and the *Environmental project ornamental plant cultivation* or MPS, which tends to reduce the use of pesticides and fertilizers in the production of ornamental plants (<https://www.patatino.it/img/cms/Qualità%20carni%20olandesi%201.pdf>).

Due to the problems that have involved the entire agri-food chain (*Bovine Spongiform Encephalopathy* - BSE, dioxin, *genetically modified organism* - GMO), new initiatives have arisen regarding the quality certification of primary products. In 1998, the Eurep-GAP initiative was established, or the *European Retailer Working Group-Good Agricultural Practice*, which concerns the safe production of products of plant origin.

Another quality system is the British Retail Consortium (BRC), which is a technical standard for those companies that supply food products with private labels, at cheaper prices than branded products. The BRC guidelines offer greater clarity to the suppliers of private labels, through a list that combines the principles of HACCP with specific parts of the GMPs (*Good Manufacturing Practices* regarding pesticide control) and parts of the ISO (system control).

The Global Food Safety Initiative (GFSI) created in 2000, is a task force that was established as a response to the loss of consumer confidence in food production in general. The GFSI community is composed of the world's leading food safety experts from retail, manufacturing, and food service companies, as well as international organisations, governments, academia and service providers to the global food industry.

Properties and nutritional values of red wine

With regard to the wine, with the technical characteristics expressed in a very qualitative way correlate to the sensory quality characteristics and the corresponding chemical characteristics. All characteristics change from year to year depending on the amount and quality of the harvest various grape varieties. Table no. 1 shows the ratio between the bunch and the grape berry.

Table no. 1.

Grape bunch and grape berry	% on weight of grape bunch	% on weight of grape berry
Bunch	3-7	-
Grape peel	93-97	9-11
Grape core	93-97	85-90
Pips	93-97	2-6

Wine contains water and alcohol, carbohydrates, minerals (potassium, calcium, magnesium, sodium, phosphorus), trace elements (copper, zinc, magnesium), vitamins (especially B vitamins), polyphenols, acids, so over 800 substances. And although it is classified as "alcoholic drink", wine is a genuine food, with great energy power. Wine, whether we are talking about the red, white or rose, is a natural drink, obtained only from grape and the properties of black grapes, from which it is made, are largely transferred to red wine. Thus, in 100 ml of red wine we have on average the following nutritional values (table no.2):

Table no. 2. General composition of table red wine per 100 ml

Calories: 63-85	Calcium: 7-8 mg
Carbohydrates: 2,1	Copper: 0.2-1 mg
Sugars: 0.60 grams	Phosphorus: 20-23 mg
Protein: 0.10 grams	Betaine: 0.3 mg
Vitamin A (Retinol): 2 IU	Potassium: 100-127 mg
Vitamin B1: 0.01 mg	Flor: 105 mcg
Vitamin B2: 0.02 mg	Magnesium: 20 mg
Vitamin B3 (Niacin): 0.2 mg	Iron: 0.9 mg
Vitamin B6 (Pyridoxine): 0.10 mg	Selenium: 0.20 mg
Vitamin B8 (Choline): 5.7 mg	Zinc: 0.10 mg
Vitamin B9 (folic acid): 1.00 mcg	Resveratrol: 0.2-0.713 mg / l
Vitamin K: 0.4 mcg	Alcohol: 75-160 g / l

Source: Authors elaboration based on different available data

In addition to vitamins and minerals, red wine contains other substances beneficial to the human body, including:

- *Polyphenols* - Antioxidant substances, with action in preventing the formation of free radicals and with regenerative action on the human body.
- *Resveratrol* - The most powerful antioxidant and a polyphenol with anti-aging properties and found in large quantities in the peel and pips of grapes, especially black ones. Resveratrol is produced by plants to defend against disease.
- *Flavonoids* - Antioxidants with effect on the immune system, but also with anti-inflammatory effects.
- *Melatonin* - The natural hormone involved in regulating the circadian rhythm, with an important role in terms of sleep quality.

By and large, all red wines have approximately the same properties, but if we analyze each variety separately, we will find that they differ to some extent and that we can make a choice based on its properties:

- Pinot Noir from cool and wet areas - has the highest concentration of resveratrol therefore has strong anti-aging and anti-tumor effects.
- Cabernet, Shyraz, Merlot have a high content of procyanides and flavonoids that help maintain healthy blood vessels and reduce the risk of a heart attack or stroke.
- Sagrantino, Cabernet Sauvignon are the wines with the highest level of polyphenols

From Wine Value Chain to House of Quality for Romanian red wine

Efficiency of wine making involves many actors and each of them participate to the creation of wine value chain (Figure no.2).

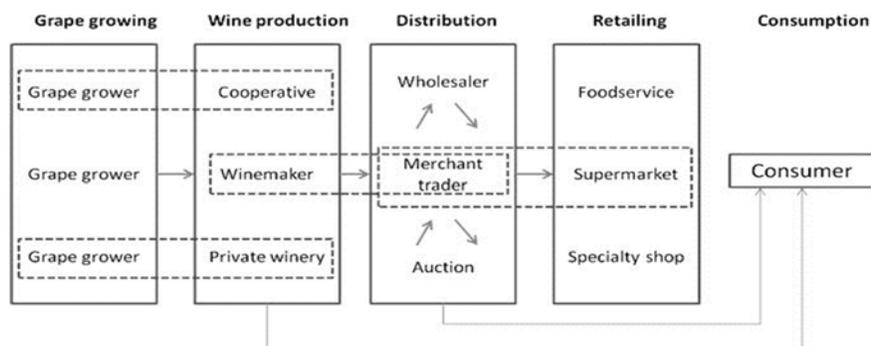


Figure no. 2. The Framework of Wine Value Chain

Source: Goncharuk, 2017

The label helps us to know exactly what we are consuming and to make sure that they do not contain a higher amount of sulfites than the one agreed at European level by the health norms (150 mg / l of sulfites for red wine, 210 mg / l of white wine). Thus, price can be a good criterion. Producers' and sommeliers associations warn that a wine whose price is less than five euros / 750 ml bottle is most likely of questionable quality and should be avoided. A wine really good, cost more than 10 euro / bottle of 750 ml. The norms adopted at European level and respectively in force in Romania, certainly have in view the support of an optimal state of health. In the case of country wine in general there are no verified and reliable data of the type mentioned above and place these wines in the category of very cheap wines.

We elaborate the *House of Quality* for Romanian red wine on the basis of the answers given by 364 respondents to an online questionnaire addressed to consumers, producers and entrepreneurs involved in the wine business. Therefore, for this purpose we take into account 8 criticalities and we individualize 7 solutions.

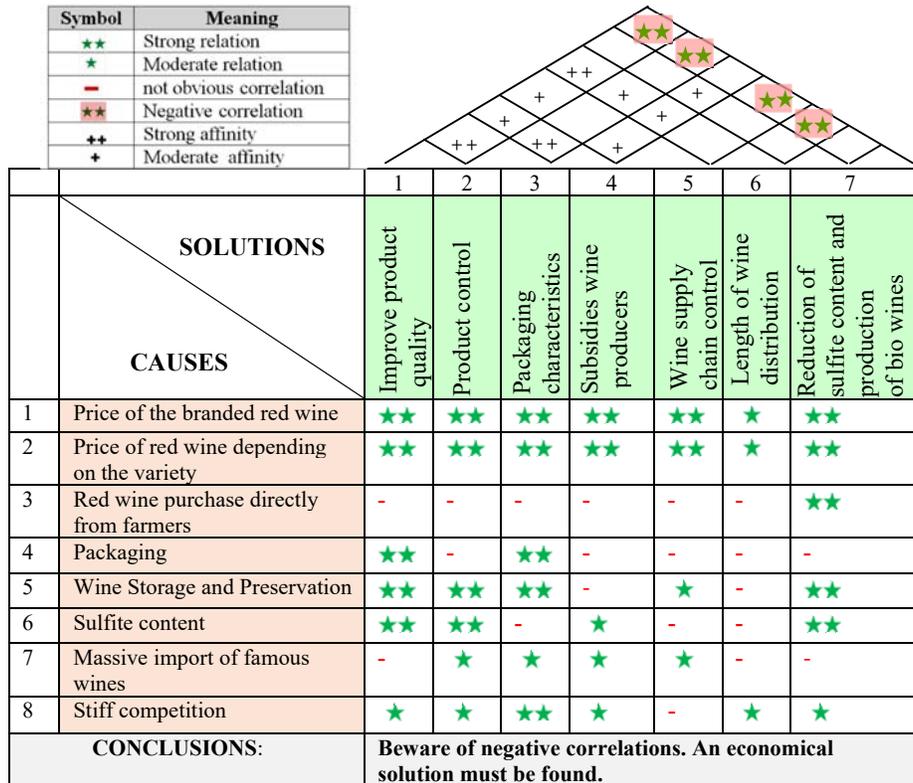


Figure no. 2. *House of Quality* for Romanian red wine

The criticalities analyzed within the *House of Quality* are: the price of the branded red wine, the price of red wine depending on the variety, red wine purchase directly from farmers (Dragulanescu et al., 2020), packaging, wine storage and preservation, sulphites content, massive import of famous wines, stiff competition. As possible solutions we indicate: improve product quality, product control, packaging characteristics, subsidies wine producers, wine supply chain control, length of wine distribution chain, reduction of sulphites content and orientation to production of bio wines.

Conclusions

Using the methodology provided by quality engineering, the authors analyzed the main issues and criticisms to highlight the main issues related to the production and marketing of wines. Following this analysis, the authors drew seven solutions to the main problems highlighted by the analysis of the properties and characteristics of wines. To see to what extent these solutions found respond to the highlighted problems, the authors used the QFD methodology and built a “House of Quality” consisting of two matrices. The central (basic) matrix of the QFD methodology proves to be extremely useful in studying the degree of relationship of the solutions found with the problems highlighted by interviews or questionnaire analyzes. The secondary matrix, the “roof” of the House of Quality highlights the affinity, which is created or not, between the solutions found and especially triggers an alarm signal if there is a negative correlation. This negative correlation requires finding another solution that fulfills the proposed purpose, without negative implications on the other solutions found.

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Improving Organizational Resilience through Integrated Business Continuity Plan in Times of Crisis

Gabriela Elena Bițan¹, Stelian Mircea Olaru², Teodora Elena Fogoroș³ and Cătălin Petcu⁴

¹⁾²⁾³⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

⁴⁾ *University Politehnica of Bucharest, Bucharest, Romania.*

E-mail: gabriela_bitan@yahoo.com; E-mail: olaru_stelian@yahoo.com

E-mail: teodora.elena@icloud.com; E-mail: cata_petcu@yahoo.com

Please cite this paper as:

Bițan, G.E., Olaru, S.M., Fogoroș, T.E. and Petcu, C., 2021. Improving Organizational Resilience through Integrated Business Continuity Plan in Times of Crisis. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 610-617 DOI: 10.24818/BASIQ/2021/07/078

Abstract

In the context of the crisis caused by the COVID-19 pandemic, as the issues facing organizations became increasingly complex, companies were forced to quickly adapt to a wide array of changes. The impact of the pandemic varied in severity across the globe, depending on one hand on the level of compliance from the general public with prevention measures imposed by governments, which impacted the duration and level of corresponding restrictions and on the other hand on the level of governmental fiscal and economic policies applied to support affected organizations, which aimed to partially mitigate the impact on SMEs in the most affected sectors. Business continuity plans and standards in the field of management systems represent a starting point to ensure organizational resilience, facilitating the proactive planning in view of potential major risks and also the reactive mitigation of the effects of crisis, once it has occurred. Small and medium-sized enterprises that had not developed and implemented business continuity plans to provide measures to minimize the impact of abnormal situations, have great difficulty in getting through the current global health and economic crisis. The main objective of the research presented in this paper is the implementation of an integrated business continuity plan to improve organizational resilience, following the example of an organization in Romania, whose main field of activity is the organization and conducting of swimming lessons for children from kindergartens and afterschool centers, but services also other private beneficiaries. The research results show that, through the implementation of the integrated business continuity plan, the resilience of the organization has been improved, and it has managed to recover and continue its activity, in the context of the crisis generated by the pandemic.

Keywords: Business continuity, organizational resilience, integrated business continuity plan, global crisis.

DOI: 10.24818/BASIQ/2021/07/078

Introduction

In the context of the crisis triggered by the COVID-19 pandemic, the global economy has entered the biggest recession after 1930, with the activity of many organizations being restricted, redefined or even suspended (Lampe, et al., 2020). Depending on the level of compliance of the general public the recommendations and measures imposed by governments and taking into account the fiscal and economic stimulus policies applied to support certain organizations, the impact of the pandemic was felt differently globally (Tavoletti, et al., 2021).

It is estimated that the most affected, both in terms of demand and supply, were small and medium enterprises (Arthur, 2020; Herbert, 2021). Organizations with more than 500 employees usually have

business continuity plans that provide measures to minimize the impact of abnormal situations so that they can more easily navigate through such global crisis.

Management systems standards, developed by the International Organization for Standardization (ISO), can facilitate the mitigation of the effects of this crisis, if properly implemented.

The main objective of the research presented in this paper is the implementation of an integrated business continuity plan to improve organizational resilience, following the example of an organization in the field of sports services in Romania.

Review of the scientific literature

As the pandemic broke out and resulting challenges became more complex, organizations were forced to adapt to changes in the context of the economic and health crisis (Beninger and Francis, 2021). To support global efforts to combat the effects of the pandemic, public authorities and researchers around the world defined a number of measures, action plans, tools or standards to help organizations, especially small and medium-sized ones, in their efforts to address the pandemic, ensuring business continuity and, at the same time, protect the health of all parties involved (Maier, et al., 2020).

The International Labor Organization published the tool "The six-step COVID-19 business continuity plan for SMEs", developed to help small and medium-sized organizations with limited resources to assess their level of business risk and level of vulnerability to the pandemic, considering the impact of the "4Ps" (People, Processes, Profits, Partnerships). The tool is actually a self-assessment questionnaire, containing questions on Safe working environment, Buildings and machinery, Stock and raw materials, Markets, Suppliers, Society, Economic environment, Public utilities, Third parties, Public infrastructure, Political and regulatory environment and Overall health. Based on the response score, the risk profile of the organization can be assessed, which can rank as highly vulnerable, vulnerable or resilient. Depending on the identified risk profile, the tool provides recommendations for the six-step development of the business continuity plan (ILO, 2020).

On the other hand, the World Economic Forum has published "The Global Risks Report 2021" which analyzes the risks to human health, unemployment, digitalization and youth disillusionment. It is estimated that, during this period, humanity is more prone to risks than in the past, resulting in new approaches to ensuring responsiveness and organizational resilience (World Economic Forum, 2021).

Regarding the lessons learned during the pandemic, the European standardization organizations (CEN - European Committee for Standardization and CENELEC - European Committee for Electrotechnical Standardization) prepared a report on their experience in improving organizational resilience and presented several examples of opportunities that can be capitalized by organizations (CEN and CENELEC, 2021).

Also, the International Organization for Standardization (ISO) developed a list of resources related to the medical and business field, which it made available free of charge to those interested (ISO, 2020). In order to improve organizational resilience, so that organizations can establish the right actions and ensure the protection of life, ISO is currently developing new standards in areas such as: contactless delivery service, emergency medical facility, cloud kitchen services, security and resilience, food security, health informatics, tourism and related services, buildings and civil engineering works or medical electrical equipment (ISO, 2021).

Standards have become the basic tools for quick fixes and thus, more than ever, they provide confidence (CEN and CENELEC, 2021). Business continuity plans, based on international standards for management systems, are a starting point to ensure organizational resilience (Bițan, et al., 2020).

Research objectives and methodology

The main objective of this research was to implement an integrated business continuity plan, based on international standards on management systems, in order to assess whether the resilience of the organization was improved by applying this plan during the pandemic. Please note that the

requirements for this plan were identified in a previous research of the authors, the results of which were published (Bițan, et al., 2020).

In order to achieve the mentioned objective, the integrated business continuity plan was experimentally implemented within an organization in the field of sports services in Romania, which has a quality management system certified according to the international standard ISO 9001. The field of activity is the organization and conducting of swimming lessons for children in kindergartens and afterschool centers, but includes also services for private beneficiaries. Due to the restrictions imposed during the pandemic, the organization's activity was suspended for two months, after which, due to the closure of kindergartens, schools and afterschool centers, the number of customers decreased significantly.

The integrated business continuity plan proposed by the authors was implemented during six months, between July-December 2020 and consisted in applying the measures established to ensure the continuity of the business in safe conditions, both for employees and customers, taking considering the requirements defined by the international standards regarding the management systems.

Results and discussion

1) Internal and external environment specific factors of the organization identified in the research

In order to understand the organization and the context in which it operates, the relevant external and internal factors were established, the mission and strategic directions were determined, as well as for the evaluation of the organization's ability to achieve the defined objectives.

Identifying and monitoring the specific factors related to the external and internal environment of the organization is essential at the management level, to identify opportunities and keep under control the risks generated by the changes of these factors.

To identify the main specific factors related to the external environment in which the organization operates, the PEST Analysis (Political, Economic, Social and Technological) was used, and to identify the main specific factors related to the internal environment the SWOT Analysis (Strengths, Weaknesses, Opportunities and Threats) was used. The identified factors are presented in tables no.1 and no.2.

Table no. 1. Specific factors of the external environment of the analyzed organization, identified using the PEST analysis

No.	Categories of factors	Specific factors of the external environment of the organization
1	Political	<ul style="list-style-type: none"> • Changes in the regulations regarding sports clubs • Changes in unemployment legislation
2	Economic	<ul style="list-style-type: none"> • Overall economic crisis • Increasing unemployment rate • The economic situation of sports clubs • Lack of economic incentives for sports-related activities • The consumption power of the population • The value of similar services provided by other organizations
3	Social	<ul style="list-style-type: none"> • The lifestyle of the population • Respecting of human rights • Changing of customer preferences for indoor spaces
4	Technological	<ul style="list-style-type: none"> • The impact of technology on the sports field

Source: authors own development.

Table no. 2. Specific factors of the internal environment of the analyzed organization, identified using the SWOT analysis

<p style="text-align: center;">Strengths</p> <ul style="list-style-type: none"> • Seriousness and professionalism (qualified, trained staff, certified competencies) • Market reputation • Recommendations of clients and collaborators • Observance of all measures to combat the spread of the virus 	<p style="text-align: center;">Weaknesses</p> <ul style="list-style-type: none"> • Limiting the capacity to provide services due to the use of swimming pools by several sports clubs • Impossibility to wear a protective mask during training • The small number of private clients, compared to the number of clients from kindergartens and afterschool centers • Impossibility to perform online training
<p style="text-align: center;">Opportunities</p> <ul style="list-style-type: none"> • Parents' willingness to bring their children to swimming lessons, due to working from home • Development of an online training program, complementary to pool training • Moving training during the summer in an outdoor pool 	<p style="text-align: center;">Threats</p> <ul style="list-style-type: none"> • Suspension or limitation of activity due to the increased number of Covid-19 cases in the local area • Closing the leased pools for a determined or indefinite period

Source: authors own development

2) *Elaboration of the measures plan of the risks identified during the pandemic and establishing the objectives of the organization*

Based on the specific factors of the internal and external environment of the organization, in the next stage focus was placed on identifying the risks that may affect the organization during the pandemic (table no. 3).

Table no. 3. The risks identified in the case of the analyzed organization, during the pandemic

Risk no.	Identified risks	Probability	Impact	Risk level	Risk category
1	Suspension or limitation of the organization's activity	3	5	15	critical risk
2	Closing for a fixed or indefinite period of the leased pools	3	5	15	critical risk
3	Illness of instructors with Covid-19	3	5	15	critical risk
4	Illness of clients with Covid-19	3	5	15	critical risk
5	Loss of reputation as a result of multiple cases of Covid-19 illness of clients and instructors	2	5	10	moderate risk

Source: authors own development

In order to prevent or reduce the adverse effects of the identified risks, a Plan of Measures for these risks was developed (Table no. 4).

Table no. 4. The proposed plan of measures for treating the identified risks in the case of the analyzed organization

Risk no.	Proposed risk management measures	Responsible	Deadline
1	Identification and observance of the measures imposed by the Government	General manager	31.12.2020
	Adherence to all measures required to prevent the transmission of the virus	General manager, Instructors	31.12.2020
	Development of an online training program, complementary to pool training	Instructors	31.12.2020

2	Identifying an outdoor pool and concluding the contract during the summer	General manager	15.07.2020
3	Performing training only based on appointments	General manager	31.12.2020
	Performing epidemiological triage before each training for both instructors and clients	Instructors	31.12.2020
	Weekly testing of instructors	Instructors	31.12.2020
	Limiting the access of companions	Instructors	31.12.2020
4	Performing training only based on appointments	Instructors	31.12.2020
	Performing epidemiological triage before each training, both for instructors and clients	Instructors	31.12.2020
	Weekly testing of instructors	Instructors	31.12.2020
	Limiting the access of companions	Instructors	31.12.2020
	Disinfection of materials and tools used after each training	General manager	31.12.2020
5	Avoiding the illness of instructors and clients, by observing all the measures imposed to avoid the transmission of the virus	Instructors	31.12.2020

Source: authors own development

Taking into account the context of the organization, the proposed Plan of measures for dealing with the identified risks and the regulations applicable to the organization, the objectives for the pandemic period were established (Table no. 5).

Table no. 5. The objectives established within the integrated business continuity plan, in the case of the analyzed organization

No.	Objective	Actions to achieve the objectives	Responsible	Deadline
1	Maintaining the activity	<ul style="list-style-type: none"> Observance of all measures required to prevent the transmission of the virus Development of an online training program, complementary to pool training 	General manager, Instructors	31.12.2020
2	Zero Covid-19 illness of instructors	<ul style="list-style-type: none"> Carrying out training only based on appointments Performing epidemiological triage before each training, both for instructors and clients Weekly testing of instructors Sanitization of materials and tools used after each training Limiting the access of companions 	Instructors	31.12.2020
3	Organizing at least 3 groups / day / location	<ul style="list-style-type: none"> Entering and leaving at fixed hours to limit the meeting with other clients Reducing the number of participants to a maximum of 10 participants / group 	Instructors	31.12.2020
4	10% increase in the number of private clients, compared to the period before the outbreak of the pandemic	<ul style="list-style-type: none"> Tariff reductions for recommendations Discounts for subscriptions for periods longer than 3 months Tariff reductions for private clients coming from kindergartens and afterschool centers with which there is a collaboration contract 	Instructors	31.12.2020
5	Moving the activity during the summer to an outdoor pool	<ul style="list-style-type: none"> Identifying an outdoor pool Concluding the contract 	General Manager	15.07.2020

Source: authors own development

In order to achieve the established objectives, the team for the implementation of the integrated business continuity plan also proposed the necessary resources (human and financial resources), and the general manager approved the allocation of these resources.

3) Implementing the measures established through the integrated business continuity plan and the continuous improvement of the results

After identifying the risks and setting the objectives, the measures established by the integrated business continuity plan were implemented. All results were monitored and analyzed monthly.

For the identified opportunities, the development of an online training program, complementary to the training in the pool and the relocation of the activity during the summer in an outdoor pool, a subscription was purchased on an online course organization platform and a contract was concluded for renting a swimming lane in an outdoor pool.

To evaluate the performance of the organization, an internal audit of the quality management system was performed. Six months after the implementation of the plan, the management review took place, in which results were evaluated: the extent to which the established objectives were met (table 6), process performance, conformity of products and services, non-conformities and corrective actions, customer and stakeholder feedback, monitoring and measurement results, internal audit results, risk assessment results and opportunities for improvement.

Table no. 6. Analysis of the stage of achievement of the objectives established for the pandemic period, in the case of the analyzed organization

No.	Objective	The results of the analysis regarding the achievement of the objectives
1	Maintaining the activity Deadline: 31.12.2020 Responsible: General Manager, Instructors	Objective in progress. A subscription was purchased on an online platform for organizing courses for conducting an online training, complementary to the training in the pool. A training lane was leased in an outdoor pool.
2	Zero Covid-19 illness of instructors Deadline: 31.12.2020 Responsible: Instructors	Goal achieved 100%. There were 2 cases of Covid registered with instructors, but after analyzing each case, it was concluded that they did not get sick within the organization.
3	Organizing at least 3 groups / day / location Deadline: 31.12.2020 Responsible: Instructors	Goal achieved 100%. Between July 15 and September 15, 2020, 8 workouts / day took place at the outdoor pool.
4	10% increase in the number of private clients, compared to the period before the outbreak of the pandemic Deadline: 31.12.2020 Responsible: Instructors	Goal achieved 100%. At the end of 2019, the organization had, on average, 350 private clients per month. After implementing the measures established by the integrated business continuity plan, at the end of 2020, the organization reached, on average, 400 private clients per month.
5	Moving the activity during the summer to an outdoor pool Deadline: 15.07.2020 Responsible: Instructors	Goal achieved 100%. The outdoor pool has been identified and the contract has been concluded for the period July 15-September 15, 2020

Source: authors own development

Although the probability of occurrence and the impact of the identified risks were not diminished, the application of the measures established for the treatment of the risks led to the development in good conditions of the organization's activity and to avoid the suspension of the activity during the pandemic.

During the implementation of the plan, all cases of Covid-19 illnesses, both of the instructors and of the clients, were investigated and it was concluded that they became ill outside the organization.

As a result of the management review and the measures established for continuous improvement, it was ensured the continuation of the online trainings and the rental of two outdoor swimming pools during the next summer, in two different neighboring areas.

It was also identified the opportunity to seek financial support through the “National Recovery and Resilience Plan” containing the recovery and resilience mechanism created by the European Union to provide effective and meaningful financial support for the implementation of sustainable reforms and related public investment (MIPER, 2021).

Conclusions

To improve organizational resilience, an integrated business continuity plan was developed experimentally, by the authors, for an organization in the field of sports services in Romania, which has a quality management system certified according to the international standard ISO 9001.

The research results show that the implementation of the integrated business continuity plan proposed to the organization's management facilitated the improvement of the organization's resilience, and understanding the organization's context, identifying and managing the risks generated by the economic and health crisis, allowed recovery and continuity during the pandemic. This ensured the reduction of the negative impact of the pandemic on the organization's activity, as a result of the closure of kindergartens, schools and afterschool centers.

The research can be expanded, by applying the above-mentioned integrated business continuity plan to other fields, especially in the context of implementing the National Recovery and Resilience Plan.

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ERP Systems: A Solution for Sustainable Business Development

Laura Eugenia Lavinia Barna¹ and Bogdan Ștefan Ionescu²

¹⁾²⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: barnalaura15@stud.ase.ro; E-mail: bogdan.ionescu@cig.ase.ro

Please cite this paper as:

Barna, L.E.L. and Ionescu, B.Ș., 2021. ERP Systems: A Solution for Sustainable Business Development. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 618-624 DOI: 10.24818/BASIQ/2021/07/079

Abstract

The purpose of this paper is to highlight that integrated ERP (Enterprise Resource Planning) systems can be a solution to ensure the sustainable development of a company. As the economic and technological environment has constantly evolved, companies have felt the need to automate most of their daily activities and to maintain their competitiveness to companies in the same sector of activity. If a company has planned actions for sustainable development and implements these sustainable development plans, then it can obtain various benefits based on these plans (financing activities, growth, innovation and other benefits).

In the article, we used the questionnaire to see how ERP systems are a solution for sustainable development of the company. On analyzing the obtained data, we made a regression model using Microsoft Excel. Quantitative research methodology can have practical implications, as many companies can take this information into account to improve their social and environmental performance and to develop sustainably. The results of this questionnaire showed that ERP systems support the sustainable development of the company, because they reduce the inefficient consumption of resources (electricity, paper) and provide clear and quality information useful in preparing company reports. Also, the business structure is well defined.

We believe that ERP systems can offer a company the opportunity to grow sustainably only if it establishes a good strategy and periodically modernizes existing IT systems implemented and used within the company.

Keywords: ERP systems, business, sustainable development, evolution, automation, benefits.

DOI: 10.24818/BASIQ/2021/07/079

Introduction

Information technology has undergone a series of major transformations, these having an impact on the way people carry out their daily activities. Technological progress has influenced coordination and management mechanisms, with an emphasis on creating people's competencies. To ensure quality work within the company, it must employ people with high digital skills or provide training programs for employee training. Also, technological progress has been the basis of the evolution of the business environment and the process of globalization (sectors of activity that were visible only at the national level, have become visible at the global level).

Due to the technological progress, the information systems used within the company have evolved, the companies being forced to keep up with the changes in the technology field by investing in information systems as efficient as possible in order to fulfill their established objectives and to develop sustainably. Thus, the implemented IT systems must integrate all the processes within the company in order to ensure a clearer picture of the company's situation.

The most appropriate solution to incorporate and ensure the sustainable development of the company is the implementation of an ERP system, because all information collected and processed are stored in a common database for several departments, ensuring a correct and efficient flow of information between all company departments. According to Kandananond (2014), ERP systems have the role of *automating and integrating business processes* throughout the company.

ERP systems have a modular appearance, because each module has the role of providing "the necessary support to carry out a certain business process" (Koh, et al., 2011, quoted by Maliszewska and Klos, 2019) or on a certain functionality. The main modules of ERP systems are: financial, accounting, supply, production, sales, human resources (Weinrich and Ahmad, 2009 cited by Rajal and Baral, 2015). Depending on the specifics of the company, other specific modules can be implemented. Currently, these systems offer a clearest flow of information and support in implementing the company's strategy.

Even if the process of implementing ERP systems within the company is quite complicated and takes a long time, a company must be aware that ERP systems provide many benefits to the company (process automation, clear information, correct decisions, business efficiency, processing a large volume of information) (Niu, et al., 2017).

Danciu (2013) considers that the existence of plans for sustainable development ensures the future of the company. The reasons why a company decides to "pencil" a strategy for sustainable development can be: competition with other companies and pressure from government or banks (Hasan, et al., 2019).

Our paper presents the following structure: a section specific to literature review, a section where we presented the research method used, a section where we analyzed the main results specific to the subject of the article using a regression model and finally the paper ends with the main conclusions of the paper.

Review of the scientific literature

Sustainable development has the role of improving the activity and ensuring the future of the company. Even if the implementation of ERP systems is quite difficult, these systems provide a series of benefits. To ensure implementation in the most reasonable time possible, the company must create a strategic plan to ensure a holistic view of the entire company (Chofreh, Goni and Klemes, 2018).

According to Koh, et al. (2011, quoted by Maliszewska and Klos, 2019) considers that ERP systems in modular format ensure the fulfillment of business processes in different departments of the company. Zeng, Chiang and Yen (2003) and Rodriguez, et al. (2019), considers that ERP systems represent "an advanced software solution" that aims to collect and process all company data, as well as to integrate a multitude of functionalities for different departments.

In figure 1, the main features of ERP systems are:

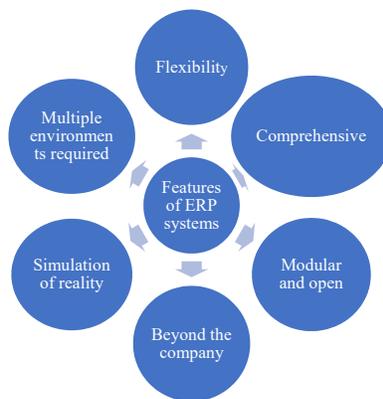


Figure no 1. Features of ERP systems

Source: Author's own creation adapted after Zeng, Chiang and Yen, 2003

The flexibility of the ERP system ensures the correct response to the company's requirements and comprehensively provides support for a number of functions of the organization. The modular architecture allows the customization of ERP systems according to the company's requirements. ERP systems also offer the user the possibility to simulate real business processes. Multiple environments required need different interfaces for implementation, testing, production and disaster recovery.

The concept of sustainable development of business processes in a company was researched by the authors Nosratabadi, et al. (2019) who noted that in order to ensure the sustainable development of the company, we must take into account "the reasoning that creates, provides and captures value in the economic environment."

According to Schaltegger, Freund and Hansen (2016), companies have a "crucial role in transforming the market and society", because business activities can in some cases cause social and environmental problems. Thus, companies should establish a strategic plan for sustainable development so as to minimize the adverse effects on the environment. Drafting a business model to ensure the sustainable development of a company can be defined as a model that "describes, analyzes and communicates" (Schaltegger, Freund and Hansen, 2016) how to ensure a sustainable business, how to reduce the negative effects on the environment and how to regenerate or replace the natural resources used within the company.

According to Tunn, et al. (2019), the rational consumption of resources by a company allows it to grow sustainably.

Ursacescu, et al. (2019) considers that the main criteria on which ERP systems are chosen to ensure the sustainable development of the company are: energy efficiency, portability, flexibility and the server on which it operates (recommended Service as a Software - SaaS, because it consumes less electricity and reduces the consumption of printed paper because the database allows the storage of a large volume of data).

Research methodology

The research method used in our article was quantitative, based on the questionnaire. The questionnaire was published between November 12, 2020 - November 30, 2020 and was structured as follows: a section containing questions about the profile of respondents, and the second section contains questions through which we researched whether ERP systems have any impact. on the sustainable development of the company. The sample of respondents consisted of undergraduate, master's, doctoral students from Bucharest University of Economic Studies and employees in the economic field aged between 20 and 50 years.

To investigate whether ERP systems are a solution for the sustainable development of the company (dependent variable $y = SOL$), we used a regression model consisting of the following factors (independent variables) presented in Table no. 1:

Table no. 1. Factors of the multiple regression model

Factors	Code
Respondents' experience in using ERP systems	EXP
"Green measures" adopted for sustainable development	GREEN
The quality of decisions following data processed and generated using ERP systems	QLTY
Labor productivity	PRODM
Production and services	SERV
Business infrastructure	INFRA
The volume of data processed with ERP systems	VOL

Source: Author's own creation

Multiple regression model has the following structure:

$$y = \alpha_0 + \alpha_1 * EXP + \alpha_2 * GREEN + \alpha_3 * QLTY + \alpha_4 * PRODM + \alpha_5 * SERV + \alpha_6 * INFRA + \alpha_7 * VOL + e$$

The main hypotheses formulated were:

H₁: ERP systems are a solution for the sustainable development of the company

H₂: There is a strong relationship between the dependent variable SOL and the independent variable EXP

H₃: There is a strong relationship between the dependent variable SOL and the independent variable GREEN

H₄: There is a strong relationship between the dependent variable SOL and the independent variable QLTY

H₅: There is a strong relationship between the dependent variable SOL and the independent variable PRODM

H₆: There is a strong relationship between the dependent variable SOL and the independent variable SERV

H₇: There is a strong relationship between the dependent variable SOL and the independent variable INFRA

H₈: There is a strong relationship between the dependent variable SOL and the independent variable VOL

To analyze the data collected for the regression model we used Microsoft Excel as a tool. The data obtained will be presented in the next section.

Results and discussion

As we presented in the previous section, the sample consisted of undergraduate, master's and doctoral students from Bucharest University of Economic Studies and employees in the economic field. The questionnaire was answered by 77 women and 11 men residing in urban areas and 15 women and 9 men residing in rural areas (figure no. 2)

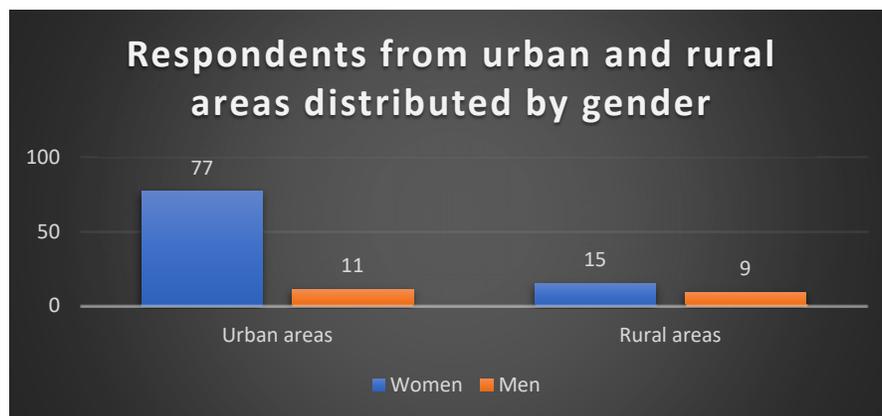


Figure no. 2. Respondents from urban and rural areas distributed by gender

Source: Author's own creation

Given the results obtained on the basis of the questionnaire, we can see that women predominate the most in our sample. This was also confirmed by the study conducted by ANS (2020), through which

the number of women students and annual graduates represents the largest share of the total number of students and graduates.

Analyzing the multiple regression model presented in the previous section, we obtained the following results of summary output:

Table no. 2. Summary output

Multiple R	0,9645
R Square	0,9302
Adjusted R Square	0,9167
Standard Error	0,9881
Observations	112

Source: Author's own creation

From table no. 2, the value of the regression coefficient (R) is 0,9645 which is close to the value 1 and represent a strong relationship between the dependent variable (SOL = ERP systems are a solution for the sustainable development of the company) and the 7 independent variables (EXP = Respondents' experience in using ERP systems, GREEN = "Green measures" adopted for sustainable development, QLTY = The quality of decisions following data processed and generated using ERP systems, PRODM = Labor productivity, SERV = Production and services, INFRA = Business infrastructure, VOL = The volume of data processed with ERP systems).

The coefficient of determination has a value of 93.02% close to 100% demonstrating that the dependent variable SOL is explained through the 7 independent variables (EXP, GREEN, QLTY, PRODM, SERV, INFRA, VOL).

In table no. 3, we identified that the chosen multiple regression model is valid because Significance F <0.05.

Table no. 3. ANOVA

	df	SS	MS	F	Significance F
Regression	7	1368,47	195,49	200,20	0
Residual	105	102,53	0,97		
Total	112	1471			

Source: Author's own creation

In table no. 4, we identified the coefficient of the multiple regression model:

Table no. 4. Coefficient of the multiple regression model

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95%	Upper 95%
<i>Intercept</i>	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<i>X₁ - EXP</i>	0,017	0,093	0,192	0,847	-0,167	0,202	-0,167	0,202
<i>X₂ - GREEN</i>	0,021	0,125	0,173	0,863	-0,225	0,268	-0,225	0,268
<i>X₃ - QLTY</i>	0,186	0,150	1,245	0,215	-0,110	0,484	-0,110	0,484
<i>X₄ - PRODM</i>	0,136	0,174	0,781	0,436	-0,209	0,481	-0,209	0,481
<i>X₅ - SERV</i>	-0,169	0,189	-0,896	0,372	-0,545	0,205	-0,545	0,205
<i>X₆ - INFRA</i>	0,475	0,153	3,105	0,0024	0,171	0,778	0,171	0,778
<i>X₇ - VOL</i>	0,254	0,081	3,129	0,0022	0,093	0,415	0,093	0,415

Source: Author's own creation

After obtaining the data from table no. 4, we verified the significance of the regression model coefficients:

Table no. 5. Significance of regression model coefficients

Independent variable	Variable significance calculation 100% - (p-value * 100)	Significant / Insignificant
X ₁ - EXP	15,20% < 95%	Insignificant
X ₂ - GREEN	13,69% < 95%	Insignificant
X ₃ - QLTY	78,43% < 95%	Insignificant
X ₄ - PRODM	56,33% < 95%	Insignificant
X ₅ - SERV	62,80% < 95%	Insignificant
X ₆ - INFRA	99,75% > 95%	Significant
X ₇ - VOL	99,77% > 95%	Significant

Source: Author's own creation

According to the data obtained in table no. 5, the regression model remained structured only in 2 independent variables (INFRA and VOL), so hypotheses H₇ and H₈ are confirmed and hypothesis H₁ only partially confirmed. The rest of the formulated hypotheses were infirmed, because the coefficients in the regression model are insignificant.

$$y = 0,475 * INFRA + 0,254 * VOL + e$$

Where:

INFRA = Business infrastructure

VOL = The volume of data processed with ERP systems

Conclusions

The evolution of technology can have both ups and downs for business, all depending on how a company establishes its strategy and how it perceives the market.

The role of ERP systems is to ensure the most efficient use of the company's resources, so that they can develop sustainably. Sustainable development has the role of improving the activity and ensuring the future of the company, thus creating a holistic view of the company.

Even if ERP systems have a modular appearance, it offers suitable solutions for different departments of the company. Following the research, the authors concluded that ERP systems have a significant impact on the business infrastructure and the volume of data that can be processed using ERP systems by the users of these systems, but also the decrease of the inefficient consumption of resources, offering clear and quality information. If ERP systems provide complete and accurate information about the company's situation, managers will be able to analyze and to take the most important decisions for the company. The analysis presented in this article is useful both for research interested in sustainable development and for companies that want to develop sustainably using ERP systems.

The implementation of these ERP systems offers numerous benefits both in terms of sustainable development and the financial and non-financial performance of a company (operational, managerial benefits, cost reduction, activity planning).

In conclusion, ERP systems can be a solution for the sustainable development of a company if it has a strong business infrastructure and a well-defined strategy.

Acknowledgements

This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.

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Project Management Capability – Differentiator of Organizational Change Success

Orlando Voica¹, Cătălin Ionuț Silvestru² and Ramona Camelia Silvestru³

¹⁾²⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

³⁾ *Technical University of Civil Engineering Bucharest, Bucharest, Romania.*

E-mail: orlandovoica@yahoo.com; E-mail: catalin@ase.ro

E-mail: ramona.silvestru@gmail.com

Please cite this paper as:

Voica, O., Silvestru, C. and Silvestru, R.C., 2021. Project Management Capability - Differentiator of Organizational Change Success. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 625-633
DOI: 10.24818/BASIQ/2021/07/080

Abstract

Organizational change has become a permanent process in the worldwide daily reality, sparked by the necessity to adjust to economic environment or to take profit of it.

This paper aims to present a few conclusions of a study on the project management capabilities of Romanian organizations that experienced organizational changes in the last 2 years prior to the study.

Many researchers analyzed the organizational processes that lead to successful finalization of projects while some procedural standards were established by professional organizations in the field of project management. Starting from their work, our effort is based on the hypothesis that the organizational capability to implement successful changes is the organizational project management capability, which is a second-order multidimensional construct that can be evaluated through four latent reflective variables: (1) planning capability, (2) organizing capability, (3) implementing capability and (4) monitoring / control capability.

The investigation is built on by using second order structural equation modelling (SEM) technique applied through SmartPLS software. This technique exposed the relations between the project management and components such as planning, organizing, implementing and control capabilities as prerequisites of the organizational change success.

The data for this study was gathered from executives who had comprehensive knowledge about the results of organizational change initiative within Romanian companies.

Through its results, our research highlights the project-management related capabilities that are important for organizations pursuing a change attempt. It identified that Control Capability is the most relevant capability necessary for change success in Romanian companies pursuing change, followed by the Implementing Capability. The results of our research create the ground for a more effective approach of future organizational changes.

Keywords: organizational change, project management, planning capability, organizing capability, implementing capability, monitoring capability.

DOI: 10.24818/BASIQ/2021/07/080

Introduction

There are more than twelve months since the whole world has come under siege. SARS-Cov 2 virus led to the arousing of many barriers and created shocks to economies, generating rough situations for

businessmen, entrepreneurs and employees. More than anything else, it is responsible for the shaping of new economic and organizational realities.

In their hunt to survive and be competitive, organizations have been required over time to shift from a familiar, regular situation, to a different, new environment adapted.

Crises continuously occur in every organization, triggered by various factors, so the organizational capacity ability to transform, to uphold competitiveness, has become extremely necessary. Therefore, organizational capacity to implement change has become an important feature of organizations.

A number of authors analyzed organizational changes as projects, thus associating them with the specific characteristics of project management. This approach provides an outlook of the procedural and process aspects of resolving the challenges of change, while recommending the maintenance of short-term operational Capability and its long-term expansion.

Reaching a predetermined level of outcomes and the way to achieve the desired situations are usually planned elements, so the organizational capacity to establish plans and implement them becomes a key success factor for any improvement effort.

The project management capabilities portray this perspective that strengthens the procedural aspects included in the change programs, supported by structured and successive activities.

Organizational change initiatives are often described as projects or programs, with change management referring to the use of project management skills, tools, and techniques (Crawford and Nahmias, 2010).

A promoter of the project management approach, Rosembaum, et al. (2018), emphasizes the work of Peters and Waterman (1982), Bullock and Batten (1985), Beckhard and Harris (1987), Kotter (1996), Taffinder (1998) that proposed frameworks that support the organizational analysis and help the increase of its efficiency. The work in this field have also been refined into various tools and techniques by Project Management Institute (PMI) and the Association of Professionals in Change Management (ACMP).

The purpose of this paper is to identify a model of Project management capabilities specific to Romanian companies that were involved in implemented a change.

Our research briefly highlights some specific routines of project management, characteristic of a successful organizational change.

The paper comes up to propose a model for analyzing and stimulating the development of the organizational change effectiveness. The hypotheses tested during the research were studied based on primary data obtained through a questionnaire-based survey and a newly developed statistical software (SmartPLS 3.3.3).

Project management and organizational change

The project is an organizational form of response to environmental change, and Söderlund (2010) pointed out that an increasing number of projects in the business environment include elements of change.

Project management is the “disciplined application of knowledge, skills, tools and techniques to project activities to meet the project requirements” (Project Management Institute, 2013).

Organizations that promote the development of project management field claimed for a certification of competence for professionals. Even though the existence of a certification of project management competence might be beneficial for individuals – as recognition of a profession, the organizational project management capability is determined by the way the activities are orchestrated within to determine the goal achievement.

Approaching change through the project management concept can become an organizational routine within specific contexts. The approach can be effective in a relatively stable environment, but as the environment becomes more turbulent, the organizational risks of rigidity increase dramatically: tasks can become inappropriate in the new context and the organization is unable to identify how they need

to be changed. Through its dynamics, organizational change involves more than joining a technical process. Effective change management and leadership significantly influence the success of implementing organizational initiatives (Gilley, et al., 2008).

Recent studies have emphasized that project management is critical to the success of a project (Blomquist, et al., 2016; Musawir, et al., 2017) and that the integration of project management with organizational change management has become a necessity (Hornstein, 2015).

Many individual competencies for project management were identified by Omar and Fayek (2016) who divided them into functional and behavioral competencies. Also, Danneels (2002), highlighted two types of skills needed for innovative projects: “functional skills” and “integrative skills”, while Hanna, et al. (2016) modelled the importance of different competencies for project management.

Various perspectives on the organizational change and project management have been analyzed by researchers. Griffith-Cooper and King (2007) claimed that “the nature of project management is change”, while Stanley (2016) highlighted the way project management has supported change in the medical field.

Crawford and Hassner-Nahmias (2010) emphasized the growing interest for using projects as a way to make changes in organizations while Parker et al. (2013) suggested that it is imperative for organizations to use project-based initiatives as levers for organizational change.

However, we believe that the literature feels the need for in-depth research to highlight how organizational project management skills and routines contribute to the successful implementation of organizational change. Moreover, we have not yet identified studies to evaluate a model (of the components) of an organizational project management capability and its’ effects on the success of an organizational change.

Therefore, we consider that there is a field of research on the relationships between project management capability of organizations and their successful change initiatives, after a previous identification of capabilities model.

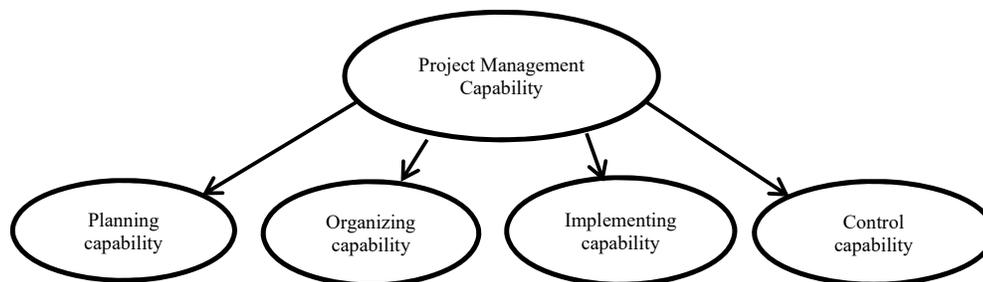


Figure no. 1. The Second-order structural model of the Project management capability of the Romanian organizations pursuing change

Source: Authors' proposal

Under these conditions, this paper is an attempt to analyze the project management multidimensional construct and to establish a model of project management capability of organization in change.

Research methodology

Based on the theoretical and practical literature, some routines have been selected to analyze the Project Management Capability of organizations that pursue change.

For the Planning capability our research focus on organizational routines that allow defining necessity and purpose, defining objectives, identifying the necessary activities, defining the evaluation criteria, establishing the necessary resources, activity planning.

The organizing capability was studied through routines that are specific to setting up the implementation team, setting tasks, scheduling activities, defining the limits of competence, establishing a resource allocation plan and training team members.

In the present research the implementing capability is reflected by the organizational routine that support the efficient management of activities, involvement of the implementation team members, performing individual tasks, and fulfillment of the assumed obligations.

Control capability is reflected by the use of monitoring / control tools, periodic performance measurement, checking the allocation in the allocated budget, schedule monitoring and periodic review of plans.

The research methodology is similar to that one used by one of the authors in previous works (Voica, 2016; Voica, 2017). The data was collected by means of an on-line questionnaire, which was advertised in the management field environment in Romania. All variables are based on Likert-type scales with five intervals. Non-response bias was prevented through questionnaire that accepted only full-completed responses. The respondents included change executives, managers and consultants that were directly involved in change and had extensive knowledge about the (processes and results of) organizational change initiative within Romanian organizations.

The data analysis was carried out with help of descriptive and inferential statistics using SPSS 20 as support for factor analysis (principal components analysis- PCA and exploratory factor analysis - EFA) and SmartPLS 3.3.3 for Structural Equation Modelling (SEM) analysis.

As many scholars highlighted, the structural equation modelling (SEM) technique has some advantages over traditional multivariate techniques, such as the explicit assessment of measurement error, the estimation of latent –unobserved - variables via observed variables or the easiness of model testing when a structure is imposed (Henseler et al., 2016). Moreover, the partial least square approach to SEM (SEM-PLS) provide greater flexibility in developing and validating complex models. Therefore we decided to further analyze the data through SmartPLS 3.3.3, a partial least squares structural equation modeling software that allows researchers to make user-friendly assessments of inter-construct relationships as well as to identify relationships among constructs and their respective indicators.

There are some limits of the results of the present endeavours, in terms of focus of analysis and of data available for it. The model is based on routines that are also typical to the organizational dynamism and this element can affect the number of items that characterizes each first-order construct of *Project Management Capability*. In addition, data was gathered using online survey, thus limiting the number of respondents due to technical resources (internet connection, digital competences) and also in terms of ensuring statistical representativeness, as a low number of responses / the sample size might influence the statistical validity of the results, even though the answers may be considered as representative for our work.

Results and discussion

A total number of 137 usable responses were obtained as result of various messages sent through e-mail. Table 1 shows the profile of the analyzed organizations. These analyzed changes took place in 75 (54,8%) private companies (of which 46 companies (33,6%) with predominantly Romanian capital and 29 companies (21,2%) with predominantly foreign capital), 32 public institutions or in which the Romanian state was the sole shareholder (23,3%), 23 multinationals (16,8%), 6 NGOs (4,4%) and a state-owned, self-financing autonomous organization (0,7%).

The change was described by study participants in terms of the level of planning, the number of stages in which it was carried out, its continuity, the speed of implementation, and the completion interval, as exhibited in the Table 1.

Table no. 1. Characteristics of the analyzed changes. (% of total answers)

1	2	3	4	5	6	7	8	9	10		
Completely unplanned	2.92	2.92	3.65	3.65	5.84	5.84	10.95	29.93	17.52	16.79	Full-planned, in detail
Implemented in many small phases	8.03	3.65	12.41	8.03	15.33	10.22	12.41	8.03	13.14	8.76	Implemented in one important phase
Continuous	18.98	10.95	8.03	8.76	17.52	7.30	8.03	13.87	3.65	2.92	Discontinuous. sudden
Slow	3.65	4.38	7.30	8.76	16.06	10.95	17.52	16.79	8.03	6.57	Fast
Completed in a long range of time	4.38	5.11	15.33	5.11	16.79	13.87	13.14	13.87	6.57	5.84	Completed in a very short period

In the first stage, the analysis aimed to extract four factors that characterizes the project management-related routines / capabilities (first order reflective constructs) of organizations in change.

A number of items were estimated for each dimension. Each component extracted has an eigenvalue (total amount of variance explained) higher than 1 and is reflected by 3 or 4 items (organizational practices). Table 2 presents the Project Management unequivocal items whose loading on the specific reflective sub-scale exceeds the threshold value proposed by Chin (1998).

We observe that *Planning capability* is reflected by routines such as *clear definition of the need and purpose of change* (PM_P_1 – factor loading 0,840), *clear definition of the desired results and their specifications* (PM_P_2 – factor loading 0,845), *identification of the activities necessary to achieve the objectives* (PM_P_3 – factor loading 0,811).

The *Organizing capability* is manifested through practices such as *setting-up of the change implementation team* (PM_O_1 - factor loading 0,821), *individual task allocation and scheduling* (PM_O_2 - factor loading 0,729), or *establishment of team members' competency limits* (PM_O_3 - factor loading 0,803).

The *Implementing capability* was exposed via practices such as *team members got involved in the implementation activities* (PM_I_2 - factor loading of 0.882), *individual tasks were performed as originally planned* (PM_I_3 - factor loading of 0,767) and *all obligations of the implementation team members were fulfilled* (PM_I_4 - factor loading of 0,821).

The *Control capability* is revealed by routines such as *monitoring the level and quality of the results' achievement* (PM_C_2- factor loading of 0,828), *monitoring the fit into the budget* (PM_C_4- factor loading of 0,732), *monitoring the time frame and the fit in the implementation schedule* (PM_C_5- factor loading of 0,806) and *periodic review of the implementation plans* (PM_C_6- factor loading of 0,725).

The Cronbach's Alpha index has values higher than 0.8 for each of the subscales, which is in line with the recommendations of Nunally (1978) and, together with the CR index, shows the internal consistency of each construct.

AVE is a strict measure of convergent validity, more conservative than CR and allow the proper analysis even if the variance is determined by errors. The average variance extracted has values above the threshold of 0.5 recommended by Fornell and Larcker (1981), for each of the subscales analyzed. Consequently, we can talk about the convergent validity of each one of the constructs.

Table no. 2. Outer Loadings on *Project Management Capability* first-order constructs

		Convergent Validity			Internal consistency		R ²	R ² adj.
		Loadings	Indicator reliability	AVE	Composite Reliability	Cronbach's alpha		
Standards		>0.7	>0.5	>0.5	0.6 - 0.9	0.6 - 0.9		
1.Planning capability	PM_P_1	0.840	0.706	0.692	0.871	0.870	0.695	0.693
	PM_P_2	0.845	0.714					
	PM_P_3	0.811	0.658					
2.Organizing capability	PM_O_1	0.821	0.674	0.669	0.858	0.858	0.794	0.793
	PM_O_2	0.829	0.687					
	PM_O_3	0.803	0.645					
3.Implementing capability	PM_I_2	0.882	0.778	0.680	0.864	0.864	0.904	0.903
	PM_I_3	0.767	0.588					
	PM_I_4	0.821	0.674					
4.Control capability	PM_C_2	0.828	0.686	0.599	0.856	0.857	0.846	0.845
	PM_C_4	0.732	0.536					
	PM_C_5	0.806	0.650					
	PM_C_6	0.725	0.526					

Source: Authors' processing of the SmartPLS 3.3.3 reports.

As presented in Table 3 all the correlations between the analyzed subscales are below 0.7, so we can conclude that there are no significant correlations between them. However, as can be observed, there is a correlation higher than 0.7 between each of the four latent variables and the second order construct *Project management capability* showing that they represent sub-scales of this higher order construct.

The discriminative validity of the 4 subscales was first tested using the Fornell-Larcker criterion. As can be observed in Table 3, the square root of the average extracted variance (AVE) of each construct is greater than the highest correlation of the latent variable with any other construct, which confirms the discriminatory validity of the model components.

In addition, the results of the HTMT (Heterotrait Monotrait Ratio) analysis proposed by Henseler et al. (2015) show in Table no. 3 that all HTMT values of the correlations between each one of the 4 constructs underlying the latent variable *Project Management Capability* are below 0.85 (Hair et al., 2017). Therefore we can consider that there is discriminatory validity between the 4 subscales of the construct. Also, the HTMT index between the *Project Management Capability* and each of the analyzed constructs exceeds the threshold value of 0.85 (or close to this level for the *Planning Capability*). Therefore the *Project Management Capability* can be validated as a higher order construct, consisting of the 4 sub-scales *Planning capability*. *Organizing capability*. *Implementing capability* and *Control capability*.

Table no. 3. Analysis for discriminant validity of the *Project Management Capability* components

	Latent Variable Correlations				Fornell-Larcker criterion for sub-scale analysis				The HTMT analysis of the sub-scales			
	1.Planning capability	2.Organizing capability	3.Implementing capability	4.Control capability	1.Planning capability	2.Organizing capability	3.Implementing capability	4.Control capability	1.Planning capability	2.Organizing capability	3.Implementing capability	4.Control capability
1.Planning capability	1.000	0.599	0.605	0.464	<u>0.832</u>							
2.Organizing capability	0.599	1.000	0.622	0.588	0.599	<u>0.818</u>			0.599			
3.Implementing capability	0.605	0.622	1.000	0.723	0.605	0.622	<u>0.825</u>		0.604	0.622		
4.Control capability	0.464	0.588	0.723	1.000	0.464	0.588	0.723	<u>0.774</u>	0.464	0.587	0.723	
Project Management Capability	0.834	0.891	0.951	0.920	0.834	0.891	0.951	0.920	0.841*	0.892	0.941	0.926

Source: Authors' processing of the SmartPLS 3.3.3 reports

For the second stage of the analysis in SmartPLS we identified the path coefficients between each reflective sub-scale and the second-order construct *Project management capability* as well as their significance. The Consistent PLS analysis revealed the path coefficients of the second-order construct Project management capability while the PLS Bootstrapping Consistent Algorithm provided their significance (see Figure 2 and Figure 3).

Table no. 4. Path coefficients of the second-order construct *Project management capability*

	Coeff.	STDEV	t-Stat	P-Value	2.5%	97.5%
1.Planning capability	0.834	0.052	16.130	0.000	0.709	0.916
2.Organizing capability	0.891	0.045	19.827	0.000	0.775	0.958
3.Implementing capability	0.951	0.026	36.620	0.000	0.891	0.993
4.Control capability	0.920	0.032	28.511	0.000	0.845	0.976

Source: SmartPLS output: PLS Algorithm reports

The coefficients in Table 4 show that each indicator of the outer model of Project Management Capability has statistical significant weight. The table reveals also the bias-corrected confidence intervals obtained through the bootstrapping procedure.

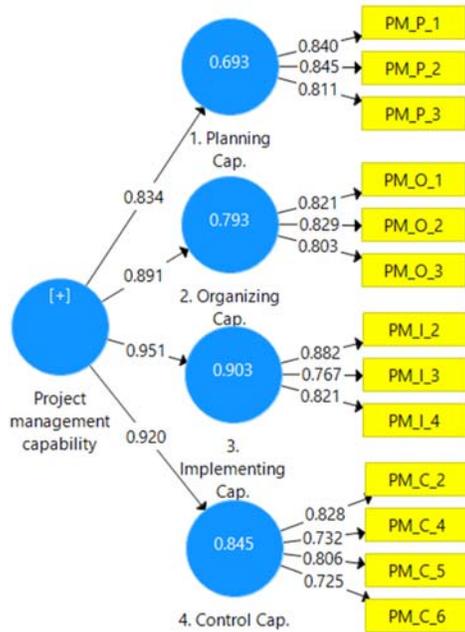


Figure no. 2. Path coefficients of the Project management capability of the Romanian organizations pursuing change

Source: SmartPLS output: PLS Algorithm report for path coefficients

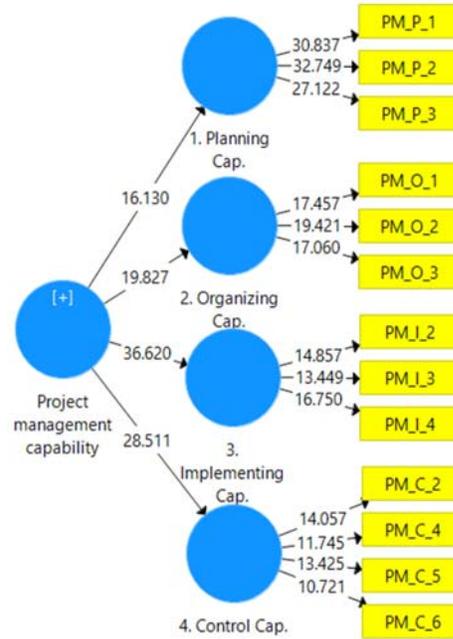


Figure no. 3. Significance of the path coefficients of the Project management capability of the Romanian organizations pursuing change.

Source: SmartPLS output: PLS Bootstrapping Consistent Algorithm report for significance of coefficients (t-values)

Figure no 2 and Figure no 3 graphically illustrates the path coefficients and the significance of each of the path coefficients of the Project management capability of the Romanian organizations pursuing change.

Conclusions

As long as organizational change initiatives are often described as projects or programs (Crawford and Nahmias, 2010). Our research endeavor aimed to identify the operational routines of Romanian companies that implemented a change that can be specific to a second-order model of Project management capability.

More than 80% of the Romanian change initiatives analyzed in our research were performed under a certain degree of planning and this observation highlight the importance of our work for further endeavors for organizational change.

For Romanian companies that pursue changes, planning is important and the most relevant practices for the *Planning capability* are routines such as *clear definition of the need and purpose of change*, *clear definition of the desired results and their specifications* and *identification of the activities necessary to achieve the objectives*.

Even if a change is well planned, the ability to transform the plans into realities become more relevant and the capability to *create the change implementation team*, to *allocate and schedule individual tasks*. or to *set-up competency limits* reflect the *Organizing capability* of an organization.

During the implementation stage *team members' involvement*, *performing the tasks as scheduled* and *fulfillment of all obligations* are practices that reveal a proper *Implementation Capability*

Monitoring the level and quality of the results, *the fit into the budget*, *the fit into the implementation schedule* and *periodic review of the implementation plans* proved to be the routines that secure a high level of *Control capability*.

Our endeavor graphically illustrates the path coefficients and the significance of each of the path coefficients of the Project management capability of the Romanian organizations pursuing change. It identified that for Romanian companies pursuing change the most relevant capability that is necessary for change success is the *Control Capability* followed by the *Implementing Capability*. This conclusion is in line with the observation that the environment is continuously changing and the plans can be outdated / overcome at the implementation moment. This observation emphasizes the importance of the organizational

agility and of the development of dynamic capabilities. This might be a very important direction for further studies in the field of management. In addition, our model can be used for further analysis of the differences between the proactive and reactive organizations.

The outputs of our research are restricted by elements such as the limited number of respondents or the belongingness of a routine to various constructs (so it cannot be characteristic to only one construct).

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Perceptions of Online Dispute Resolution in the Bucharest Business Environment

Betty Cohen-Tzedec¹, Mihaela Bucur², Ion Daniel Zgură³ and Mihai Adrian Felea⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: betty_cohentzedec@yahoo.com; E-mail: mihaela.bucur@com.ase.ro@yahoo.com

E-mail: zgura@com.ase.ro; E-mail: mihai.felea@gmail.com

Please cite this paper as:

Cohen-Tzedec, B., Bucur, M., Zgura, I.D. and Felea, M.A., 2021. Perceptions of Online Dispute Resolution in the Bucharest Business Environment. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 634-639

DOI: 10.24818/BASIQ/2021/07/081

Abstract

The contemporary world highly impacted by COVID-19 brought many changes in solving business disputes, the focus being currently on the digitalization of alternative dispute resolutions. As a consequence of the decrease of economic growth due to the decrease of business activities, many business parties found themselves in incapacity to fulfil their contract agreements, which lead to an increase in ADR. Also, taking into account the pandemic situation, ADR moved online, the main purpose being to handle them in a flexible, cost-effective manner.

The purpose of this research is to analyze the perceptions of Bucharest's corporations regarding online ADR, the main objectives being to identify its advantages and limitations in a pandemic situation. The paper critically analyzes the main bibliographic sources in the field of online alternative dispute resolution, the method of research applied being quantitative. For a better understanding of the corporate perspective in Bucharest related to online alternative dispute resolution, a questionnaire was applied to 110 working professionals. The research highlights the positive perceptions of employees in spite of the problems arising from online ADR. The originality of the paper resides in the fact that it systematically analyses the current landscape and future directions of ODR in Romania, with main focus on Bucharest, highlighting perceptions of business corporations on the subject, having practical implications on dispute service providers, practitioners, customers, law makers and scholars in dealing with the ODR practices.

Keywords: Online dispute resolution (ODR); alternative dispute resolution (ADR); ODR practices; online mediation; online arbitration.

DOI: 10.24818/BASIQ/2021/07/081

Introduction

COVID-19 highly impacted not only economy around the globe but also justice in an unprecedented manner. Due to this pandemic situation, regulators were urged to adapt their services, this being also the case of ADR services. Consequently, online dispute resolution (ODR) developed from the ADR, adapting traditional ADR to the virtual world, however keeping the main aim of solving disputes outside of litigation. As a relatively new concept, the ODR emerged at the end of the 20th century, encapsulating "a wide array of online procedures and technological tools that disputants and neutrals use to resolve disputes" (Sela, 2017, p. 634; Tecău, et al., 2020).

There are scholars who consider that, "since this genesis, the shift in mediation to videoconferencing platforms – which has now been underway for more than a decade – has accelerated" (Sourdin and Zeleznikow, 2020). There are other terms that are used interchangeably for this concept: Internet dispute resolution (iDR) electronic ADR (eADR) and online ADR (oADR).

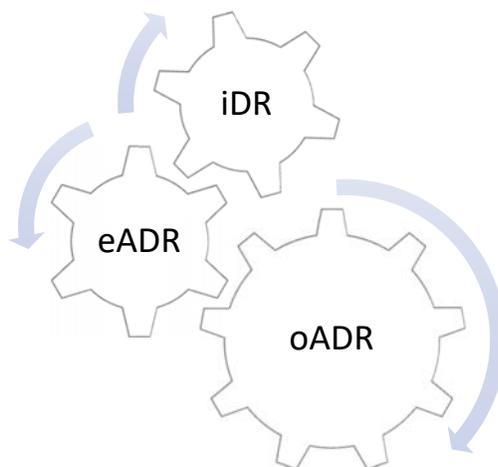


Figure no. 1. Terms for ODR

Source: the authors

Online dispute resolution (ODR) is perceived as a manner to solve conflicts differently from traditional legal systems, by making use of the online or the offline environment. There are several ways in which ADR can be carried out online: either on the Internet through email, chat, and videoconferencing or by combining these methods of “online” and “offline.” These are also known as synchronous and asynchronous communication ways.

Review of the scientific literature: online dispute resolution – advantages and disadvantages

In these challenging pandemic times, when the global society faces a growth in online activities and services, as well as in e-commerce, traditional ADR techniques seem no longer appropriate. Also, since Covid-19 imposes social distance, online dispute resolution appears as the most natural and feasible manner of sorting things out (Tecău, et al., 2020). ODR platforms copy the classical ADR process (arbitration and mediation) with the only difference that ODR uses different technologies. Thus, even if there are many common features between ODR and ADR, the technological factor provides a particular set of both benefits and drawbacks.

From the point of view of types of ODR, these are: online mediation, online arbitration and online negotiation, although the last one is used to a lesser extent.

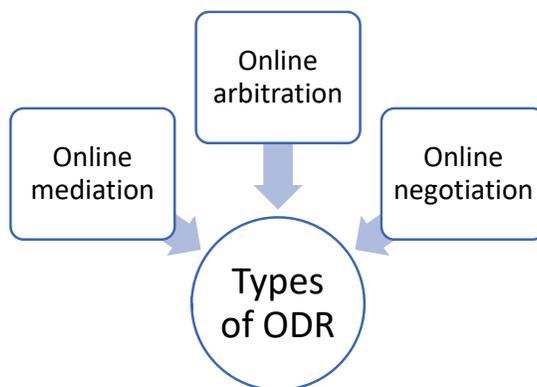


Figure no. 2. Types of ODR

Source: the authors

First, the online mediation will be analysed. Online mediation starts due to the desire of implied parties to enter a broad-based consultation after being involved in a conflict (Mania, 2015, p. 76). Usually, the process of online mediation begins with an e-mail that the third party sends to the parties involved, enclosing essential data on proceedings.

According to Mania (2015), “virtual meetings are conducted in so-called ‘chat rooms’, which constitute virtual versions of meeting rooms. These can be carried out separately with each party or simultaneously with all parties” (Mania, 2015, p. 79). Most of the time, online mediation is conducted via written communication, not being based on meetings in real time, which rarely occur (Hopt and Steffek, 2013, p. 291).

Online arbitration stands as the second type of ODR, standing as the process through which parties who pursue arbitration submit their proofs, documents and usually communicate with the arbitrator through different “technological platforms such as email, video/audio conferencing, online platforms, electronic signatures and e-filing” (Muigua, 2020, p. 3; Nemțeanu and Dabija, 2021). In the virtual arbitration, the arbitrator delivers “a final and legally binding decision, the award, which can be enforced by the parties and can be registered with a court and thereafter enforced like a court judgment” (Lavi, 2016, p. 885).

Accordingly, the suitability of the ODR is subject to debate. Some scholars argue in favour of ODR, by stating that technology conducts to a more accessible, flexible, faster and less expensive dispute resolution process (Rabinovich-Einy and Katsch, 2019, p. 59). Also, according to Van Arsdale (2015), an ODR „platform may also pursue benefits such as greater efficiency, overcoming human biases, and convenience by implementing technologies in new and creative ways” (Van Arsdale, 2015, p. 117). In a more complex perspective, the development of ODR programs was seen as a complement and support for legal processes, reducing the backlog, accelerating court developments and dispositions, at the same time also facilitating access to justice due to the diminishment of economic and procedural obstacles in solving conflicts (Gomez, 2019).

Critics find this process as inadequate, particularly since the internet cannot be seen as a ‘mirror image’ of the real world (Larson, 2019, p. 432). Additionally, academics argued that “the claimed efficiencies of ODR come at the expense of procedural quality, due to the limitations that the online environment imposes on human communication” (Sela, 2018, p. 98). At the same time, critics highlighted that “the inter-personal processes of negotiation and mediation are fundamentally dependent on an elusive quality or aspect dubbed ‘the human touch’. The cold impersonal environment of the internet, the arguments went, is inherently bereft of the human touch” (Ebner, 2021). To all these were added issues such as privacy and confidentiality, which still remain unsolved aspects even nowadays (Ebner and Zeleznikow, 2016, p. 298; Abedi, Zeleznikow and Brien, 2019).

Perceptions of the ORD in the Bucharest business environment

The quantitative research is based on a questionnaire designed to understand the perceptions of online dispute resolution in the Bucharest business environment. The questionnaire consisted of two sections (A to B). Section A focused on demographic information from respondents. The next section, made up of 14 questions highlights the perceived advantages and disadvantages of ODR technology by users. Respondents were drawn from medium-sized (SMEs) and large enterprises in Bucharest. Before applying the questionnaire, the respondents were asked to answer whether they did or not use ADR or ORD during the past three years. Consequently, a dataset of 112 respondents was drawn after respondents answered this question.

Overall, 76 respondents were ‘Male’ while 36 were ‘Female’ (representing 71.74% and 28.26% of the respondents, respectively). As far as the professional background of the respondents, 51.79% were from “Legal Department”, 25.00% indicated “Acquisition Department”. However, some (11.61%) indicated “Management” and 11.61% were from “Other” departments. In terms of the practice experience the majority (58.87%) had between 10 and 15 years’ practical involvement and experience in their professions. From the educational point of view, the largest number of respondents (65.22%) indicated “Law” as background.

Table no. 1 summarizes respondents' professional backgrounds.

Table no. 1. Professional background of the respondents

Professional background	No.	%
Legal Department	58	51.79
Acquisition Department	28	25.00
Management	13	11.61
Other	13	11.61

Source: authors' research

However, even if respondents knew about ODR, they have not used ODR so far (61%). Therefore, a large majority had not used ODR previously in their work. Also, respondents perceptions of ODR were questioned no matter if they had used it or not. There were mixed results in terms of personal attitudes regarding ODR. When asked about effectiveness, most participants were neutral (47%) but when asked whether they were in favor of face-to-face meetings or online meetings, most of the respondents (82%) considered face-to-face meetings as more suitable for dispute resolution.

This proves certain skepticism towards ODR techniques, ADR techniques being favored. Despite this, most respondents expressed a belief that exclusively utilizing ODR could adequately lead to conflict dealing. Fifty-six percent (56%) believed they could use ODR and forty-four percent (44%) did not agree. Respondents also took into account the accessibility (81%), flexibility (83%) and the fact that an ODR is a less expensive (89%) dispute resolution process. At the same time, respondents answered positively when asked about whether ODR enhanced the ability to manage information (88%) and implied transparency (78%).

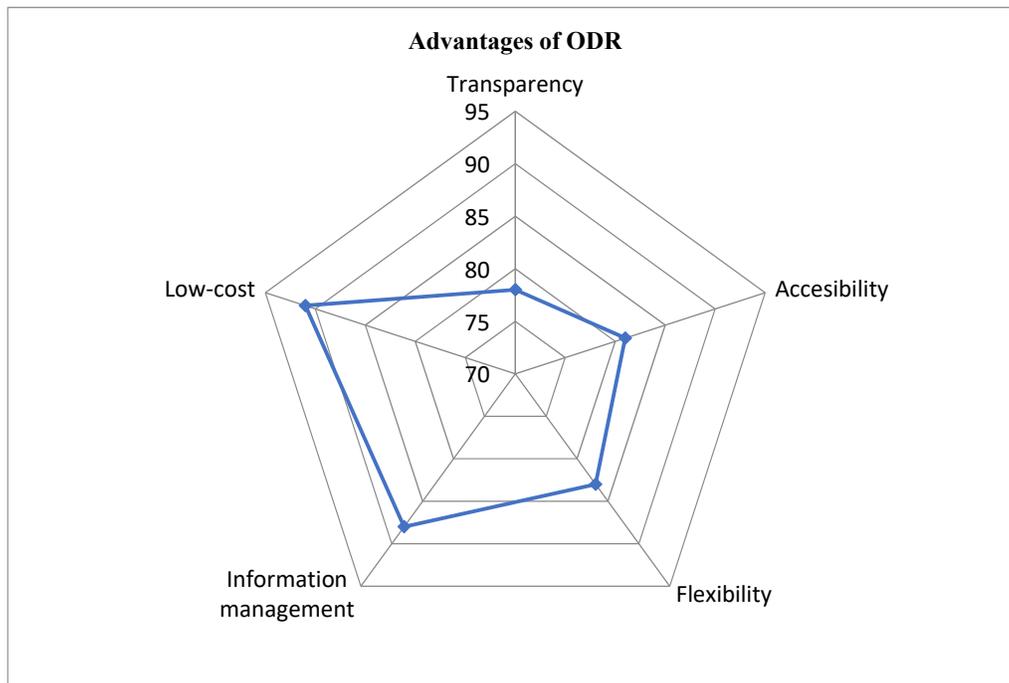


Figure no. 3. Advantages of ODR

Source: authors' research

As a concluding remark, on the one hand, respondents seem attached to traditional ADR techniques, but on the other hand, they do value features of ODR such as: accessibility, flexibility, low-cost, ability

to manage information and transparency. Summing up, the research strongly suggests that respondents although used to ADR proceedings are ready to embrace ODR as a tool which can render justice due to high transparency and good information management.

The skepticism respondents still perceive about ODR, comes from a lack of trust of the technology environment, which lacks personal feelings and therefore interaction between the parties. This negative feeling can potentially inhibit trust between parties and therefore results even in high scepticism about ODR. However, in spite of a good perception regarding ADR, it becomes obvious that ODR does offer added value when compared to the traditional ADR, whether it is transparency, cost efficiency or flexibility and transparency. Although face-to-face meetings are more appealing to many respondents the other advantages that ODR imply could make them choose ODR instead of ADR, particularly in pandemic times.

One of the two main findings is that the results suggested respondents positively acknowledged ODR proceedings but that there were negative implications of ODR in terms of online/virtual meetings.

Conclusions

Starting from the above-mentioned aspects, taking into consideration the rapid changes of the society and the challenges posed by the pandemic situation, traditional ADR techniques are no longer an option, which leads us to modern techniques, using the electronic system at a high extent. Due to restrictions that currently appeared and to continue their activity as smooth as possible, different businesses consider that commercial conflicts need to be solved in a rather modern manner, through ODR, which depend on an electronic system (online) and not on face-to-face encounters, which are no longer seen as feasible (Schmitz, 2018).

Indeed, as Schmitz (2018) states, “ODR is particularly efficient and effective in global e-commerce disputes. It offers means to a remedy where none exist in the face-to face world. It therefore offers protection for cross-border deals and helps garner trust from buyers who may fear purchasing overseas. Bypassing the traditional legal system through ODR also allows parties to reduce or eradicate jurisdictional problems and helps to expedite participation of emerging economies in the global e-market. Moreover, when e-commerce becomes trustworthy, it strengthens expansion of the digital economy. ODR therefore creates a win-win for companies and consumers in a world moving to online transactions” (Schmitz, 2018, p. 45).

The research focused on current views and use of ODR of businessmen working in the Bucharest environment, along with their perception of it by focusing on their practice. The study revealed that businessmen in Romania (Bucharest) who participated in this research viewed ODR with suspicion regarding the virtual involved meeting and did not use it on large scale. However, in spite of this, there was a general feeling of wanting to use due to several advantages it involved, such as accessibility, flexibility, low-cost, ability to manage information and transparency. Consequently, the general opinion was that ODR would be of help, particularly in pandemic times.

The ODR use in pandemic times was hardly researched in the Romanian literature reviews (Piroșcă, et al., 2020), which turns our research in a pioneering one. Key limitations would be presented below together with future directions in research. Thus, further research is still needed in order to find out more about best practices, but also about practitioners’ views on the matter. A limitation of the current research is that it focused only on commercial ODR.

Hopefully the Romanian academic research would flourish from this article on. Even if this research cannot make any generalizations about Romanian businessmen compared to others across the globe, the respondents’ answers suggest Romanian usage of ODR is limited. Still, taken into account these pandemic times, there is big potential in this field to develop. Another limitation resides in the content of the questionnaire which could have focused on specifically questions concerning number of cases and types of cases engaged with ODR, questions dealing with the platform, with the mediators, cases settled with ODR and so on. All in all, ODR requires close examination in Romania and around the world.

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COVID-19 Pandemic Face Masks Pollution: Case Study from an Apulian Hospital

Giovanni Lagioia¹, Vincenzo Campobasso² and Teodoro Gallucci³

^{1),2),3)} University of Bari Aldo Moro, Bari, Italy.

E-mail: giovanni.lagioia@uniba.it; E-mail: vincenzocampobasso@aruba.it

E-mail: teodoro.gallucci@uniba.it

Please cite this paper as:

Lagioia, G., Campobasso V. and Gallucci, T., 2021. COVID-19 Pandemic Face Masks Pollution: Case Study from an Apulian Hospital. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 640-648
DOI: 10.24818/BASIQ/2021/07/082

Abstract

Purpose: The goal is to provide a comprehensive framework about how the COVID-19 pandemic is affecting both plastic pollution and CO₂ emissions mainly due to the consumption of face masks in an hospital located in southern Italy, highlighting the CO₂ impact as well as the consequences on waste management systems.

Methodology: A detailed literature review research was conducted, scrutinizing governmental websites, technical reports and using engines such as Science Direct, Google Scholar, Elsevier, Inderscience, Scopus. Furthermore, different meetings with the managers of an Apulian hospital have been realized to benchmark the consumption of face masks in the periods before and during the pandemic.

Findings: The research shows that the pandemic has led to an increase of 1,395% in the use of face masks with consequent impacts both to CO₂ emissions, which can be linked to both the production and disposal phases, and to waste management. The most significant value concerns the emissions of CO₂ attributable to FFP2 with a rise of 11,735%, compared to the increase in CO₂ emissions equal to 1,130% caused by face surgical masks.

Originality: The case study underlines to what extent the excessive use of face masks contributes to pollution and CO₂ emissions linked to both the production, disposal phases, and waste management.

Possible practical implications: This work can be used to identify solutions or alternatives in line with the concepts of sustainability, circular economy and recycling focusing on material alternatives on facial mask production.

Keywords: Face mask, Plastic pollution, Covid-19, Waste management, Polypropylene.

DOI: 10.24818/BASIQ/2021/07/082

Introduction

The Covid-19 pandemic in the last year has caused serious economic environmental and social consequences around the world. Scientific literature has highlighted the positive impacts caused by pandemic on the environment as the reduction of greenhouse gases (GHG), nitrogen oxides (NO_x), sulfur oxides (SO_x) due to less traffic or less industrial production recording, for example, a daily decrease of CO₂ emissions equal to minus 17% in April 2020 if compared with April 2019 (Le Quéré, 2020). At the same time, there are adverse effects mainly related both to the higher number of medical wastes generated within pandemic such as gloves, face mask, gel sanitizer bottles, and the difficulty in their disposal (Saadat, 2020). These medical wastes are mostly made of plastic which first converts into microplastics and then into nano-plastic ending up inland and ocean contaminating the natural ecosystem and altering the food chains. The urgent problem that has emerged is that the over-

production of plastic medical wastes requires a special effort in their waste management also considering the risk of contamination with pathogens (Parashar and Hait, 2021). The European regulatory framework enforces clear and stringent rules for disposal and treatment of medical waste management. For example, the face masks cannot be classified as plastic materials -even if is composed mainly by plastic materials- but it is classified as an undifferentiated or special waste.

This reflection confirms both the difficulty in the disposal of medical waste or personal protective equipment (PPE) and in their management. These considerations are not limiting the production of plastic medical devices or single-use plastics applications because the perception of health workers is that the single-use of plastic disposable is more hygienic and safer than other materials, such as cotton which requires to be washed and sanitized before to be reused. This has implied that some countries such as the Canada, Portugal, United Kingdom and United States have changed their perception towards the usage of single-use plastics, temporarily revising the bans and limitations on single-use plastics during the pandemic period (Parashar and Hait, 2021).

The revisional limitation on plastic to be used for medical purposes, combined with the collapse in the price of oil, due to the reduction in transport activities, has led again to an increase in the production and supply of plastic products (Ecobusiness, 2020). The consequences are clear: industries are returning to produce with virgin plastics, increasing the unsustainability of plastic waste and reducing the recycling rate due to possible contamination of commodities. It can be highlighted that in the countries of Southeast Asia the demand for recycled plastic has decreased by about 30-40% (BIR, 2020; Klemeš, et al., 2020; Sharma, et al., 2020). A report by the Chinese Ministry of Ecology and Environment reported that during the outbreak in Wuhan- China around 240 t per day of medical waste, mostly plastic, was produced compared to 40 t in the previous period (Klemeš, et al., 2020; WEF, 2020). Considering the face masks production Grand View Research (2020) outlines that 129 billion masks and 65 billion gloves have been used monthly in 2020 and the market has gone from 800 million dollars in 2019 to 166 billion dollars in 2020. As above mentioned, the strong demand for the production of face masks has increased mainly the production of plastic increasing the debate over the environmental consequences. For this reason, it is becoming of utmost importance to verify the production of face masks to make a comprehensive their real contribution to the global warming potential (Liebsch, 2020). The scientific literature in recent years has examined the environmental impacts resulting from the use of face masks.

The environmental impact of surgical masks has been little studied in literature therefore the goal of this research is to provide a comprehensive framework about how the COVID-19 pandemic is affecting both plastic pollution and CO₂ emissions mainly due to the consumption of face masks in a hospital located in southern Italy. Preliminary research has been reported analysing the face masks consumption within a hospital located in the Apulian region – Italy – highlighting the CO₂ impact as well as the consequences on waste management systems and studying alternative solution to their disposal.

Research methodology

A detailed literature review research was conducted, scrutinizing governmental websites, technical reports and using engines such as Science Direct, Google Scholar, Elsevier, Inderscience, Scopus. The keywords or terms used for the search were: personal protective equipment (PPE), plastic pollution and Covid, waste management of PPE. Furthermore, have been organized different meetings with the managers of an Apulian hospital useful to benchmark the consumption of face masks in the periods before and during the pandemic. To identify the environmental contribution to CO₂ emissions, firstly, a detailed analysis of the components of face masks has been studied. Secondly, the evaluation of CO₂ emissions has been calculated, according to the different types of face masks used. Finally, the waste management of masks has been analysed.

Results and discussion

Standard and composition of face masks

Before assessing the environmental impact of face mask production, their main characteristics are reported. There are mainly two types of face masks on the Italian market, distinguished in a) surgical

face masks and b) filtering face pieces (such as FFP2). For a) the technical standard of reference at the international level is UNI EN 14683:2019: this reference standard does not establish the materials to be used for the production of the masks, but establish the characteristics that face masks must possess; for b), conversely, the technical reference standard is UNI EN 149:2009: this standard classifies the degree of protection from dust, where the numbers 1 indicates low protection (>80%), the number 2 indicates medium protection (>94%) and number 3 indicates high protection (>99%) (Santarsiero, et al, 2020).

Scientific literature identifies polypropylene as the most suitable material for making surgical face masks and filtering facepieces. Polypropylene (PP) is one of the most widely used plastic materials in the world, second only to polyethylene which has a market share of approximately 70%. Polypropylene is a semi-crystalline thermoplastic material that exhibits different mechanical properties according to different chemical characteristics (Akber et al. 2020). Giulio Natta received the Nobel Prize in Chemistry for studying catalysts to produce polypropylene of different tactics. This material is characterized by high tensile strength, high ductility, low density, and excellent thermal resistance to abrasion. It also exhibits low cost to its high properties. It should be emphasized that according to a recent study (Alsabri and Al-Ghamdi, 2020) polypropylene production has a higher environmental impact equal to 1.58 kg CO₂/kg-PP, which is embodied in surgical face mask therefore, in the assessment of environmental impacts, it is also necessary to analyse how the emissions of CO₂ arise as the use of face masks increases. Tables 1 and 2 report materials composition and weights of facial masks.

Table no. 1. Surgical face mask technical features

Layers	
<i>Total size</i>	<i>175 mm X 95 mm</i>
<i>Spunbond weight</i>	<i>25 g/m²</i>
<i>Meltblown weight</i>	<i>30 g/m²</i>
Nose clip	
<i>Material</i>	<i>Aluminum coated in PP/PE</i>
Rubber bands	
<i>Material</i>	<i>Polyester covered in nailon yarn</i>

Source: Information from the datasheet (Available at <https://www.gruppogda.it>)

Table no. 2. Filtering facepiece composition

Layers	
<i>Total size</i>	<i>168 mm X 108 mm</i>
<i>Inner spunbond layer weight</i>	<i>30 g/m²</i>
<i>Outer spunbond layer weight</i>	<i>50 g/m²</i>
<i>Cotton layer weight</i>	<i>40 g/m²</i>
<i>Meltblown layer weight</i>	<i>55 g/m²</i>
Nose clip	
<i>Material</i>	<i>Aluminium coated in PP/PE</i>
Rubber bands	
<i>Material</i>	<i>Polyester covered in nailon yarn</i>

Source: Information from the data sheet (Available at <https://www.munusmedical.it>)

As Table 1 and Table 2 show, the surgical face mask is usually composed by three-layer polypropylene with different characteristics: spunbond layer (outer layer and inner layer) which confers the mechanical resistance to the outer layer and protective function to the inner side; meltblown for the intermediate layer with a filtering function. Conversely, the filtering facepiece (FFP2) has multiple layers. For structural and functional reasons, the surgical face mask and filtering facepiece require various other materials, such as cotton, other plastics and/or metals. Cotton is used for the laces, metals and/or other plastics, like polyethylene (PE), are used for the nose pads, while for the edging, sometimes optional, other polymers are used (Barycka, et al. 2020). It emerges that quantity of materials used as well as the relative quantities in an FFP2 are greater than a surgical face mask and this, as highlighted in the next subparagraph, influences the environmental impacts, both in terms of CO₂ emissions than in terms of waste management.

CO₂ emissions of face masks

For the calculation of CO₂, the work of Klemes, et al. (2020) was used, in which the CO₂ emissions of different types of face masks is reported: the CO₂ emissions attributable to a single FFP2 are equal to 0.05 kg, the CO₂ emissions attributable to a surgical face mask are equal to 0.059 kg. To compare the consumption data of the masks, the management of a medium-large sized hospital in Apulia was contacted. The hospital has about 450 employees, 100 hospitalized per day and 30,000 hospital services per year, data provided of the consumption of the surgical face masks and FFP2 masks in the periods pre-Covid-19 (March 2019 - February 2020) and Covid-19 (March 2020 - February 2021). The consumption of surgical face masks of the hospital in the pre-Covid-19 period was equal to 10,151 masks, whereas the consumption of FFP2 was equal to 261. In the Covid period, the consumption of surgical face masks passed to 114,719 masks, whereas the consumption of FFP2 passed to 30,623 masks. As above mentioned, figure 1 shows the CO₂ emissions (tons) related to the face surgical mask and FFP2, according to Klemes, et al. (2020).

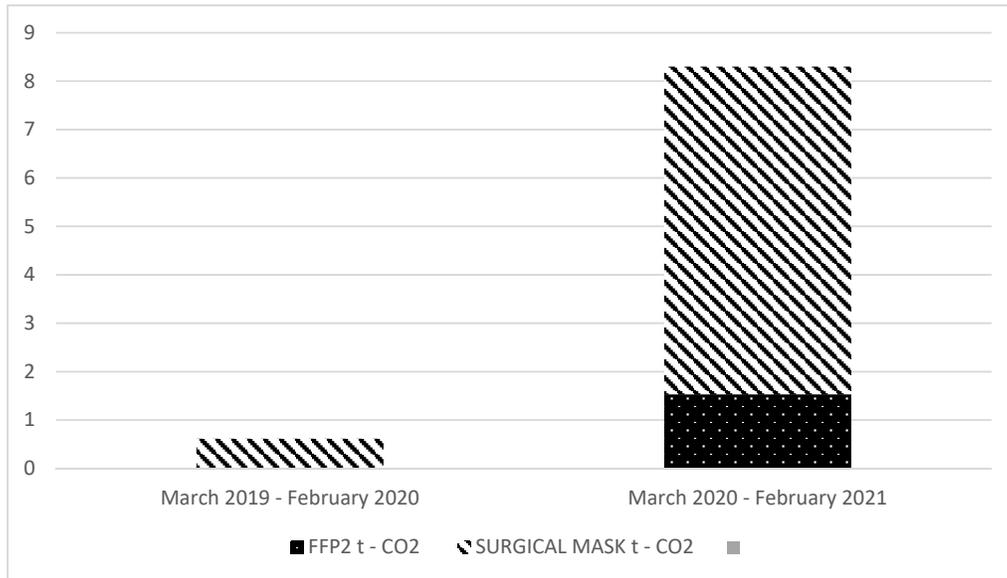


Figure no. 1. Emissions of CO₂ (in tons) related to face surgical mask and FFP2

Source: elaborated by the authors

Figure 1 shows how, due to the pandemic, CO₂ emissions relating to the production of face masks have increased overall by 1,356%, of CO₂ whereas CO₂ emissions related to FFP2 masks increased by 11,735%, and those related to surgical face masks increased by 1,130%: this difference between the increases in emissions relating to the two types of masks is because before the pandemic the FFP2, in the hospital sector, were almost completely unused. The value of CO₂ doesn't include the energy consumption and carbon footprint related to other important criteria as disinfection technologies. For this reason, more study is required to offsetting the potential environmental performance risk with adequate concern on the use of alternative materials to replace the PPE.

Waste management of face masks

The massive use of face masks has been creating a problem in the disposal phase, as well. As above cited, the surgical face mask consists of three layers of polypropylene: the outer and the inner layers of the mask are produced with spunbond technology and the middle layer is produced with meltblown technology. Furthermore, there are other materials that if not adequately treated can create problems in the final disposal.

Table 3 shows the weight of the materials that make up the surgical face mask.

Table no. 3. Weight of the materials of a surgical face mask

Layers		
Total size	175 x 95 mm	
Inner spunbond layer	<i>Size</i>	175 mm X 165 mm
	<i>Weight</i>	0.717 g
Middle meltblown layer	<i>Size</i>	175 mm X 165 mm
	<i>Weight</i>	0.861 g
Outer spunbond layer	<i>Size</i>	175 mm X 185 mm
	<i>Weight</i>	0.805 g
Total weight of the layers	2.383 g	
Other components		
Weight of the rubber bands	0.545 g	
Weight of the nose clip	0.230 g	
Total weight	3.158 g	

Source: elaborated by the authors on the different composition

It can be seen how the size of the face mask is 175 mm X 185 mm, but this value doesn't consider the edging and the folds. The size of the individual layers isn't equal to each other.

The FFP2 has five layers with different materials: two layers of spunbond, two layers of meltblown and one layer of cotton. Table 4 shows the weight of the materials that make up the filtering facepiece (FFP2).

Table no. 4. Weight of the materials of an FFP2

Layers	
Weight Inner spunbond layer	0.5443 g
Weight Meltblown layers (for single layer)	0.9979 g
Weight Outer spunbond layer	0.9072 g
Weight Cotton layer	0.7257 g
Total weight of the layers	4.173 g
Other components	
Weight of the rubber bands	0.956 g
Weight of the nose clip	0.573 g
Total weight	5.702 g

Source: elaborated by the authors

Tables 3 and 4 report the weight of components present in both face masks. It emerges that: a surgical face mask is made of 2.4 g of PP, 0.23 g of AL coated in PP/PE and 0.54 g of PL coated in nylon whereas an FFP2 is made of 3.44 g of PP, 0.57 g of AL coated in PP/PE, 0.96 g of PL coated in nylon and 0.72 g of cotton. Using the information provided by the hospital located in the Apulia region, it was calculated to what extent the waste deriving from surgical masks increased in the period March 2019 - February 2020 and March 2020 - February 2021.

Table 5 shows the waste materials in the reporting periods due to the Covid-19 pandemic

Table no. 5. The waste generated by the use of face masks in different periods

	SURGICAL	FFP2	TOTAL
March 2019 - February 2020			
PP:	24.189 kg	0.899 kg	25.088 kg
AL coated in PP/PE:	2.334 kg	0.149 kg	2.483 kg
PL coated in Nylon:	5.532 kg	0.249 kg	5.781 kg
Cotton:	0 kg	0.189 kg	0.189 kg
Total waste	33,541 kg		
March 2020 - February 2021			
PP:	273.375 kg	105.566 kg	378.941 kg
AL coated in PP/PE:	26.385 kg	17.546 kg	43.931 kg
PL coated in Nylon:	62.521 kg	29.275 kg	91.796 kg
Cotton:	0 kg	22.223 kg	22.223 kg
Total waste	536,891 kg		

Source: elaborated by the authors

Data in table 5 show the trend of quantitative waste generated during the pandemic year. In particular, waste generated by face mask disposal as a potential source for microplastic in the hospital passed by 33,541 kg in the pre-Covid-19 period to 536,891 kg in the Covid-19 period: this increase is approximately equal to 1,600%. As for CO₂ emissions, also in this case the consumption of FFP2 is more decisive with a relative increase of 11,750%. It should be emphasized that the most relevant material, also, in this case, is polypropylene which represents 74% of the materials in the pre-covid-19 period and 70.58% in the covid-19 period. This reduction between the two periods is due to a consistent increase in the use of FFP2 masks which contain different materials including cotton, not present in surgical masks, which represents 4.14% of total waste in the Covid-19 period compared to 0.56% of the pre-Covid-19 period.

These data are very interesting because highlights the importance to build up a managerial system for sorting waste. The disposal of face masks, which are considered as "potentially infected material", is outsourced to an external company and required special efforts for a higher practicality response and decision making. Nowadays, the most suitable solution for facial mask disposal is incineration (ISPRA, 2020). This solution will create other environmental issues: to burn 256 masks, 1.39 kg of CO₂ would be released into the atmosphere. Using historical data, we can expect around 75% of the masks used during this period, as well as other waste related to the pandemic, will end up in landfills or in the seas (Dharmarajetal, 2021).

Conclusions

Environmental sustainability of face mask highly depends on how is used and treated at the end-of-life. Incorrect management creates more CO₂ footprint. The case study shows that during the pandemic year the consumption of facial masks increased from 10,412 to 145,342 pieces. The CO₂ emissions associated with the production of face masks increased respectively by 0.61 t-CO₂ to 8.30 t-CO₂. Another important consideration is the total increase of waste attributable to the users face masks in the Hospital passed by approximately 33,541 kg to 536,891 kg. This situation considerably complicates the envi-

ronmental problem linked to plastics: while recycling or the use of materials with a lower environmental impact is encouraged for plastic bottles, for masks the regulatory and technological limits make it impossible to recycle and reuse this waste.

Recycling face masks is one of the alternatives to reduce plastic pollution. There are two types of recycling: primary recycling, i.e. reusing the product in its original structure, and secondary recycling, in which the face masks are re-melted and reprocessed into various final products (Lackner, 2015). However, considering the costs of a new face mask this would be cheaper and the filtering capacity and quality of the recycled face mask is lower than a new one, so further alternatives should be found (Chua et al., 2020). In light of this, governments have already begun to explore alternative solutions including the reuse, reprocessing, and production of biodegradable masks (Rubio-Romero et al, 2020).

It is important to find environmentally well-disposed options to minimize environmental impacts. In this direction it is very important to focus on innovation converging on more resistant materials. A new type of mask should be designed to better withstand multiple sterilizations cycle using heat, UV treatment, and isopropyl alcohol, including the use of aggressive methods such as boiling.

Another solution is the use of biodegradable face masks as alternative solutions to reduce waste (Glukhikh et al., 2020). Bioplastic and biodegradable polymers are excellent substitutes for polypropylene with good mechanical, physical, and chemical properties at low cost (Samper et al., 2018; Siracusa and Blanco, 2020). Biodegradable plastic reduces CO₂ emissions by 30-70% compared to conventional plastic (Lackner, 2015). Biodegradable polymers can be obtained from different resources such as polysaccharides, proteins, lipids, and microorganisms and natural fibres such as cactus, banana, avocado, lotus, sisal, straw, hemp, corn, bamboo, hemp, coffee, and sugar cane can meet the requirements for making face masks (Ramesh, et al. Al., 2017, Luhar, et al., 2020; Yan, et al., 2016).

Another approach to reusing face masks is to convert them into building materials with different applications. For example, plastic waste was used in a recent study to make sustainable mortars with 75% recycled plastic as a partial replacement for sand used in the building sector (Aciu et al. 2018). Furthermore, Adlakha in 2020, has emphasised that used face masks can be reused for the production of sustainable bricks, consisting of 52% of mask waste, 45% of paper waste, and 3% of binding substances, with the advantage of a reduction in terms of costs and waste. Therefore, more research is needed to ensure the performance, efficiency, and economy of the building materials or other products produced by this mask that has generated plastic waste.

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COVID 19 Impact on Air Transport Industry and Recovery Policy

Sorin Eugen Zaharia¹, Casandra Venera Pietreanu², Adina Petruta Pavel³ and Ruxandra – Elena Boc⁴

¹⁾²⁾³⁾⁴⁾ Politehnica University of Bucharest, Bucharest, Romania

E-mail: sorin.zaharia@gmail.com; E-mail: casandra.pietreanu@yahoo.com

E-mail: adinappavel@gmail.com; E-mail: ruxandra.elena.boc@gmail.com

Please cite this paper as:

Zaharia, S.E., Pietreanu, C.V., Pavel, A.P. and Boc, R.E., 2021. COVID 19 Impact on Air Transport Industry and Recovery Policy. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 649-658
DOI: 10.24818/BASIQ/2021/07/083

Abstract

Aviation has changed people's lives all around the globe, boosted the service industry, included tourism and played a major role in the recent economic growth. Air transport is a vital key for the global economy facilitating access to any product or labour market and having the capacity to transform a local business into a global one, especially in developing countries.

The purpose of the paper is to analyse the impact of pandemic COVID 19 on air transport passenger traffic in a holistic approach, its domino effect on air companies, airports and aircraft factories evolution in 2020 and 2021. The research methods are a data-based analysis of air transport evolution at both European and global level considering the documents published by IATA, ICAO and ACI, and structured interviews with representatives of airports, airlines and maintenance providers.

Our analysis provides policymakers with strategic information concerning some of the most important performance indicators of air transport, as RPK, passenger traffic, air routes served by European airports, passenger revenues evolutions, net profits of the airline industry. The target group consists of airlines, European airports and major aircraft manufacturers. This analysis could be the baseline for building air transport recovery strategies for 2021 – 2024.

Keywords: Air transport, COVID-19, airlines, airports, aircraft manufactures, RPK, passenger traffic.

DOI: 10.24818/BASIQ/2021/07/083

Introduction

Aviation has changed people's lives, boosted the service industry, included tourism and played a major role in the recent economic growth. Air transport is a vital key for the global economy facilitating access to any product or labour market and having the capacity to transform a local business into a global one, especially in developing countries.

The data show that 12.5 million passengers travelled by plane, 128,000 scheduled flights were made, and \$ 18 billion worth of goods were transported by day in 2019.

In 2018, the airline industry generated 87.7 million jobs globally, providing 11.3 million direct jobs. Airlines, air navigation service providers and airports directly employ almost 4.5 million people, and the civil aerospace sector, which produces aircraft, structures and engines, employs 1.2 million people. In addition, 5.5 million people work in other positions at the airport. There are also 18.1 million indirect jobs generated through the purchase of goods and services from various companies through the supply chain of the air transport industry. Employees' wages in the airline industry support spending for 13.5 million induced jobs. Aviation-facilitated tourism generates approximately 44.8 million jobs globally.

A 0.1 µm intruder produces a domino effect on aviation

Dramatic decrease in passenger traffic

In the first two quarters of 2020, all forecasts were brutally invalidated by the unexpected arrival of a 0.1µm intruder called SARS CoV-2. Isolation policies imposed by many governments starting with March 2020 and travelling plans cancelled by anxious passengers produced a dramatic air traffic backdrop. There were about 7.5 million flights cancelled during the first half of the year 2020. 12 of April became the day of 2020 with the fewest flights in recent years, only 46,294. Since that day, the total number of flights pursued by Flightradar24 has increased, even though commercial traffic has roughly remained the same during the whole month of April 2020. The busiest flight day was the 28th of April, the day when Flightradar24 registered 80,714 flights only. It was a 40% decrease if compared with the same period of 2019 when the number of registered flights was 203,239. A slight increase of 29,439 flights average per day was registered at the end of April 2020. The level stayed low if compared with 111,799 flights per day in 2019. A modest recovery trend was observed in June 2020, even though remaining at -90% on the 28th of June compared to -94% on the 15th of June and -97% on the 1st of June. (ACI – Europe, 2020). The International Air Transport Association (IATA) statistics (IATA Economics, 2020) indicates for December 2020 a volume of passenger traffic between -94.7% in Asia-Pacific and -68.8% in Africa compared to the same period in 2019 (Table no. 1). In December 2020, the RPK recorded a decrease by 82.3% in Europe.

Table no. 1. Changing of RPKs in 2020 vs 2019 by regions of airline registration

Region of airline registration	RPKs 2020 vs 2019 (%)	Region of airline registration	RPKs 2020 vs 2019 (%)
Asia – Pacific	- 61.9	Middle East	- 72.2
North America	- 65.2	Africa	- 68.8
Europe	- 69.9	Latin America	- 62.1
Air Transport Industry			- 65.9

Source: IATA, 2021

Drastic decrease in airline revenues

In February 2020, IATA (IATA Economics, 2020) estimated that, globally, airlines will record \$ 113 billion in revenue from passenger traffic less than a year ago. In July, the figure reached \$ 419 billion. By mid-April, more than 80% of the global fleet was grounded. Airports around the world were either closed or operating at a very low level. The staff has been reduced throughout the sector, and several airlines have started insolvency proceedings. Subsequently, the losses at the level of 2020 were estimated at 252 billion dollars, which means a decrease in revenues by 38% compared to the previous year (Figure no. 1).

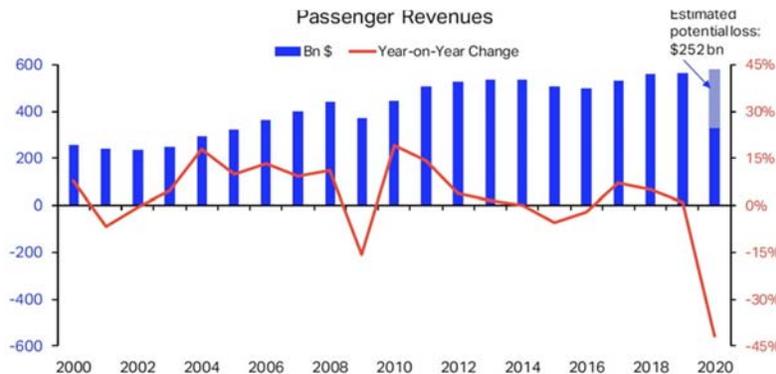


Figure no. 1. Passenger Revenues Evolutions

Source: IATA Economics, 2020

The 2008 crisis contributed to the air traffic knockdown with a certain time lag comparing with the economic collapse, whereas the air traffic stopped at the same time as the economy due to the pandemic in 2020. Figure no. 2 illustrates the effect that the 2020 crisis had on global GDP in that period, but also the estimations for the 2021-2023 (Oxford Economics, 2020).

IATA has estimated revenue losses of approximately \$ 16.4 billion and \$ 37.1 billion in 2020 for airports in North America and Europe and over \$ 314 billion dollars for airlines between January 1st and June 28th 2020 (E. Măzăreanu, 2020). 24 airlines ceased operations or entered into bankruptcy due to the crisis between February and August 2020, including Atlas Global (Turkey), Eurowings (Germany), Flybe (UK), Air Mauritius, Virgin Australia etc.

Many companies were saved by state aids, such as Lufthansa, in which the German government bought 20% of the company's shares. Tarom and Blue Air are also receiving financial assistance from the Romanian government.

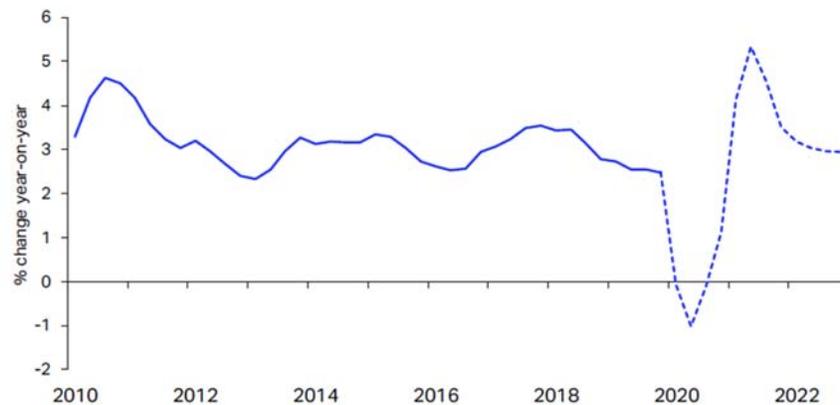


Figure no. 2. Global Gross Domestic Product GDP growth

Source: Oxford Economics, 2020

Massive layoffs among airline employees

The dramatic drop in air traffic caused by the pandemic and the worldwide airlines' decline has led to massive layoffs among their employees. Airlines had to find quick solutions to air traffic decline, which means either stopping all orders for new aircraft and components or firing many employees. Airline cash was quite fragile even before the pandemic. A study conducted for IATA by McKinsey (IATA Economics, 2020) on 120 airlines shows that only a quarter of them made a profit in 2018. Most of them were heavily indebted as a result of ambitious investments in new aircraft.

The pandemic has further aggravated the situation of airlines, which had to return about \$ 35 billion for tickets sold for not operated flights in the second quarter of 2020. Operating losses in the second quarter are estimated to a total of \$ 61 billion (Figure no. 3). The enormous losses of 2020 will marginally harm the operating gains of 2021.

The share price of the airlines had already decreased since the end of 2019, which made it more difficult to capitalize later on them. The pandemic further aggravated the situation, so the value of shares continued to fall to less than half of the initial value in the first five months of 2020. Even if governments have provided financial support to them, some airlines could either go bankrupt or survive if they significantly reduce their size. Surviving players in the market have serious reasons to be prudently and to postpone staffing, route expansion and equipment purchases in the given situation.

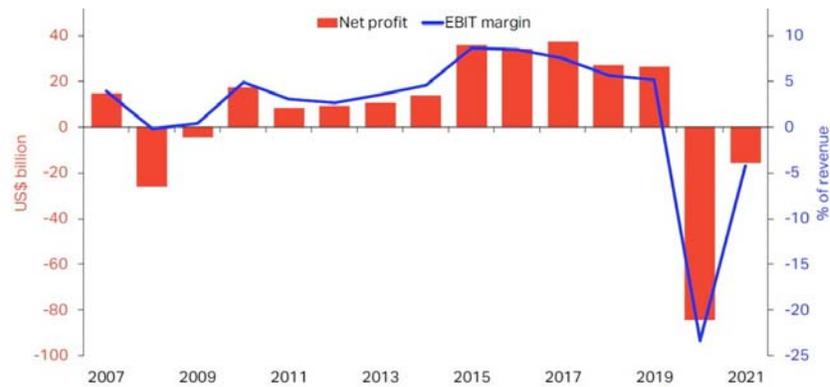


Figure no. 3. Net profits of the airline industry and EBIT margin

Source: IATA Economics, 2020

Air France and HOP! have taken rigorous decisions to save current and future costs. These airlines had 95% lower revenues in the first three months of the pandemic, in other words, they had losses of 15 million EUR per day. The French state has been aware of this situation and has lent them 7 billion euros to withstand the crisis in the short term, until they can get back on their own feet. At the moment, the solution would be workforce's restructuring and reorganization. Air France is forced to reduce approximately 6,560 jobs by the end of 2022, and HOP! is obliged to reduce 1,020 jobs by the end of 2023 (Prokopovič, 2020). Lufthansa estimates that it needs to reduce 22,000 jobs, both for seafarers and for management or administration positions despite the support received from the German government. (BBC News, 2020).

Airlines companies have reduced or announced further job cuts in a large number, such as: Ryanair 3,000 jobs to survive in the next 12 months; Virgin Atlantic 3,000 jobs; British Airways 12,000 jobs; EasyJet by 4,500; Tarom by 400 jobs; Virgin Australia has reduced 8,000 out of 10,000 employees (Digi 24, 2020).

Decreased airport revenues

With some markets seeing almost three-digit declines in passenger traffic, airport activity immediately felt these declines in financial terms. Losing consumer confidence also means time for the industry to recover. These airport revenues help cover capital costs and operating expenses, as well as personnel costs. At present, estimates indicate airport industry losses of up to \$70 billion compared to the pre-COVID-19 core value for 2020. At airports in Europe, passenger traffic and airlines decreased by about the same percentage of -64.2% in the first half of 2020. Regarding the second quarter of 2020, airports almost reached a total blockage with a decrease of -96.4%, compared to the same period last year (ACI – Europe, 2020).

In the first half of the year 2020, the decrease in passenger traffic was less pronounced on the non-EU market (-59.8%) than in the EU (-65.6%) (ACI – Europe, 2020). The difference in traffic reduction reflected less severe blockages in several non-EU countries. These were visible at a time when domestic air services were less affected than international services. The decrease in domestic traffic was less acute on non-EU airports (-50.7%) than on the EU (-62.9%) ones, while passenger volumes on international routes decreased at the same rate on both non-EU and EU airports with -65.1% and -65.4%, respectively. That was especially the case of the airports in Russia, Norway and, to a lesser extent, in Turkey (ACI – Europe, 2020).

All these significant decreases have led to changes in the ranking of the top five European airports. In June 2020, when there was a decrease in passenger traffic in the European airport network by -93.3%, Moscow-Domodedovo became the busiest European airport, with 716,800 passengers (-73.3%), followed by Paris-CDG (625,900 passengers, -90.9%), Moscow-Sheremetyevo (622,800 passengers, -86.5%), Frankfurt (599,200 passengers, -90.9%) and Istanbul (591,000 passengers, -90.1%). London-

Heathrow (-95.2%) has held first place in Europe for several consecutive years. In June 2020 it reached 11th place, with just over 350,700 passengers compared to 7.24 million in June 2019. Amsterdam - Schiphol, the third busiest airport in Europe in 2019, dropped to 7th place, with 471,800 passengers (-92.7%). The changes in the ranking were not limited to the top five European airports, but spread to a whole list of airports, reflecting the lack of coordination between European states in lifting travel restrictions: Athens (-87.9%) and Izmir (-77.7%) registered more passengers than Munich (-95.1%); Sochi (-70.8%) more than Madrid (-96.5%) and Zurich (-93.3%); Trondheim (-77.3%) and Catania (-91.1%) more than Brussels (-96.4%) and Helsinki (-96%) (ACI – Europe, 2020).

Passenger traffic and the number of aircraft movements have increased slightly since then, with an acceleration in July but followed by a traffic stagnation in August due to the resurgence of restrictions imposed by some states whenever the cases of COVID-19 increase in number. The recovery rate at the end of 2020 and the beginning of 2021 continues to be slow. In January 2021, Europe’s airports recorded a decrease in passenger traffic of -80.6% compared to January 2020 and - 80.2% compared to January 2019. The decrease was more pronounced on the EU/EEA/Swiss/UK airports (-86% vs. 2020 | -85% vs. 2019) than on other European airports (-58% vs. 2020 | -57% vs. 2019) (Figure no. 4).

The downward trend was particularly acute on EU/EEA/Swiss/UK airports in January 2021, with the last week of the month at -88% due to a widespread tightening of travel restrictions, including a non-essential travel blanket negative advice/prohibition. The worst performance came from the UK (-92%) on 31 January, closely followed by Germany (-89%), the Benelux & Nordics/Baltics (-88%), then Italy (-87%), Eastern EU (-84%) and France (-73%). Conversely, the rest of the European market saw passenger traffic improving slightly over the month from -60% to -56%, reflecting much less restrictive travel and the resilience of domestic markets, as in Russia and Turkey. Figure no.5 presents the passenger traffic data for 15 March 2020 to 31 January 2021, based on data received from members accounting for 82% of total European passenger traffic. Since 1 March 2020, Europe’s airports have lost 1.86 billion passengers compared to business forecasts for 2020, which foresight an increase of 2.3% compared to 2019.

In the ranking of the top ten European airports for April 2021, IGA Istanbul Airport ranks first as the busiest European airport, with 641 flight per day (week 8-14/4) (-43% vs 2019). The Turkish airport was followed by Frankfurt (526 flights, -64 %), Paris-CDG (480 flight, - 67%), Amsterdam (472, - 67%), and Madrid/Barajas (403, -65 %), Istanbul/Sabiha Gokcen (395 flight, -35%), London/Heathrow (348, -74%), Palma De Mallorca (242, -62%), Munich (233, -80%), Athens (218, -62%).

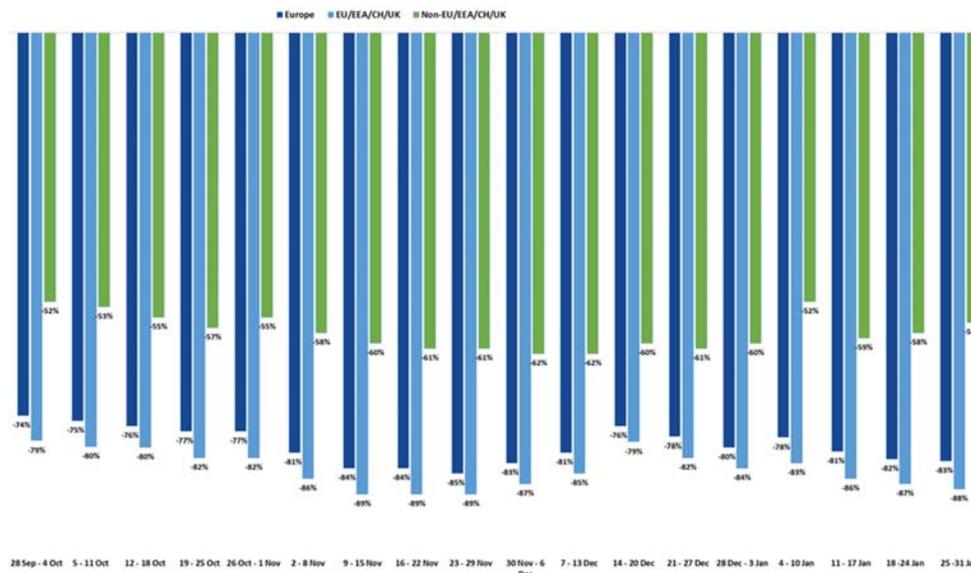


Figure no. 4. Airport Passenger Traffic – Weekly Passenger Developments

Source: ACI- Europe, 2021

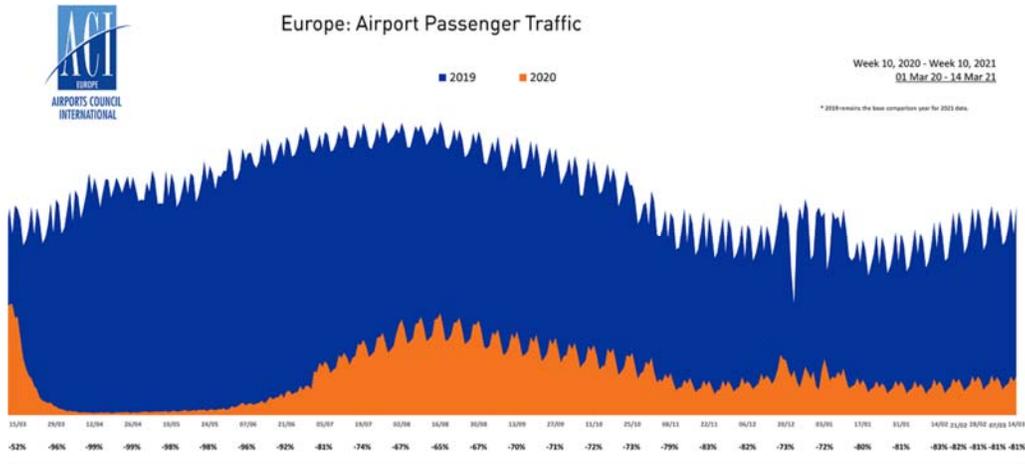


Figure no. 5. The evolution of passenger traffic in Europe between 15th of March 2020 and 2021
 Source: ACI – Europe, 2021

The total number of air routes served by European airports at the end of 2020 and first quarterly of 2021 is presented in Figure no. 6.

Massive layoffs also took place at airports. Copenhagen Airport alone has laid off 650 employees. Heathrow Airport Group reduced more than 30% of management positions. Handling companies are also not immune to financial suffering and, implicitly, redundancies. Swissport airport handling company plans to cut more than 4,500 jobs in the UK due to the pandemic.

Aircraft are rapidly becoming victims of Coronavirus

The global economic downturn triggered by the Covid-19 pandemic, but with older roots, is very likely to go far beyond this year. As a result of this recession and the immediate consequences already presented, frequent cancellations and rescheduling of airliners orders can be expected, with huge effects on producers’ business. Boeing and Airbus will be severely affected by the slowdown development of air transport, and their production rates will need a serious adjustment, with their financial performance declining considerably.

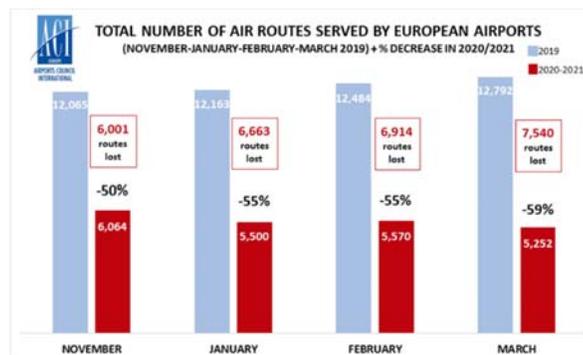


Figure no. 6. Total number of Air routes served by European airports
 Source: ACI – Europe, 2021

Boeing was already in a delicate situation at the start of the pandemic after suffering heavy losses in 2019 due to the grounding of 737 Max aircraft even though the US Government promised a \$60 billion bailout. European governments should also be prepared to do the same for Airbus if a recession strikes as its activity for the defence industry is less developed than the Boeing one with \$26 billion annually sells to the sector. Airbus covering losses from the sale of commercial products with gains from military sales sounds not very genuine. However, neither of the two producers will be relieved of difficulties shortly. They had been supposed to deliver approximately 2,700 aircraft worldwide by 2020-21. Both companies were already hit by an avalanche of order cancellations in the first six months of 2020. 27 Boeing 737MAX aircraft orders were cancelled by Aircraft leasing company Avolon alone (Prokopovič, 2020).

Large second-hand owned fleets, bankruptcies' discouragement, and enormous financial difficulties of the surviving airlines add together and lead to a significant number of order cancellations for new aircraft and more new orders shortage. Moreover, it will create hard times for aircraft manufacturers. Astonished by the shock of the 2020 crisis, giant manufacturers as Airbus and Boeing have refrained from making updated forecasts anymore as being busy recording the flow of order cancellations and reducing production volume. Boeing's operating income, reported at the end of March 2020, was \$16.9 billion, 26% lower compared to the same period of previous year. Boeing recorded a profit of \$2.15 billion in the first quarter of 2019, but had a loss of \$628 million in the same period of 2020. As for Boeing's indebtedness, it exceeded the level of assets, reaching 106.5% at the end of March 2020 (TradeVille, 2020).

On the other hand, Airbus had operating revenues of EUR 10.6 billion in the first quarter of this year, which are 15% lower than the same period of last year. The total losses recorded by Airbus in the first 3 months of 2020 were EUR 481 million compared to the same period of last year, when they had a profit of EUR 40 million. Airbus CEO Guillaume Faury estimates (TradeVille, 2020) a 40% reduction in production over the next two years caused by the COVID-19 epidemic. The company expects deliveries to decrease by 40%. The Chamber of Commerce and Industry of Occitania, the French region where Airbus aircraft are produced, estimates that this year Airbus will reduce parts purchases by 50% (TradeVille, 2020). Around 40,000 jobs will be directly affected locally, and another 40,000 jobs will be indirectly affected by this. Boeing has already announced that the first 6,770 employees are to be laid off in the United States. Airbus announced already plans to adapt its global workforce on 30 June 2020. Moreover, the company resized its commercial aircraft activity in response to the COVID-19 crisis (Airbus, 2020), resulting in a reduction of approximately 15,000 positions by the summer of 2021 (Bobon, 2020). As the commercial aircraft activity has fallen by almost 40% in recent months, the production rate of commercial aircraft has been adapted accordingly. The new average monthly production rates set are: 40 of A320 aircraft, 2 of A330 aircraft and 6 of A350 aircraft. Airbus also received government support that allowed it to limit the measures needed to adapt to unprecedented crisis conditions. However, according to forecasts, air traffic is not expected to return to previous levels of COVID-19 before 2023 and potentially by 2025.

Another impact of the recent crisis is the review by airlines of fleet development and used strategies, obviously with a massive impact on aircraft manufacturers. Not only the employees suffered but also the A380, B747 and B777 aircraft fleets. The COVID-19 pandemic has contributed to the early disappearance of the A380 aircraft from the fleets of some major companies, the market demand getting to smaller aircraft with low fuel consumption at the moment. The crisis has forced airlines worldwide to reconsider both strategies and fleet composition to reduce costs and remain operationally efficient. To reduce costs, Lufthansa had to remove 100 aircraft from its fleet and stop Germanwings operations. It has already eliminated 22 of its aircraft: 5 of Boeing 747-400, 6 Airbus of A380 and 11 Airbus of A320. Lufthansa Group said in a press release that: "The financial planning up to 2023 provides for the acceptance of a maximum of 80 new aircraft in the fleets of Lufthansa Group carriers' fleet. This will reduce the investment volume for new aircraft by half" (Prokopovič, 2020). During the same period, the last QF 747 flight of the last Qantas Boeing 747 jumbo has already taken place. Nearly five decades of mutual history of the "Queen of Heaven" and Australia's national carrier are now over.

Forecasts

The return scenarios established by IATA for April 2020 and on indicate for 2025 a traffic lowered by only 10% compared to the 2019 forecasts. (Figure no. 7).

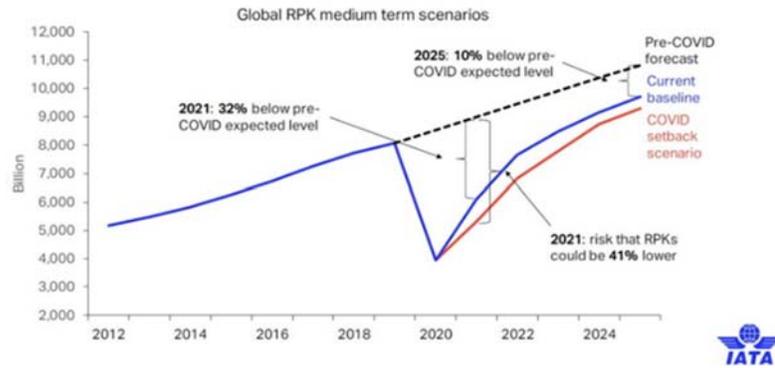


Figure no. 7. Global RPK medium term scenarios
 Source: IATA Economics, 2020

ACI (ACI – Europe, 2021) has managed to make some prediction on the return of passenger traffic in Europe for 2021, by quarters (Figure no. 8).

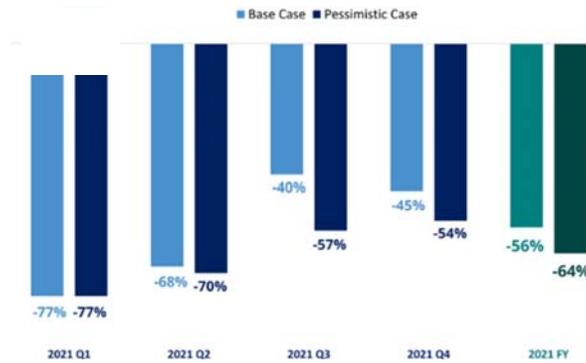


Figure no. 8. Passenger Traffic Forecasts by Quarter
 Source: ACI – Europe, 2021

The chief executive of Ryanair is mor optimistic and considers that it is feasible to reach 75-80% of pre-Covid levels in 2021, especially if the vaccine becomes available in 2021.

Conclusions

Although aviation was reduced by -98% during the pandemic, it continued to fulfil its crucial social role as far as possible. Its part was to reunite families by repatriating tens of thousands of citizens from all over the world, saving lives by transporting the sick or injured ones, as well as massive amounts of medical supplies and consumer goods needed worldwide. Aviation has been of great support to governments, physicians and researchers' efforts, enabling all of them to carry out its essential missions along this arduous, complicate and still hard to fix standing.

Keeping travel restrictions prospects in Europe and the associated uncertainty keep altering the confidence in international travel and have a bad influence on air transport demand. The transformation

of airlines might be based mainly on changing their internal business model, reorganizing its support functions and continuing to reduce external and internal costs to survive. The traffic reduction has already a domino effect and will generate redundancies at the aircraft manufacturers level in the years to come because of both orders cancellations and postponements.

Aviation needs support to continue living, rescuing and giving millions of passengers who have enjoyed all its economic and social benefits in recent years hope to travel safely and secured. Aviation undoubtedly remains a relevant service, as long as teleportation is a subject of science fiction movies for the time being.

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The Global Organic Agri-Food Market: The Current Trends and Development

Daniela Mărăcine¹, Maria Girip², Lăcrămioara Dracea³ and Nicolae Suvorov⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-Mail: maracine.daniela@gmail.com; E-mail: maria.girip@gmail.com;

E-mail: lacramioarav48@gmail.com; E-mail :suvorov.niolae@gmail.com

Please cite this paper as:

Maracine, D. Girip, M., Dracea, L. and Suvorov, N., 2021. The Global Organic Agri-Food Market: The Current Trends and Development In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 659-665

DOI: 10.24818/BASIQ/2021/07/084

Abstract:

Nowadays, the organic market is growing more and more. Most people are having a preoccupation of what they eat, and the benefits of their eating habits. Growth domestic product means the total of money spent by businesses and consumers in given period. It is used by economic industry to measure the progress of a country. An economy that is developing and progressing has a higher growth domestic product. On the other hand, the interest of an individual that has already covered his primal needs tends to move towards its wealth, being more careful of what he eats than having concerns of whether it can afford food. At the opposed pole are the countries that have a lower growth domestic product per capita, where it is highly visible that the concern is inclined towards affording any kind of food and not towards food's provenience. This level of interest was mostly reached in countries that have a higher growth domestic product per capita and an educated population. The internal motivation of population sets the trends towards consumption, therefore looking into a country's growth domestic product's rate and wealth, it is visible that where its population has reached a certain level of wealth, the organic market tends to grow also as a response to a higher demand. Therefore, the wealthier a country is the higher the number of organic operators is. This paper aims to analyze this correlation between GDP and the number of organic operators.

Keywords:

market, organic, development, trends

DOI: 10.24818/BASIQ/2021/07/084

Introduction

Organic production is a complex agri-food production and management system focused on the implementation of sustainable production practices that enable both environmental protection and compliance with the preferences of a growing segment of consumers for products obtained strictly from natural processes because of the removal from the production process of all synthetic inputs (such as additives, pesticides, or genetically modified organisms). The orientation of the consumers shows that there is a significant number of people that are willing to pay more to get the BIO products (Laroche, et al., 2001). A relevant indicator for the pace at which the transition to sustainable production methods occurs is the number of agricultural producers active in the organic sector. Since the results of organic farming, both economically and in terms of reducing the environmental impact compared to traditional agriculture, depending on their efforts and investments, it is important that their numbers increase each year (Hamzaoui-Essoussi, et al., 2012). To be noted is that the demand for organic products is also mirrored by the number of the organic producers (Jones, et al., 2001). The nearly 3 million organic

farmers operate in 172 countries, practicing sustainable production methods at different stages of development. Over 80% of organic producers are found in Asia and Africa, with positive developments in the two regions. In Europe, in 2018, the number of producers registered an increase of 5.12% compared to 2017, totalling 418,610 thousand.

As can be shown in Figure 1, in 2018 there was a slight decrease in the number of organic agricultural producers totalling 2.79 million, 5% less than in 2017 when the total number of producers was 2.94 million.

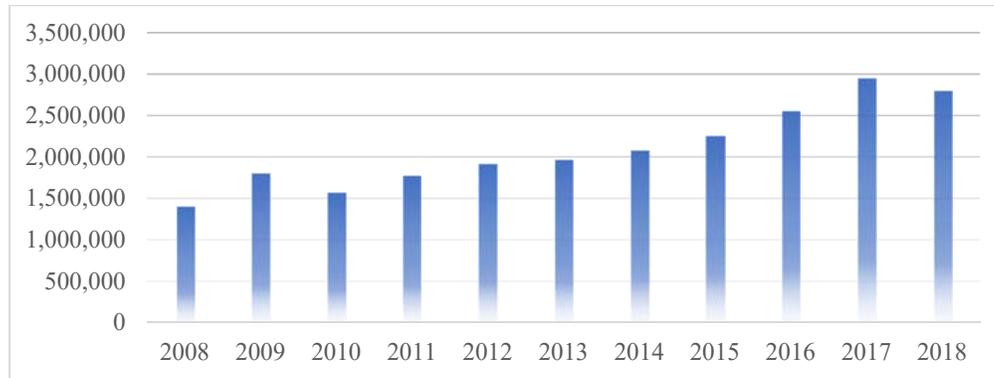


Figure no. 1. Evolution of the total number of global organic producers

Source: FiBL, 2019

Also, one can note the doubling of the number of organic producers in the period 2008-2018 and from the methodological point of view it is important to mention that, in the centralization of data, some states considered only sustainable agricultural enterprises, while others have reported including small farmers. In fact, some of the countries reported the number of companies, which is why it can be assumed that the real number of organic farmers is higher than the one that emerged from the calculations. (Winter and Davis, 2006)

As regards the market value of organic products, since 1999, when a first official assessment of global sales of organic products has been carried out, there have been spectacular increases at global level, but also at regional and state level. The positive development is confirmed by the statistical data provided by the Research Institute for Organic Agriculture (FiBL) according to which, at the end of 2018, the organic product market was assessed at almost 97 billion. The euro, an increase of 185.29% compared to the total value of EUR 34 billion in 2008. To analyse the global evolution of the organic products market, were used the data recorded during 2008-2017.

In the graphical representation of the data for the period 2008-2018 (Figure 2) you can see the increasing pace recorded globally.

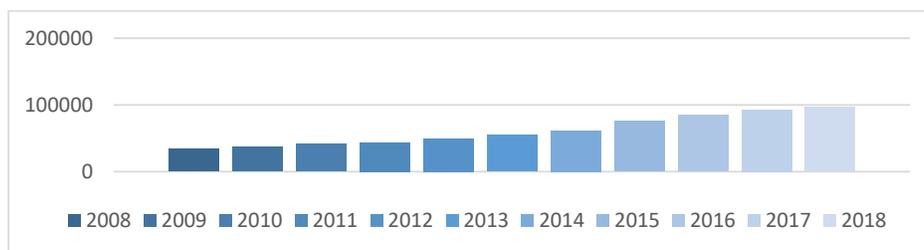


Figure no. 2. Evolution of Total Organic retail sales [Million €]

Source: FiBL, 2019

Although organic production is developed across all regions with significant increases across all continents, consumption is still highly concentrated in the US and Western Europe, although the two regions together only hold a quarter of the total area Organically grown agricultural (FIBL, 2019). Under these circumstances, ascending production in Asia, Africa and the rest of the regions is intended for export.

Review of the scientific literature

The organic market and its benefits are highly discussed (Martindale, et al., 2020), the arguments are declaring organic market to be sustainable and providing economic growth. Besides that, it should be taken in consideration the fact that it doesn't only have impact on a macroeconomical level, but also at microeconomical level – even going to an individual level and health. It was proven that food has more health implications and the concern of what a population eats it is one of the driving forces for the organic products market (Willet, et al., 2013).

Organic farming has a great contribution to long-term economic development and plays an important role in improving the condition of the environment, preserving the soil, improving water quality, bio diversification and protecting nature. Organic farming can move forward in the rural economy and make it viable by expanding high-value-added economic activities and generating jobs in rural areas (Toncea I., 2002)

A retrospective of the development of agricultural practices shows that organic farming has taken shape as an alternative to conventional agriculture aimed primarily at the continuous growth of agricultural production by using fertilizers in large quantities. Accentuating intensification factors has a negative impact on the environment and brings with it irreversible mutations on wildlife and immense damage with serious consequences on the balance of the environment and especially on human health. (Mitchell et al., 1997).

Organic farming promotes sustainable production systems, ensures the integrity of the biosphere and encourages the production of good quality products in order to improve the human environment and protect the environment as a whole.

Research methodology

This paper will use comparative methods with correlation. Based on the information available for the moment in terms of GDP and organic operators, trends of the market, population needs, the Pearson coefficient model will be used to establish the connection between GDP and the number of organic producers. The influences of those two variables are going to be analyzed and explained in regard with the global organic food market trends. The organic food production will not be taken in consideration only from a plastic point of view – it should be stated that the benefits for one's health must be mentioned also. (Rizzo, G., et al., 2020).

The main objective of this study is to analyze the evolution of the organic agri-food market as well as to identify the relationship between gross domestic product (GDP) and the number of organic operators.

Therefore, this paper presents a quantitative analysis of the organic market and wants to find conclusive answers to the question: Is there or not a relationship between gross domestic product (GDP) and the number of operators in the organic products market? To find the answer to this question, the specific tools used in calculating indicators were established based on Excel Data Analysis software in the Microsoft Office package.

Results and discussion:

- ***Correlation between organic retail sales, total organic producers and GDP***

In order to establish the influence that the organic retail sales and organic certified producers can have on GDP, it is desirable to carry out an analysis using the Pearson correlation coefficient. The correlation

analysis shows the level of connection and intensity between two variables and how much they tend to change together. For available data, the Pearson correlation coefficient (r_{xy}) shall be used. It is determined by the ratio of the sum of the products of deviations to the product of standard deviations and evaluates the meaning and intensity of the connection between the two variables. The sign of the coefficient indicates the direction, i.e. whether the variables are reported directly proportionally or inversely proportionally, and the value of the coefficient indicates the intensity, the closer the value to 1 (in the absolute value), the higher the intensity. The Pearson correlation coefficient is calculated by the formula:

$$r_{xy} = \frac{\text{cov}(x, y)}{s_x \cdot s_y} = \frac{s_{xy}}{s_x \cdot s_y} = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\left[\sum_{i=1}^n (x_i - \bar{x})^2 \right] \left[\sum_{i=1}^n (y_i - \bar{y})^2 \right]}}$$

Figure no.3 – Pearson correlation coefficient

where:

r_{xy} - Pearson correlation coefficient

x_i — individual values of the variable

\bar{x} — the average of individual values of x

y_i — individual values of the variable

\bar{y} — the average of the individual values of y

With MS Excel's optional Data Analysis program, the correlation coefficients were determined between TOTAL Organic retail sales [Million €], TOTAL Organic Producers and Total GDP effect indicator. They are shown in Table 3 below:

Table no. 3. Calculation of total organic produceres and GDP

	Total Organic retail sales [Million €]	TOTAL Organic Producers	Total GDP
Total Organic retail sales [Million €]	1		
Total Organic Producers	0.969198869	1	
Total GDP	0.849669442	0.807251964	1

Source : Authors personal calculation

The direct link between the three indicators is noticeable, but the focus will be on direct link between the number of organic producers and the dependent variable (GDP), it can be seen that there is a correlation coefficient of 0.80 (in absolute value) which suggests that when one of the variables increases and the other increases.

Further, it will be determined the way of influence through simple linear regression, in order to measure the interdependence between the 2 variables, the number of organic producers and GDP.

This analysis model allows the dependent variable to be expressed as a function, depending on the independent variable. Depending on the number of independent variables, the function can be unifactorial or multifactorial, in this case the first form will be used, being of the form: Y = a + b*x + e, where: Y — dependent variable, x — independent variable, a — free term, b — coefficient of independent variable, e — the error. The regression model shall be determined by identifying variables, calculating function coefficients and testing the model, possibly and making forecasts. Before determining the model equation, the 1st order autocorrelation shall also be tested using the Durbin-Watson

test. This test allows the identification of the first order autocorrelation, i.e. whether the residual values are correlated with model variables. This test is carried out by determining the DW value and then comparing it with the tabular value DW, whereby it will be possible to determine whether there is autocorrelation (positive or negative), indecision or independence.

$$DW = \frac{\sum_{i=2}^n (\hat{\varepsilon}_i - \hat{\varepsilon}_{i-1})^2}{\sum_{i=1}^n \hat{\varepsilon}_i^2},$$

where:

DW – the value of the Durbin-Watson test,
 $\hat{\varepsilon}$ – residual values of the econometric model

This value is compared with the values d1 and d2 in the Durbin Watson test table according to the level of significance and the decision can be determined according to the following rules.

- Rules of decision on the Durbin Watson test

$0 < DW < d1$	$d1 \leq DW \leq d2$	$D2 \leq DW \leq 4-d2$	$4-d2 \leq DW \leq 4-d1$	$4-d1 < DW < 4$
Positive Autocorrelation	Indecision ←	Independence	Indecision →	Negative Auto-correlation

Figure no. 4. The rules of decision on the Durbin Watson test

Source : Wikipedia, 2021

In order to measure the interdependence between the number of organic producers and GDP, the following linear simple regression model will be used:

Table no. 2. Regression Statistics

Regression Statistics	
Multiple R	0.81
R Square	0.65
Adjusted R Square	0.61
Standard Error	4,766,058,300,105.73
Observations	11.00

Source: Authors own calculation

ANOVA

Table no. 3. ANOVA calculation

	df	SS	MS	F	Significance F
Regression	1.00	382,446,563,668,110,000,000,000,000.00	382,446,563,668,110,000,000,000,000.00	16.84	0.00
Residual	9.00	204,437,805,480,060,000,000,000,000.00	22,715,311,720,006,700,000,000,000.00		
Total	10.00	586,884,369,148,170,000,000,000,000.00			

Source: Authors calculation based on The WORLD BANK DATA, 2021

Table no. 4. ANOVA calculation

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95,0%</i>	<i>Upper 95,0%</i>
Intercept	47,760,101,039,139.00	6,531,406,187,882.72	7.31	0.00	32,985,033,748,075.60	62,535,168,330,202.40	32,985,033,748,075.60	62,535,168,330,202.40
X Variable 1	12,489,063.36	3,043,713.97	4.10	0.00	5,603,704.00	19,374,422.72	5,603,704.00	19,374,422.72

Source: Authors calculation based on The WORLD BANK DATA, 2021

Residual Output

Table no. 5. Residual Output

<i>Observation</i>	<i>Predicted Y</i>	<i>Residuals</i>
1.00	65,150,097,664,482.00	(1,343,573,549,179.79)
2.00	70,326,926,828,694.40	(10,008,420,503,179.60)
3.00	67,297,342,327,934.50	(1,269,027,962,558.77)
4.00	69,942,201,231,895.40	2,472,761,347,589.67
5.00	71,692,281,191,442.50	4,447,882,101,051.89
6.00	72,280,715,900,703.40	4,976,518,489,282.37
7.00	73,653,276,453,010.10	3,139,974,018,200.36
8.00	75,775,043,427,208.60	1,580,815,027,577.98
9.00	79,594,261,447,956.00	(3,693,918,765,941.30)
10.00	84,539,256,129,020.20	(3,625,724,876,518.03)
11.00	82,684,567,774,771.30	3,322,714,673,675.23

Source: Authors calculation based on The WORLD BANK DATA

For this model there was a correlation coefficient (Multiple R) of 0.807, which led to a close and positive relationship between the evolution of the number of organic producers and GDP values, respectively when one variable increases, the other increases.

At the same time, the coefficient of determination (R Square) was calculated, with a value of 0.651, which indicates that the dependent variable (GDP) is explained by the independent variable (organic producers) at the rate of 65.1%.

Conclusions

In the ANOVA table, which assumes variance analysis, the following indicators determining the validity of the model can be observed. The value of the statistical parameter F may or may not reject the null hypothesis, i.e. the validity of the model, comparing it with the value of the critical F. Thus, in the case of the model the F value is 16,83 and the critical F value of 0,002 thus, it is assessed that the value of F versus the critical F is significantly higher, and in conjunction with the fact that the significance level recorded by F (Significance F) is less than 0,05 it can be stated that the model is valid.

The coefficients table will consider whether the null hypothesis can be rejected, i.e. whether the function coefficients will be different from 0 for the model to be valid. To test this will be analyzed statistical parameter t (t Stat), which again will be compared with the critical t value to be able to exclude the null hypothesis. The critical value of the parameter t is 4,10. As can be seen, both coefficients of the regression equation record a value t greater than the critical value, the significance level (P-value) is below the threshold of 0.05, and the confidence intervals do not contain the null value, thus the null hypothesis is rejected. Finally, the residual values will also be tested to eliminate the possible first order correlation with the Durbin-Watson test. Calculating using the formula presented, a DW value of 1.23 was determined and according to the decision rules presented above, we are in a situation of indecision

tending to positive autocorrelation. With all these assessments, related to the rejection of the null hypothesis and the validity of the regression model, one can write the regression function:

$$\text{GDP} = 12489063.36 * \text{Total number of Organic Producers} + 4.77601\text{E}+13$$

From this function it is highlighted that the value of the coefficient X (Total number of Organic Producers) is 12489063.36 respectively when the number of organic operators increases by one unit, the GDP value will increase by 4.77 units. Furthermore the analysis reaches a certain conclusion, when the population is wealthier – meaning a higher GDP will increase the number of the organic operators. The viceversa applies, when the number of organic producers grows, the growth domestic product raise as well. The trends of the organic market are aligned with the level of wealthiness, hence the individual preoccupation for its health. To conclude, the intrinsic need of oneself for a healthier life and the circumstances of wealthiness are a force that impacts the growth domestic product.

Acknowledgement

„This paper was co-financed by The Bucharest University of Economic Studies during the PhD program”.

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Impact of Tourism on Economic Growth: Evidence from Lebanon, Jordan and Turkey

Mohammad Baker Hamieh¹, Awatef Abdallah², Oana-Diana Crîșmariu³ and Iulian Tenie⁴

¹⁾ *Lebanese International University, Beirut, Lebanon.*

²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: mohamad.hamieh01@liu.edu.lb; E-mail: awatef_abdallah@hotmail.com

E-mail: oanadianacrismariu@gmail.com; E-mail: iulian_tenie@yahoo.com

Please cite this paper as:

Hamieh, M.B., Abdallah, A., Crîșmariu, O.D. and Tenie, I., 2021. Impact of Tourism on Economic Growth: Evidence from Lebanon, Jordan and Turkey. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 666-673
DOI: 10.24818/BASIQ/2021/07/085

Abstract

Tourism sector is playing a crucial role in the development of the economy in Lebanon. Despite the regional political tension and local security issues, tourism activities have continued to grow in the last year.

The main purpose of this paper is to analyse the impacts of tourism indicators of Lebanon, Turkey and Jordan on their economic growth using panel data (cross sectional time series data) approach. Static linear panel data models were used for determining the effects of tourist arrivals (independent variable) on tourism contribution to gross domestic product (GDP) of Lebanon, Jordan and Turkey.

The analysis in this research discloses an adequately gauge of the impact of tourists' arrivals on tourism contribution to economic growth. The results showed that an increase of 1 % in tourists leads to a rise of 0.42 % in the tourism contribution to GDP.

The findings of this research are especially useful for Lebanon, Jordan and Turkey for developing convenient tourism strategies, and could significantly contribute to promoting sustainable and integrated development of the country.

Keywords: Tourism, Gross Domestic Product (GDP), Economic Growth, Sustainable Development, Competitiveness.

DOI: 10.24818/BASIQ/2021/07/085

Introduction

Tourism is considered as one of the Key sectors of development in the world and a main generator of income, employment and wealth.

In Lebanon, despite at first glance the Travel and Tourism sector was showing strength in the last few years, it encounters challenges that it needs to overcome in order to keep the development and wealth of the sector.

Moreover, the improvement of competitiveness in the tourism sector in Lebanon could significantly contribute to promoting sustainable and integrated development.

In 2019, the travel and tourism in Lebanon, Turkey and Jordan contributed respectively around 19.5%, 12.7% and 19.8% of the country's global GDP (WTTC, 2020).

The relationship between economic growth and tourism indicators has long been a popular issue of discussion in the literature of economic development. In this content, the main purpose of this research is to analyse tourism indicators of Lebanon tourists' arrivals and neighbours' countries and the tourism contribution to countries' economic growth using panel data approach. Annual data are used for the period 1997 to 2019. The data was gathered from the World Bank database and World Travel and Tourism Council.

Tourism development positively influences economic growth, but few studies have examined the extent to which tourism productivity influences sectors of the economy. Recently, studies have been conducted comparing the effects of tourism sector productivity on economic development. (Liu and Wu, 2019)

To analyse the tourism development and its impact on countries economic growth, it is important to study tourist inflows at a national level given the current competition in the tourism market between countries (Jansen-Verbeke, 1995).

Review of the scientific literature

Because of the importance of tourism in the economy and the expectations of governments that tourism will lead to economic growth and development, there is a significant literature to discuss the topic.

It has been argued that tourism is an easy, effective and relatively inexpensive tool to achieve economic health (Tosun, 2001).

In the last years, more attention has been paid to tourism by the governs because it has been seen both as a source of growth and employment and as a way of cultural promotion. Also, in the academic environment it has been debated up to several relations between economic growth and tourism. (Brida, Matesanz Gomez, and Segarra, 2020)

Economic growth can be associated with an increase in the number of tourist arrivals in two ways. First of all, through the contribution brought to companies (profit, investments), households (services, salaries) and the government (goods, services, taxes, duties) through the money spent on accommodation, food, shopping, attractions, souvenirs, transport. Second, tourist arrivals indirectly affect GDP through productivity spill-overs in situations where international companies in the hospitality industry operate in new destinations bring new ideas, personally. The new influences can inspire and motivate local entrepreneurs, setting new standards comparing to major international chains (Groes, et al., 2021).

There are many publications discussing the contribution of tourism to GDP, in which the absolute value of tourism GDP, the share of tourism in GDP and their changes over time are discussed /Archer and Fletcher (1996), Evensen (1998), Sharpley (2001), WTTC (2011).

As we are dealing with time series data for several countries, we relied in our paper on Mourad (2019) book dealing with panel data analysis, theory and practice, based on a great bibliography by examining all the sides that make this topic easily affordable by researchers. Also, with Mourad (2018a), a panel co-integration analysis was carried out by considering the impact of trade on GDP in the World's top ten economies.

Mourad (2018b) performed a panel data analysis using pedroni's approach to estimate the long-run equilibrium relationships between vital economic determinants and real GDP in GCC countries.

Research methodology

Graphic analysis of variables

Lebanon in figures. As we mentioned before, the tourism sector plays a crucial role in regional development, contributing to the development of the economy and job creation. Despite the regional political tension and local security issues, tourism activities have continued to grow in Lebanon in the last year.

The travel, tourism and hospitality industry is a significant contributor to the Lebanese economy. According to the World Travel and Tourism Council, tourism contribution reported an average of 19% to GDP in the period from 1997-2019. This ratio reached a high record of 34.4 % in 2003 showing an improvement in tourism activity compared to previous years whereas it experienced a low record of 1.1% in 2000.

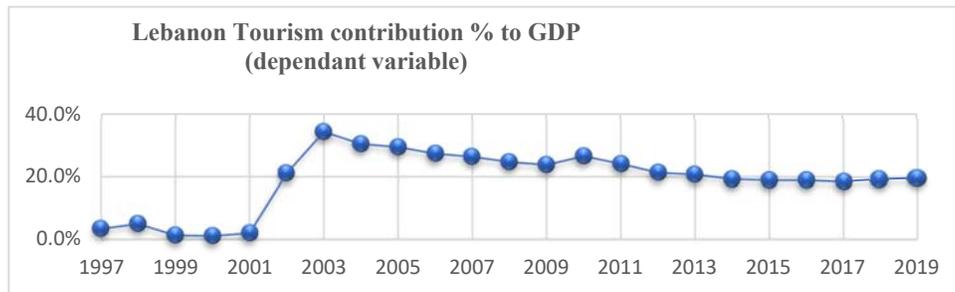


Figure no. 1. Tourism contribution to GDP in Lebanon from 1997-2019

Source: Lebanon Ministry of Tourism, 2021

The tourist arrivals show a steady increase from 1997-2004 and experienced a continuing fall in the following years after the deterioration of the political situation in Lebanon due to Prime Minister’s assassination in 2005.

One year later the Israel’s war on Lebanon caused a continued drop in tourist’s arrivals to nearly 1 million tourists. This sector started to improve through 2007-2010 whereby the number of tourists amounted to 2,168,000 in 2010 reaching its high record. However, the eruption of Syrian crisis along with the local security instability through 2011-2014 has highly affected the flow of international visitors to the region in general and to Lebanon in particular.

The latter experienced a sequence of terrorism attacks in many regions of its land especially in Beirut, in addition to the kidnap of Estonian tourists in Lebanon in 2011 This situation improved from 2015 as the government strengthened the local security and won the war against terrorist later in 2017. However, in the last quarter of 2019 the tourists dropped with the start of “October revolution” as a cause of the financial crisis that the country experienced, recording a 1.72% annual decline in total tourists.

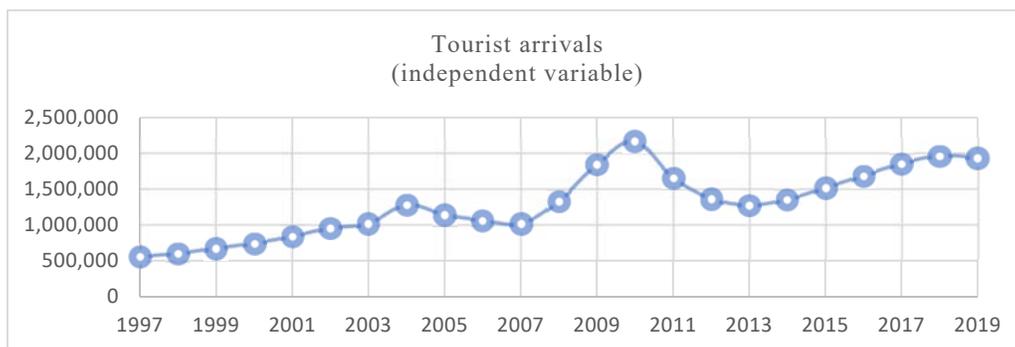


Figure no. 2. Annual tourists to Lebanon from 1997-2019

Source: Lebanon Ministry of Tourism, 2021

Turkey in figures. Tourism and hospitality industry is a major contributor to the Turkish economy and it is growing in importance (Gokovali, 2010). Tourist arrivals witnessed a strong steady growth in

turkey in the period from 1997 until 2015 whereas the foreign tourists visited Turkey was around 9 million in 1997 and grew around 316% in 2015 hitting 39.5 million. (WTTC,2011).

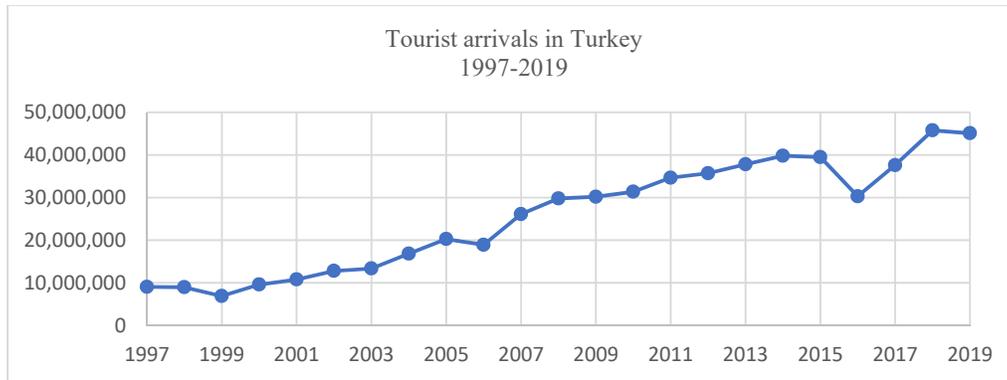


Figure no. 3. Tourism contribution to GDP in Turkey from 1997-2019

Source: Ministry of Culture and Tourism of Turkey

Tourist Arrivals in Turkey averaged 25,698,565 from 1997 until 2019, reaching an all-time high of 45,768,000 in 2018 and a record low of 6,893,000 in 1999 whereas Turkish tourism faced serious crises following the two earthquakes in the industrial northwest region of Turkey in this year (Yolal, 2010).

The terrorist attacks and the political conflict with Russia caused a drop of tourist arrivals in 2016 by 23.8 %. This number accounted a rise by a year-on-year as the ties between Turkey and Russia have normalized.

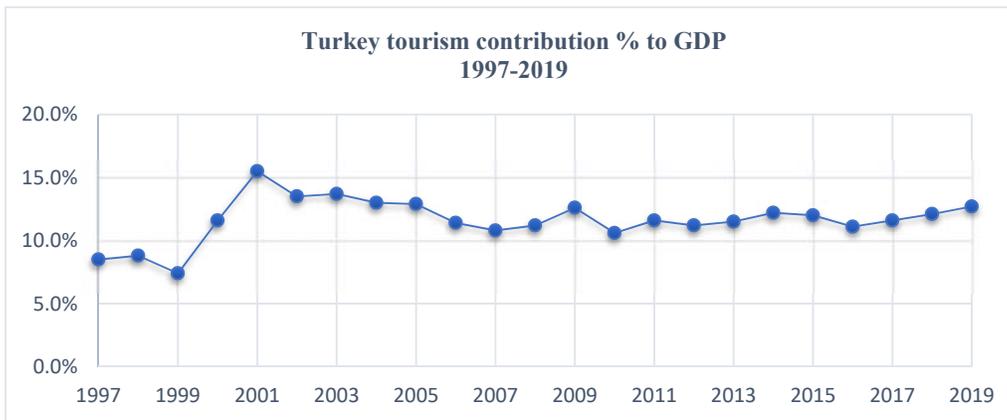


Figure no. 4. Annual tourists to Turkey from 1997-2019

Source: Ministry of Culture and Tourism of Turkey

These figures reveal the total contribution of tourism sector in GDP, whereby this number varied over this period from its low record 7.4% in 1999 to 15.5% its high record in 2001. However, Turkey contribution of travel and tourism to GDP (% of GDP) fluctuated substantially in recent years, it reached its peak of 15.5% in 2001 and tended to decrease through 2002 - 2019 period ending at 12.7 % in 2019 (WTTC, 2019).

Jordan in figures. While Jordan is a country of limited resources, Tourism is considered as a major income source for the national economy. Over the past few years, The Jordanian tourism sector remains

to grow steadily after resisting many difficulties imposed by the different challenges in which the region has faced that include the Global Financial Crisis as well as the (Arab Spring) revolutions in 2011.

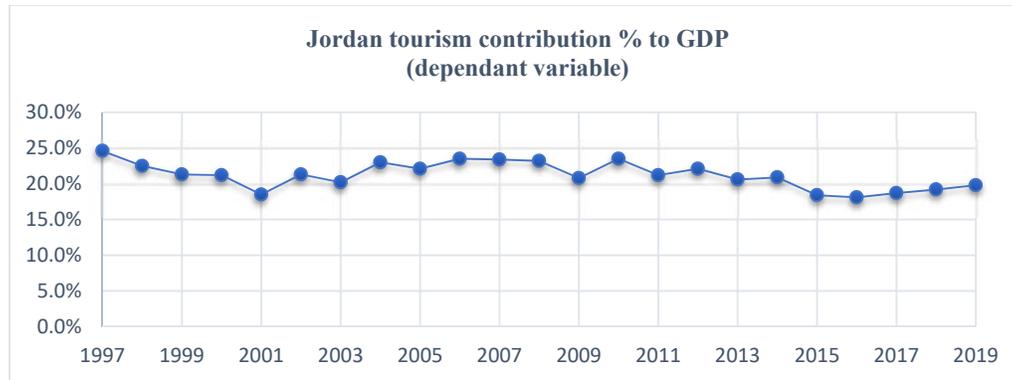


Figure no. 5. Tourism contribution to GDP in Jordan from 1997-2019

Source: Ministry of Tourism and Antiques of Jordan

Jordan which is heavily reliant on the tourism industry, has experienced a steady growth through 2001-2010 revealing the strength of the tourism sector which contributed an average of 21.2% to GDP. However, it experienced a drop in tourism arrivals by 11.7% after the outbreak of political turmoil between Israelis and Palestinians in 2000 (Beirman, 2003).

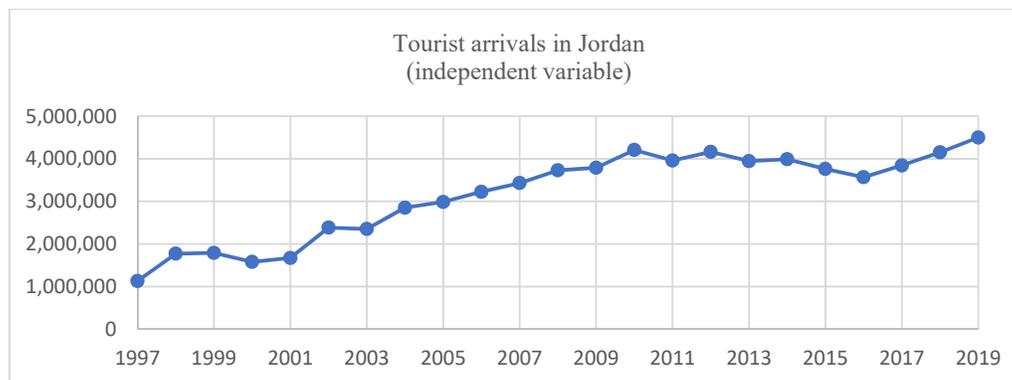


Figure no. 6. Annual tourists to Jordan from 1997-2019

Source: Ministry of Tourism and Antiques of Jordan

The number arrivals to Jordan during 2011 stood at 6.8 million compared to 8.1 million recorded back in 2010 representing a drop of 16% over 2010. Arab Spring revolutions addition to the war in Syria likely caused the stagnation in tourism in Jordan from 2011 to 2014 as well as the precipitous drop that happened in 2015 and continued through 2016. However, this indicator recorded a steady increase from 2017 until 2019 where it reached its highest record of 4.5 million tourists.

Still, the total tourist arrivals to Jordan averaged an amount of 3,164,457 tourists through the period of study.

Panel data modeling in tourism and contribution to GDP

X: Tourist arrivals (independent variable)

Y: contribution to GDP in percentage (dependent variable)

Database: 1997-2019 (23 years)

Countries: Lebanon, Turkey and Jordan

The two variables are calculated in natural logarithm.

Panel Regression - Estimation by Random Effects model is considered to deduce the equation describing the relation between the variables of study. Eviews program is used to analyse the relation between the variables.

For a deeper theoretical understanding of these models, we guide researchers to Mourad (2019, p. 156-209). Log-transformed data is considered.

Panel Data is set of data obtained by observation of the characteristics of a variety of units (cross-sectional variables) over time (Ahn and Moon, 2001).

Panel data sets that thousands of cross sectional units observed through the time are used in many micro-economic researches (Hill, Griffiths and Lim, 2008). Panel data offer more explanatory data, more variability, more degrees of freedom, less co-linearity among the variables and more efficiency (Baltagi, 2010). Panel data analysis can be considered as a combination of regression and time series analysis (Frees, 2004).

Because panel data has time based dynamics with the observations of cross sectional data repeated through time, the effect of unmeasured variables can be controlled (Hsiao, 2003). With the use of cross-sectional observations over time, panel data analysis provides more clarification character, less co-linearity and more degrees of freedom and efficiency than only cross sectional analysis or time series analysis.

Table no. 1. Panel Regression - Estimation by Random Effects

Variable	Coefficient	Std. Error	t – Statistic	Signif
Constant	-3.6785	2.4413	-1.507	0.132
X	0.4188	0.1568	2.672	0.008
RSS = 21.54032 S_u = Standard error of estimate = 0.594239 S_α = Individual – specific standard error = 0.8822 S_ϵ = Purely random standard error = 0.6029 Hausman Test(1) = 1.68 Significance Level = 0.195				

Source: Eviews output

Results and discussion

In this paper, we used panel data approach to analyse the effect of tourists’ inflows on economic growth (GDP) of Lebanon, turkey and Jordan over 1997-2019 period. The main findings of random effects model indicate that tourists’ arrivals positively affect tourism contribution to economic growth.

Furthermore, the analysis of tourism indicators (tourist’s arrivals, and tourism contribution to GDP) through 1997-2019 for the countries of study showed that the tourism downturn happened in many periods was mainly due the regional political disruption, local and surrounding security issues.

Conclusions

Political instability generates negative publicity, which results in the unescapable drop in tourist arrivals. However, Mass media plays a crucial role in conveying the image of a destination so that it can attract or detract potential visitors. (Hall and O’Sullivan 1996, cited in Thapa 2003).

This sector will continue to be strong so long as the development takes place in an integrated and sustainable manner, along with the rise of a number of challenging headwinds. Tourism destination planners need to constantly monitor the image of their country and to work with national governments towards stability and the safety and protection of tourists and local populations alike.

Incorporating tourism crisis management planning into the country's overall sustainable development and integrating marketing strategies along with local mass media could help to protect and rebuild the country image of safety and attractiveness.

Further comparative studies about the impacts of tourism sector on growth in the country of study, will be conducted by researchers as it could help in setting strategies that contribute to the reduction of unemployment and poverty.

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Risk Management for New Projects in the Context of a Sustainable and Circular Bioeconomy

Valentina Irena Tudoran (Niculiță)¹ and Elena Condrea²

¹⁾ The Bucharest University of Economic Studies, Bucharest, Romania.

²⁾ Ovidius University of Constanta, Constanta, Romania.

E-mail: irena_niculita@yahoo.com; E-mail: elenacondrea2003@yahoo.com

Please cite this paper as:

Tudoran (Niculiță), V.I. and Condrea, E., 2021. Risk Management for New Projects in the Context of a Sustainable and Circular Bioeconomy. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 674-680
DOI: 10.24818/BASIQ/2021/07/086

Abstract

We cannot talk about sustainable development and circular economy without taking into account the fact that any private organization is created with the aim of bringing profit or other benefits to investors. Effective implementation of the new integrated management systems that address risk-based thinking, planning of changes, or the product life cycle increases the overall performance of the organization and hence the long-term business growth (*sustainable success*).

Any organization shall determine its context and, in close connection with it, to determine its risks and opportunities as a basis for planning. Determination of risks and opportunities and, first of all, planning the actions to address them, will allow the organization to achieve the intended results as best as possible, to improve these results and to prevent the undesirable effects to occur.

In this paper we proposed to present some special particularities of risk management for new projects and, from this point of view, to identify some recommendations on the risk treatment in case a project was drawn up by the management of an organization.

We will therefore consider the analysis of the integrated management systems implementation, in particular risk management and project management, in the context of developing a sustainable and circular bioeconomy.

Keywords: Risk management, integrated management systems, change planning, life cycle, sustainable bioeconomy.

DOI: 10.24818/BASIQ/2021/07/086

Introduction

Starting from the current context (characterized by global warming, limited non-renewable resources, ecosystem degradation and demographic growth), governmental, non-governmental organizations, including business environment around the world, have become increasingly concerned about achieving the sustainable development goal through the transition to the circular economy (European Commission, 2018).

The implementation of integrated management systems (quality, food safety, environmental, occupational health and safety) in line with the revised ISO standards is a concrete and viable tool for achieving the sustainable development goal and circular economy in Europe.

According to the EC Communication from 20th of May 2020, *From Farm to Fork strategy, the heart of the Green Pact*, is essential to the achievement of the 17 sustainable development goals undertaken by the UNO and the way forward following the COVID-19 pandemic and the resulting economic crisis.

The COVID-19 pandemic highlighted the importance and need for the implementation of a robust and resilient food system capable of operating in any circuit, ensuring sufficient food supplies to citizens at affordable prices (European Commission, 2020).

Any organization shall determine its context and, in close connection with it, to determine its risks and opportunities as a basis for planning (ASRO, 2015).

Literature review

According to *SR ISO 31000:2018. Risk management. Guidelines* (ASRO, 2018a), risk is defined as “the effect of uncertainty on the achievement of the objectives”. The positive effect creates or leads to an opportunity, the negative effect creates or leads to a threat, or both.

Risk-based thinking is not a new concept, being implicitly present in the previous editions of the standards through the requirement for preventive action. Moreover, since the '70, economists Harry M. Markowitz and James Tobin (from the US), as well as Germany's Nikolas Luhmann, have associated the risk with the development of an organization or a company (Popa and Gulie, 2018).

The standards for management systems define the risk as *an effect of uncertainty and the effect is a deviation from the expected, positive or negative*.

Uncertainty is hovering over the organization's goals achievement, which may be a barrier to achieving the goal or an opportunity.

The current editions of management system standards address risks and opportunities together. The introductory chapter of ISO 9001:2015 states that opportunities may be the consequence of a situation favorable to achieving an intended result, i.e. opportunities are circumstances that can lead to the performance improvement of the organization (ASRO, 2015b). Whether or not the organization makes use of opportunity may also lead to higher or lower risks. Risk-based thinking has also been incorporated into the standards requirements and is becoming essential for the effective implementation of management systems, which will thus act as prevention tools. Organizations must determine the context in which they operate and, and, closely related to it, determine its risks and opportunities as a basis for planning (ASRO, 2020).

The organization processes will never have the same level of risk in terms of achieving the objectives, and risks and opportunities will always be different from one organization to another, even for similar organizations in terms of scope or organizational structure (ASRO, 2013). From this point of view, management system standards have left it up to organizations to decide on the methodology complexity to address risk-based thinking; organizations may choose to develop a more extensive risk approach than required by quality, food safety, environmental or occupational health and safety management system standards and may use a documented risk management process in accordance with ISO 31000:2018 for this purpose (ASRO, 2018a). In relation to risk-based thinking, new editions of management system standards address the *planning of changes* requirement for the first time as an important aspect of maintaining and long term improving of the integrated management system; by approaching the two components specific to risk management and change management respectively, the organization shall ensure that any proposed change is planned and implemented in a controlled manner without adversely affecting the achievement of the intended results of the system. The potential consequences analysis of changes leads to the negative impacts avoidance and to the benefit of positive effects (decreasing of nonconformities, decreasing of human error incidents etc.), and, most important, to the sustainable implementation of changes.

In the food industry, for example, negative effects may include: nonconforming products and services; unsafe, contaminated food with consequences on consumer health (food poisoning etc.); inefficient use of raw materials, materials, utilities with negative consequences on the global ecological footprint; accidental pollution, generation of large amounts of waste with negative consequences on the environmental pillar of sustainable development; injury or ill health of employees with negative consequences on the social pillar of sustainable development; non-compliance with legal and other applicable requirements; complaints, damage of the organization's reputation; failure to meet the organization's strategic objectives; fines, litigation, criminal liability, losses etc.

The product/service life cycle, another requirement first addressed by the new editions of management system standards, requires that all life cycle stages to be considered for the organization's products and services which can be controlled or influenced by the organization with particular attention to the product end-of-life treatment with a view to its reintegration into the nature. In the case of the food industry, a fair life-cycle approach will enable waste or scrap to be converted into valuable resources and the amount of food waste generated to be reduced, thus achieving the objectives of the sustainable and circular bioeconomy.

With the three concepts (risk-based thinking, planning of changes and life cycle), risk management for new projects becomes very important in the context of a sustainable bioeconomy.

Research methodology

The research methodology in this paper is the documented one, for the purpose of accumulating information, by studying scientific literature, publications and reports made public by international or European institutions, the international standards published by ISO. This study has thus been developed following the analysis of how to implement risk management for new projects at the organizational level, the benefits for the organization and, last but not least, for the community.

In the traditional approach of the project management, also promoted by SR ISO 21500:2014 (ASRO, 2014), replaced by a new version in March 2021 (ISO 21500:2021), the life cycle of a project consists of the following steps: initiating, planning, implementing, controlling including change control and closing the project.

Representative for the role of risk management in the development of an organization is the process of identifying, analysing, evaluating and addressing the risks for each stage of the new project. It can be said that each project is unique; numerous differences have been identified between the projects, including those referring to: the products/services as outcomes of the project; the interested parties involved in the project; the resources needed to carry out the project; project constraints; how processes are designed to deliver the project outcomes.

According to ISO 21500:2021, the success of a project depends on the environment of the project, i.e. on a set of factors outside or inside the organizational boundaries, namely:

- Factors outside the organizational boundaries: socio-economic, geographical, policy, legislative, technological and environmental factors;
- Factors inside the organizational boundaries: strategy, technology, maturity of project management, availability of resources, culture and organizational structure.

Results

Revised management system standards according to Annex SL, also known as the High-Level Structure (section of the part of the ISO/IEC Directives 1 which sets out how the management system standards of ISO should be written (ISO, 2012), radically changed the approach of management system implementation by bringing many new elements: the process approach (mandatory in the case of ISO 9001); the risk-based thinking approach; the sustainable development approach including the product life cycle (9001, 14001 and 45001); the principle of leadership (specific only for quality standard prior to Annex SL); change management approach (planning of changes); alignment of policies and objectives with the organization's development strategy; more respect to customer focus, interested parties; greater flexibility in documentation by giving up on mandatory procedures (ASRO, 2015a; ASRO, 2015b; ASRO, 2015c; ASRO, 2018b).

By analysing the requirements of those standards, as well as the results of their implementation in organizations, we can underline the benefits of an integrated management system that addresses risk-based thinking as it is showed in Fig.1:



Figure no. 1. Benefits of an integrated management system which addresses risk-based thinking
 Source: Original

Based on the studies carried out at the level of some organizations, but also on those set out in ISO 21500:2021, the success of a project also depends on the project interested parties, both external (regulators, specific interest groups, customers, financiers, business partners etc.) as well as internal (project team, project manager, employees, project sponsor, shareholders), including its organizational structure (ISO, 2021; Risk Management methodology, 2018).

Proposals and recommendation

In line with the above, we identified specific risks for three stages of the project life cycle - financing, initiation and planning (The Orange Book, 2004; ASRO, 2013; ASRO, 2020), as follows:

Table no. 1. Identification of risks in project stages

Project stage	Stage objective	Identified risks	Impact
Project financing	Obtaining financing with non-reimbursable funds	Non-compliance with eligibility criteria	Not granting of non-reimbursable financing
		Failure to achieve the best score in technical and financial assessment	
		Projects with better indicators/scores	
Initiation of the project	Formal project definition	Wrong economic and financial analysis (under-sizing of the general budget)	Insufficient financial resources, difficulties in implementation
		Omissions in the process of identifying the relevant interested parties or their requirements	Difficulties in implementation, delays caused by opposition from third parties
		Unrealistic, unachievable goals	Failure to meet the objectives or general purpose of the project
		Project deliverables do not meet the real requirements of consumers	
Developing the project		Failure to identify implementation steps	Difficulties in implementation, delays

Planning of the project	management plan	Wrong estimation of some activities duration needed to carry out the investment	Failure to comply with the calendar plan of the project
		Project completion date incorrectly estimated	
		Under-estimation of costs	Exceeding of the planned budget during the implementation period
		Failure to identify all regulatory requirements applicable to the project and to the project deliverables	Difficulties in implementation; Difficulties in the endorsement process; Fines from authorities
		Incorrect or inaccurate identification of how the regulatory requirements will be complied with	
		Wrong planning of procurements (unrealistic over time)	Non-compliance with the procurement calendar plan; Project delays
		Incomplete, inaccurate criteria for acceptance of products/services to be purchased	Purchased products/services with low quality, low technical performance
		The selection criteria of suppliers not fully established, inaccurate	Inefficient selection of product or service suppliers
		Minimizing the issuing dates for permits and agreements for running the project	Failure to comply with the project calendar plan
		Failure to identify certain documents necessary to obtain permits and agreements in order to implement the project	Difficulties in the process of endorsement, delays
		Omissions in determining the mode and stages of communication with regulatory authorities	Difficulties in the process of endorsement, delays

Source: Original

The risk treatment measures and the opportunities identified and proposed for each of the stages are:

Stage I. Project financing

Risk treatment measures:

- Contracting a company specialized in consulting and project management

Opportunities:

- Seeking alternative sources of financing (e.g. bank credit).

Stage II. Initiation of the project

Risk treatment measures:

- Formal definition of the project based on a market analysis
- SWOT analysis of the project
- Analysis of project deliverables market trends; identification and effective analysis of all interested parties

Opportunities:

- A specialised company involvement (in marketing and advertising) in order to carry out a market analysis as conclusive as possible and a SWOT analysis as objective as possible.

Stage III. Planning of the project

Risk treatment measures:

- Consultation with all interested parties when determining the stages of the project, the timetable of the activities, costs or other resources involved;
- Setting the timetable for the analysis, verification, validation and approval phases of the project so as to achieve the intended results of the project;
- The effective assigning of the project team responsibilities for each stage of the project, including for the analysis, verification, validation and approval of the project;
- Determination of inputs and outputs expected for each stage of the project management plan (clear definition of results to be achieved);
- Drawing up a list of all applicable legal or regulatory requirements and compliance evaluation of the project deliverables;
- Comparison of functional and performance requirements set for project deliverables with standardized requirements of similar products/services (product standards, product technical specifications);
- Documentation of the criteria and selection method of suppliers for the goods and services involved in the project;
- The estimation of the budget taking into account the inflation rate, possible exchange rate differences;
- The continuous, progressive update of the project plan and its communication to the relevant interested parties.

Opportunities:

- The use of information from similar projects (internal or external);
- Benchmarking;
- Timely analysis of legislative changes, other regulatory requirements, proactive attitude;
- The identification of at least two suppliers for each type of procurement planned in the project;
- Timely, proactive and transparent communication can strengthen the organization's relationship with regulatory authorities and other interested parties involved in the project.

Conclusions

Risk management for new projects brings a number of advantages for the organization, namely:

- Determining precisely the external and internal factors that could influence the achievement of the intended results of the project;
- Accurate determination of the external or internal stakeholders of the project and their relevant requirements in order to achieve the intended results of the project;
- Identification of undesirable effects for each stage of the project and thus minimizing unexpected costs;
- Improvement of control over project-specific processes;
- The allocation and efficient use of the organization's resources necessary to implement and complete the project;
- Making informed decisions in order to achieve the objectives of the project, including by taking advantage of the opportunities.

The effective and efficient implementation of a new project ensures that the integrity of the management system is maintained, the improvement of the organization's overall long-term performance, sustainable success (through increased labour productivity, economic growth, safe and decent work environment, responsible resource consumption and environmental protection).

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Designing a Multi – Directional Communication Model for Eco – Innovation in the Soft Drinks Packaging

Alexandru Jurconi¹, Rodica Pamfilie² and Rodica Lupu³

¹⁾²⁾³⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: alex.jurconi@gmail.com; E-mail: rodica.pamfilie@com.ase.ro;

E-mail: rodica.lupu.office@gmail.com

Please cite this paper as:

Jurconi, A., Pamfilie, R. and Lupu, R., 2021. Designing a Multi - Directional Communication Model for Eco - Innovation in the Soft Drinks Packaging. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 681-689 DOI: 10.24818/BASIQ/2021/07/087

Abstract

The enforcement of the provisions of the Directive EC 2019/904 - also known as the Single Use Plastic (acronym, SUP) Directive - results in the adoption of the implementation acts by all Member States, aiming to challenge the way that food products and beverages are packed. In this given context, European soft drinks industry, retailers, governments and consumers are currently working together in order to design implementation acts (EU and governments' decisions, laws, regulations, procedures, norms, etc.) that have to incorporate a balanced consideration to the business needs, from one side, and to the ones for a cleaner environment, from the other. A particular aspect of this fragile relationship is the way that the European beverage industry would address SUP Directive's specific requirement for a minimum uptake of the recycled content of polyethylene terephthalate (rPET) in the soft drinks bottles. The purpose of this article is to model the process through which the industry could turn a legal compliance matter – the one of placing on the market plastic bottles with an ever-increased rPET content – into a public communication opportunity of the eco – innovation over the soft drinks supply chain.

Keywords

rPET, communication, eco – innovation, SUP, soft drinks, circularity, littering, consumers

DOI: 10.24818/BASIQ/2021/07/087

Introduction

One of the most important enactments of the Romanian Presidency to the Council of the EU in the first half of 2019 was the Single Use Plastic Directive (EC 2019/904, aka the 'SUP' Directive), a legislation masterpiece with an unparallel disruption effect over the industry, retail and consumers habits (European Commission, 2019). Transposing the principles of circular economy, the Directive provides that all plastic packaging on the Internal Market to be recyclable or reusable by 2030, thus resulting a fresh system of relationships and flows between the key players of the beverages supply chains, in general, and of the soft drinks one, in particular. This new reality has to be hastily and accurately acknowledged by the consumers (Pamfilie and Jurconi, 2018; Teodor, et al., 2020).

A particular provision of the above-mentioned enactment has a major impact on the soft drinks producers, with regard to the mandatory rPET content: the use of rPET in the plastic bottles has to be at least 25% by 2025 and at least 30% by 2030. From the early phases of the SUP public debates, the beverages industry has raised concerns with regard to the quantitative and qualitative availability of secondary raw materials in the need to meet the above-mentioned targets. In previous works (Ilie and Jurconi, 2019) we explained that certain framework conditions should have been in place prior to the

adoption of the mandatory rPET content by the EU legislation, so that the soft drinks industry to secure access to sufficient quantities of food-grade recycled polyethylene terephthalate. In the absence of such framework conditions, the risk of plastic bottles shortage on the Internal Market remains high.

We hereby pondered the technological disruption outcome – that is, practically, a new type of plastic bottle - versus the consumers' capabilities to perceive and integrate such a transformation - one that is in line with their options for a world with less plastic (Alvarado Chacon, Brouwer and Thoden van Velzen, 2020). In order to score above consumers' perception line, the soft drinks industry need to team up with the retailers and with the governments with the goal to align public messages, to explain and to disseminate positive content on the rPET bottles, hence setting forth sustainable plans for new investment in the soft drinks packaging, job - creating and reducing the food waste and the carbon footprint.

From the industry's perspective, neither the fluctuating price of crude oil, nor the related price of the virgin PET do encourage the recycling of polyethylene terephthalate - even though the process itself is extremely sustainable: in Austria, for example, the carbon footprint of rPET is 0.45 kg CO₂-eq./kg, almost five times less than the one for virgin PET (2.15 kg CO₂-eq./kg) (ALPLA Werke, 2021).

From the consumers' standpoint, the objective reality of the mandatory rPET targets has to cope with the need of safeguarding EU's Internal Market principles, as the one of ensuring a level playing field for all types of packed and bottled products, so that the nations of the Union to benefit from the variety of goods offered by the European food and drinks industry.

From an environmental perspective, the few data available on consumers' behavior, in relation with the new types of plastic bottles, render as irrelevant, for the time being, any assumption on the littering reduction as a result of the replacement of the virgin PET with rPET (NAPCOR and The Association of Plastic Recyclers, 2016).

Materials and Methods

As a first step, we considered to examine the trends of the eco - innovation in the field of soft drinks plastic bottles and to explore - from a high-level perspective - the appetite of the soft drinks producers to adopt sustainable packaging technologies. We pointed out the key messages to accompany the rPET technology adoption to be conveyed by the soft drinks producers under the existing legislative and raw materials market constraints.

In the respect of the above, we performed an in - depth analysis of the Directive EC 2019/904, with particular regard on its provisions referring to the mandatory rPET content of the soft drinks plastic bottles, pondering their impact on the availability of the secondary raw materials and assessing the possible distortions of the EU's Internal Market that may consequently occur, resulting in a battery of communications vectors driven by a balanced system of positive and negative feed-back controllers.

We hereby produced an original overview of the voluntary pledges of the European food and beverages industry in response to the obligations provided by the Directive and in line with respective companies' sustainability targets. We determined and scaled the factors driving the ability of soft drinks companies to boost the uptake of rPET in the production of their plastic bottles, eventually stating that those factors are the positive feed-back controllers of the multi - directional communication between industry, governments and consumers (European Commission, 2018).

An array of unintended consequences of the Directive enforcement with relevant impact on packaging functionalities, environment and society has been scrutinized, as well. We took a glance over the way such consequences will affect the balance between the demand and supply of rPET in the EU (De Wilde, et al., 2013); in the proposed multi - directional model, unintended consequences act as the negative feed-back controllers of the communication process between industry, governments and consumers.

In order to design a communication model aiming to promptly and properly ensure the communication among all the parties involved in the eco - innovation of the soft drinks packaging, we mapped all the stakeholders and listed their partnership and engagement capabilities. We emphasized their particular

interests, their means of communication in accordance with their strategic goals, we draw the information flows and identified the feed – back recording mechanism. Eventually, we integrated all data into a multi – directional model, designed to communicate the eco – innovation between the key soft drinks supply chain players, buildable and expandable according to each country’s specific.

Results

The Internal Market is key for the Union’s global trading advantages and for the progress towards the Circular Economy goals. Soft drinks producers, consumers and governments have now the option to work and communicate together in a harmonized manner, ensuring the access to and the adoption of rPET technologies in the production of plastic bottles, thus turning a legal compliance matter into a public communication opportunity of the eco – innovation over the soft drinks supply chain.

1. Proposing the Key Public Messages Related to the rPET Technology Adoption

The enforcement of the provisions of SUP Directive with the goal of limiting the consumption of plastic bottles obtained from virgin PET gives concerns for the soft drinks industry; we hereby treated those concerns as threats; however, the European legislative frame is equally rich in resources for reaching the balance between business and environmental interests, so that the nations of the Union to continue to benefit from the variety of goods offered by the European food and drinks industry. we are hereby treating those resources as opportunities.

In terms of the public communication (Table no. 1), the above-mentioned threats and opportunities materialize in possible key messages with a positive or a negative feed-back effect over the process of virgin PET replacement in the plastic bottles with rPET:

Table no. 1. Key messages accompanying the rPET technology adoption by the soft drinks producers

Positive key messages	Negative key messages
The Internal Market is key for the Union’s global trading advantages and for the progress of the Circular Economy goals	Any threat on the Internal Market would have a negative effect on new investments and eco - innovation, meaning less business and jobs in Europe
The nations of the Union benefit from the variety of goods offered by the European food and drinks industry	The freedom of choice will be altered if Member States adopt unilateral implementation acts on the rPET bottles
The foodstuffs and the drinks on the European market are packaged in the same way	The free movement of the goods will be altered if Member States adopt unilateral implementation acts on the rPET bottles
Member States can derogate in order to restrict, for example, the placing of virgin PET bottles on the market	The Internal Market could be additionally altered by the derogations for virgin PET bottles enforced by some of the Member States
Smaller Member States could easily stop production of virgin PET bottles for which they have adopted restrictions	Consumers will pay the costs for altering the progress to a Circular Economy
The new production technologies allow to obtain rPET bottles that are fully compliant with EU FCM requirements	There is room for diverse interpretation of the EU norms with regard to plastic definition, leading to divergent implementation acts and norms adopted by Member States

Source: original contribution

2. Identifying the Feed-back Controllers of the Public Communication Process

Since its launch in January 2018, the Pledging Campaign launched by the Commission enrolled, among others, the key players of the European soft drinks industry, that have individually replayed to the call with voluntary commitments with regard to the recycled content for plastics packaging (Table 2). In

the proposed model, corporate voluntary commitments play the role of the positive feedback controllers, as they tend to activate those vectors between the supply chain partners that communicate engagement and focus on those areas where the soft drinks producers can make a difference.

The number and the consistency of the submitted commitments of the soft drinks supply chain indicate, on medium term, the option of the producers for circularity of the packaging, rPET included; however, certain framework conditions should have been in place prior to the adoption of the mandatory rPET content by the EU legislation, so that the soft drinks industry to secure access to sufficient quantities of food-grade recycled polyethylene terephthalate. Those framework conditions play the role of the negative feedback controllers over the communication process between stakeholders, as they tend to disengage the producers to adopt an increased rPET content in the soft drinks bottles, hence giving little substance for the multi – directional communication and leaving room for doubts, from the consumers perspective, with respect to industry’s real commitment to meet the targets imposed by the legislation or individually pledged.

Table no. 2. Feed-back controllers of the public communication process of the voluntary pledges for boosting the uptake of rPET in soft drinks bottling industry

Company	Positive feed-back controllers	Negative feed-back controllers
Coca Cola	“min. 50% rPET in soft drinks plastic bottles”	“100% of the raw materials to come from sustainable sources by 2020”
Danone	“phase 1: min. 25% of recycled content for PET phase 2: 33% of recycled content for PET”	“EU <i>End of Waste</i> criteria to stimulate secondary raw materials (SRM) markets; domestic markets to allow rPet”
Evian	“100% recycled content for PET bottles”	“pioneering partnerships to redesign its packaging, accelerate recycling initiatives and zero plastic bottle waste”
Ferrero	“10% increase of recycled plastic”	“a common and agreed approach to bioplastics along their life cycle”
Nestle	“25% recycled content for PET bottles in Europe”	n.a.
Pepsico	“increase use of recycled content in plastics”	“access to secondary raw materials required”
Mars	“utilise recycled content in plastic packaging”	“wherever possible and legal”
Mondelez	‘seeks to use recycled materials’	“where practicable, subject to food safety constraints”
Tetra Pak	“100% of all packages to be made from responsibly sourced, renewable materials”	“incentivise renewables to stimulate investment and production of bio-based plastics in Europe”
Unilever	“min. 25% recycled plastic content in packaging”	n.a.

Source: adaptation from Ilie and Jurconi, 2019

3. Mapping the Stakeholders of the rPET Adoption Public Communication Process

A distinctive number of entities (governments, political organizations and structures, EU and national regulatory bodies, business and consumers associations, individuals) could give leverage to the public

communication process of rPET adoption into the plastic bottles for the soft drinks, as shown in the Figure 1.

The European Institution have already delivered, as they have taken all the procedural and legislative steps to ensure the adoption of the Directive EC 904/2019, whose provisions have become mandatory for all soft drinks supply chain players since June, 2019.

The Presidency of the EU Commission and their key officials (state counselors, political advisors, chief of staff, head of intelligence, head of communication & protocol), as the top European administrative authority, could adapt legislative agenda, including the one referring to the rPET, upon their political priorities.

The Governments of the Member States: PM and the involved Ministers (Foreign & European Affairs, Environment, Economy, Finance), their key staff members (personal advisors, State Secretaries, GDs, national experts to the Council preparatory bodies) play an active role in transposing political priorities in public actions.

The Permanent Representation Offices of the Member States to the EU include high ranking diplomats (the Ambassador, his Deputy, COREPER coordinators, media relations officers) and operatives involved in supporting the political liaisons with the dossiers managers and public event organizers in Brussels and Luxembourg.

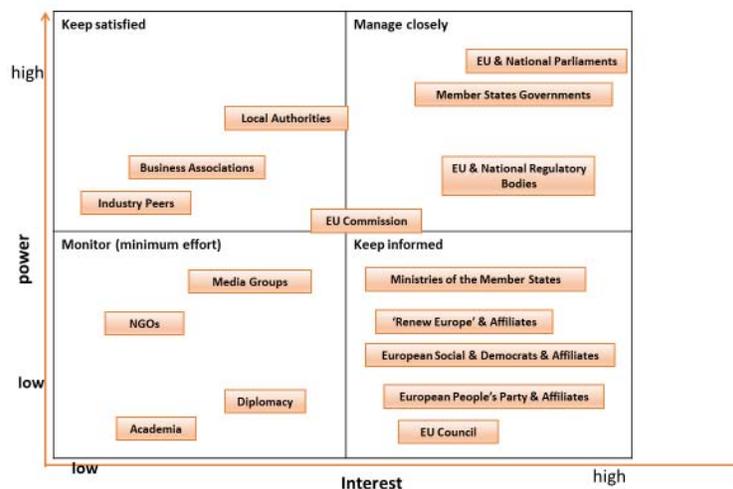


Figure 1: Stakeholders mapping of the public communication process of the rPET adoption in the soft drinks plastic bottles

source: original contribution

The Members of the European Parliament play key roles in Committees impacting the packaging and packaging waste dossiers, as the Environment, Public Health and Food Safety Committee.

The EU consultative structures of the Member States call for the national delegations' members within the European and Social Committee and the European Committee of Regions.

The Parliaments of the Member States, their leadership and the key members (political parties and political groups leaders, chairmen of Committees) usually supply key technical experts on environment matters.

The Local Authorities, consisting of local Governors and Mayors and their Councils members, do subordinate institutions whose tasks are to secure the law enforcement at any level.

The organizations for intra – communitarian development are flourishing across EU, because of their roles in the institutional team up for the packaging waste management at a local level.

The industry peers - packaging and packed goods industry horizontal suppliers and clients or waste recycling – are equally interested in the rPET case management, as are the national and European business and professional associations and the trade chambers.

The international and local media groups bring knowledge and provide distribution of the communication model.

The NGOs, the influencers & the academia are people whose civic attitude, scientific curricula and communication aptitudes qualify them as legitimate communication vectors of both consumers’ and industry’s interest.

4. Phasing - in a Multi – Directional Public Communication Model for the rPET Adoption

The objective is to enroll the stakeholders identified previously in a communication model aiming to safeguard the adoption of the rPET in the soft drinks bottles production. In order to acquire the above, we recommended the following tactical steps:

- *Phase A - the preparations:*
 - contacting and establishing relations with mapped stakeholders
 - aligning agenda, initiating and holding meetings
 - explaining responsibilities and answering all questions
- *Phase B - the alignment:*
 - exchanging technical information and proposing solutions
 - identifying and negotiating divergences
- *Phase C - the bond:*
 - building the mutual friends, enemies and neutrals list
 - enlarging the circle of trust by constantly referring others
 - organizing and attending together public events
- *Phase D - the commitment:*
 - committing mutual financial, logistic and public image resources
 - consolidating and communicating every positive outcome to the audience

The main challenge of the Phases A to D is to secure a sustainable action & communication protocol between all stakeholders, that would be affected neither by political or administrative changes, nor by replacements in stakeholders’ leadership.

5. Assessing the Engagement Capabilities of the rPET Stakeholders

We determined that the engagement capabilities of each category of stakeholders is specific to their interest to contribute to the proposed communication model, as following:

- *Governments:* usually, the leadership reacts mainly to political and public pressure therefore is unable to enroll in changes of substance affecting their short term objectives; yet, there is a question of national reputation to deliver proper results during their mandate; hence a certain interests of being educated on the rPET packaging files could be detected; governments are the main partners for modelling the public communication on rPET adoption;
- *Politicians:* interested to enroll in projects of worth for their political plans and to become the champions of the change; high capability to convey messages thanks to their huge public exposure; great opportunity to team up in the light of any political elections; main partners for drafting bills affecting current legislation or generating new pieces;
- *Industry, peers & their organizations:* long term commitment to achieve business goals; able to shift massive financial, technical and logistic resources in order to engage and to deliver technical solutions, to enroll into partnerships; enjoys trained capabilities able to legitimately communicate their objectives and to originate public influence;

- *NGOs*: never-ending environmental activism capabilities; strong implementation partner using a mix of volunteering, national presence and solid logistic; main partner for large groups facilitation & coalition building;
- *Media groups*: the referee of the democratic game, media will sanction the faults and will award the accomplishments of all the other stakeholders; main partner for online & offline communication;
- *Think tanks & academia*: the quality influencers are the main partners for endorsing the technical, social, business, educational and financial aspects of the concept of packaging & package waste selective collection in general, and of the rPET, in particular.

Discussion

A. On the Nine Key Framework Conditions for the Voluntary Pledges on the rPET Content

The capability of the soft drinks producers to incorporate increased quantities of rPET in their bottles is determined by an array of factors, out of which just few are controllable within the supply chain. In previous works we selected and explained the influence of the nine key framework conditions modulating producers' propensity to adopt disruptive rPET technologies (Ilie and Jurconi, 2019):

1. "Safeguarding the Internal Market
2. Plastics Tax Abolition
3. Net Packaging Cost
4. Essential Requirements & Eco-modulation Consistency
5. Secondary Raw Materials Availability
6. Secondary Raw Materials Quality
7. Definition of Recycling
8. R&D Support
9. Food Contact Materials Approval Process"

We explained that these nine conditions had to be fulfilled before enrolling in any voluntary or mandatory requirements of rPET content. Their absence tends to disengage the producers to adopt an increased rPET content in the soft drinks bottles, that gives them the attribute of negative feed-back controllers within the public communication process between stakeholders.

B. On the Six Potential Unintended Consequences of a Mandatory rPET Content Target

Even though the manufacturers would like to adopt more rPET in their production process, the beverages industry has raised concerns with regard to the quantitative and qualitative availability of secondary raw materials in the need to meet the targets provided by SUP Directive. In previous works we explained that a potential mandatory requirement of rPET will disturb the market balance between the offer and the demand of recycled materials in the EU, generating the following six potential unintended consequences (Ilie and Jurconi, 2019):

1. "Prices augmentation
2. Internal Market distortions
3. Free movement of goods limitations
4. Illegal/undesirable materials
5. Blurred traceability
6. Confusions between primary and secondary materials"

We explained also how the above mentioned six unintended consequences would affect the functional properties of the packaging, but also the consumers and the environment, eventually, raising a big question mark with regard to the efficiency of any multi directional public communication process regarding the rPET adoption into the soft drinks plastic bottles at all (Ilie and Jurconi, 2019).

Conclusions

There is little public data on how to build and execute a public communication plan and even less on how to design one to communicate the eco-innovation. While googling communicating disruption, the circle of knowledge shrinks again, as there is just one reference available on the net, provided by a historical debate hosted in 2016 by Weber Shandwick, a global PR firm, on the matter of disruption theory (Weber Shandwick, 2016). Therefore, we are advancing the theoretical model herewith described, with the humble ambition of setting the ground for further debates on how, who, when, where and why to communicate the innovation, and, primarily important, to whom (Xiong, et al., 2020).

The authors opinion is that a void still exists between public and governments when it comes to communicate disruption, in general, and disruptive technologies, in particular; the industry may play a critical role in feeding the needed information to the other stakeholders in a transparent and constant way.

In our endeavor, we applied the method of a strategic communication model designed to originate public debates to the highest European level on harmonizing the environmental and economic interests, so the nations of the Union to benefit from the variety of goods offered by the European food and drinks industry.

The goal was to run a simulation of enrolling the interested parties in a communication plan aiming to safeguard the principles of the Internal Market with regard to European consumers' freedom of choice and to the free movement of the goods, in respect to Union's global trading advantages and for the progress towards the Circular Economy goals, using the rPET bottle transformation as the process trigger.

The chosen name for model is multi – directional, to emphasize its advantages in the engagement process, while running the information exchange between the identified stakeholders.

The language employed was EU institutions' idiom specific, addressing the issue of the eco -innovation in a highly sophisticated manner, combining technical and academia speech with political messaging (Tohănean, et al., 2020).

The scent is given by blending the words disruption with communication, thus projecting a respectful image of sobriety and conservatism of both our key terms.

The wow factor is the designed partnership between industry, governments, EU consumers and key circularity thinkers and doers from around the world, with proven expertise in recommending adoption strategies for disruptive technologies, as the rPET packaging.

The outcome of the implementation of the designed communication model is to strongly call on EU policy-makers to ensure the safeguard of the Internal Market for packaging and packed products and avoid fragmentation caused by national restrictions, using rPET as a case study.

The model is scalable and expandable in order to be adapted to the specific of the communication needs of any groups of stakeholders, so that all supply chain players to have it at hand while building their public affairs workplans on sustainable food packaging.

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The Pillars of Convergence to Economic Justice in EU Countries as a Support of Sustainable Business and Consumption

Adina Titei¹, Daniela Serban² and Silvia-Elena Cristache³

¹⁾ *Ovidius University of Constanta, Constanta, Romania*

²⁾³⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: adinatitei@yahoo.com; E-mail: danielaserban2002@yahoo.com;

E-mail: csilvia2005@yahoo.com

Please cite this paper as:

Titei, A., Serban, D., Cristache S.E, 2021. The Pillars of Convergence to Economic Justice in EU Countries as a Support of Sustainable Business and Consumption In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 690-697 DOI: 10.24818/BASIQ/2021/07/088

Abstract

The current study is stressing the issue of economic justice within the EU-27 countries, using multidimensional perspective, starting from the premise that the purpose of the economic justice is general welfare of all individuals, no matter the age and the country. Respecting the unitary presentation of both theoretical and empirical analysis, pillars of the economic justice convergence have been identified and characterized. As a consequence, socio-economic macroeconomic measure has been analysed in order to characterise the current level of economic justice in the European countries. The present study can help guiding public policies towards achieving a state of equilibrium for economic and social equity, in accordance with the principles of sustainability. Descriptive statistical methods used to compare the European national economies and the transversal analysis of the data offered a photography of the current situation of the economic justice within the EU countries. If for some indicators, a part of the countries is placed on the first places of a possible hierarchy, the same countries were founded to be placed on the last places, from another indicators point of view. In order to have complete and comparable information, the data to be analysed were normalised using the min-max method. Aggregated indicators allowed the final hierarchy to establish which EU countries are the closed to the convergence towards the economic justice.

As a major conclusion, it is presented that the EU countries can offer to the EU citizens equal chances to welfare and equal access to resources, extremely important during the pandemics for both businesses and consumers. Reducing the inequalities and social injustice actions represents the new status of the economic order interaction with the social order in order to reach the final purpose, the achievement of a sustainable fair and better world.

Keywords: Economic justice, social justice, equal opportunities, European Union.

DOI: 10.24818/BASIQ/2021/07/088

Introduction

The problem of justice is an ancient problem of humanity, but the economic justice concept in correlation with social justice is a relatively new concept, which is developed in the context of the expansion of the free market and the increase of life quality. Also, this concept is closely related with human rights, the respect for human dignity, the equitable distribution of goods within the society and the increase of life quality (*Social Justice in an Open World*, 2006).

Economic justice represents a subjective concept based on ethics and logical thinking with a strong philosophical background. Its essence represents the welfare of all individuals, groups and nations within the current national and international context. The first condition needed to achieve the equilibrium state of economic justice is respecting the principle of equal chances.

Studying the well-being from a triple perspective: economic, ethic and philosophic, Sen proposes an equitable distribution of incomes, but not an equalitarian one. Profit must be obtained using moral actions, it must be the result of honest work (Sen, 2009). Some discussions about social and economic justice inevitably involve the demand that the government is able to distribute the goods obtained with other people's efforts. For this action, the state should not use "the force", but some rational measures and it participates to production and to voluntary exchanges (O'Neill, 2011).

The current research is describing the pillars to reach the state of economic justice, by describing the level of a set of social and macroeconomic indicators characterizing the concepts and the level reached by EU countries, taking into account the cohesion between the social and the economic domains in Europe. The definition of the economic justice starts from the values defining the concept and continues with the policies used to promote these values within the EU countries.

Economic Justice – from philosophy to action

The issue of economic justice has different approaches, from philosophical one to moral, economic and legal research approaches. The concept was initially defined by political and law sciences, but finds its place within the business sciences through the economic and business solutions used to reach this state of justice for all citizens. Economic justice concept started to be presented by the Antiquity philosophers. Plato presents the extreme richness and the extreme poverty as dangers for the society. Aristotle is developing Plato philosophy, being concerned with just prices and the way the antique market is formed.

The economic thinking was influenced by the religious thinking during the medieval period, considering the personal work as the unique source of welfare, whose benefits needing to be shared with your closest ones, promoting distributive justice upon the principles of sharing the revenues obtained from goods and services exchange actions (Popescu, 2004).

Within our time, the concept of economic justice is defined as going along with the concept of human development. Currently, the business theory, does not mention the purpose of reaching the economic justice, treating the finality of the business as a matter of profit gain and financial efficiency. Fortunately, there is a set of researchers with important contribution in the research of the economic justice as Amartya Sen, Kenneth Arrow, Serge-Christophe Kolm, A.B. Atkinson and John E. Romer, to name just a part of those who have been proven that not only material resources are essential to perfecting the human development, but also social, ethics, political and cultural aspect are highly influencing the society and human development. Amartya Sen, economist and philosopher, is judging on the same level the concepts of justice, liberty and equity, suggesting that the important issue to find appropriate solution to register important progress to reduce injustice, versus finding the precise definition of the social justice (Sen, 2006, 2009). John Rawls has showed an interest in researching the economic justice, supporting the idea that „justice does not allow for the advantages of the majority to be occurring with the sacrifice of a minority”, considering a tolerable injustice action only if it is necessary in order to avoid a bigger unjust situation (Rawls, 2011). There is a convergence between sustainable development and human development, driving to the idea that the objectives of the sustainable and human development are convergent with the pillars of the economic justice. Therefore, the achievement of the proposed goals in *The 2030 Agenda for Sustainable Development*, adopted by all United Nations Member States in 2015, aimed to contribute to the progress of economic justice, in order to ensure a new environment, appropriate for people so that they may recover their creative potential and also to build their existence according to their needs and interest, as per their free-will. All this is possible only within an economic frame respecting the human rights and the increase of the self-respect and of the respect toward your fellow citizens.

All previous objectives of economic justice represent arguments to choose to empirically the convergence pillars ensuring the achievement of the economic justice within the EU countries.

Methodology of research

Three pillars were taken into account in order to characterize the convergence toward economic justice within EU nowadays. Each pillar can be characterized by one or more indicators. The criteria used to choose the macroeconomic indicators to characterize the process of convergence toward the economic justice were: the capacity to identify and characterize the essence of economic justice, the easiness of interpretation, the statistical robustness, the potential to measure the performance in implementing economic justice, assuring comparability of the indicators and data accessibility.

The main research method is descriptive, with the finality of a hierarchy produced between the EU countries, according to the level of the indicators defining the economic justice. Those indicators were normalized using the min-max method, were aggregated and the communality among the EU countries was identified at the EU level.

Case Study Frame

Welfare was measured only from the economic point of view for a long period disregarding other aspects as the lack of institutional trust, the decline of the environment, giving up the traditional values, the increase of unemployment and the social, economic and geopolitical crisis. As a result, the EU economic justice level is characterized by analysing the economic and social policy, respecting the principles of business ethics and traditional moral.

The following pillars of the economic justice were taken into account: using more resources so that to overlap the degree of poverty in the population, ensuring revenues through equal access to those resources and achieving equity among generations

The first pillar is referring to indicators measuring the poverty among children as a main indicator to show the health and the macroeconomic wellness. UN agenda for the next 15 years comprises clear objectives to reduce the poverty of children as a major element for reducing the general poverty level and to promote social inclusion on a range of time till 2030. Boushley discovered that inadequate parents' revenues are affecting the wellness of children, determining the impossibility to prevent diseases, malnutrition, juvenile delinquency or the lack of school performance (Boushey, et al., 2001). Duncan founded that the children with risk for poverty have a double chance for school abandon or second examination for an academic year. Those high chances are even higher for children out of wedlock, abused and neglected children (Duncan, 2000). To characterize the resources needed to cross over the poverty level was the rate of relative poverty for children. Relative poverty appears when the dwelling revenues are smaller than 50% out of the national median revenue. The indicator is showing the percentage of children in such families, a situation restricting the access to material resources needed for a proper health and education.

The second pillar of economic justice is the free and equal access to resources through adequate revenues. Excessive inequality of the revenues distribution represents a restriction for the economic justice. To characterize this issue, the S80/S20 ratio is used, the ratio between the superior and the inferior quintiles of the revenues inequality. The ratio is showing how many times are the wealthy persons' revenues bigger than the revenues of the poor persons. Additionally, the wellness of adults and its distribution was taken into account. The initial hypothesis of research is that the unequal access to resources will increase while the initial resources are scarce (Hesmati, 2010; Williamson, 2002; Verhoogen, 2008). Cultural differences and investments in education are affecting and determining the inequality of revenues distribution more than biological differences (Becker, 1997). Becker explains that education is determining the decline of the revenues inequality, respecting the main principle of economic justice, the equal access to education.

The third pillar of economic justice is the achievement of equity among generations, measured with the indicator *public debt/child*, an indicator difficult to support by younger generations if it is at a high level. One American nation's parent, Thomas Jefferson, was promoting the idea that the current debts are to be paid by the same generation. Another parent founder, James Madison, is going further and considered that the public debts transfer to the next generations is just only to the extent when the benefits are also transferred (Wolf, 2008). The level of public debts/child is used to measure the level

of equity between generations. A high level of the current public debts will determine the consumption reduction not only for the current generation but also for the further coming generations. As a consequence, a child will be affected by poverty during the childhood and also at the age of maturity, when the previous debts are still to be paid.

Case Study Results. European hierarchy

Hierarchy of EU countries was produced in order to find out in which countries the current level of economic justice is higher.

Analysing the relative poverty rate for children in Figure no. 1 for 2019, the highest level of poverty is registered for the Romanian children with a level 24,5%, followed by the Bulgarian children, with a level of 22,3%, Spanish children for which the level is 18,8% and Italian children with a rate of 17.9%. The best situation is for the Northern EU countries, Finland and Denmark with the smallest rates, bellow 5%.

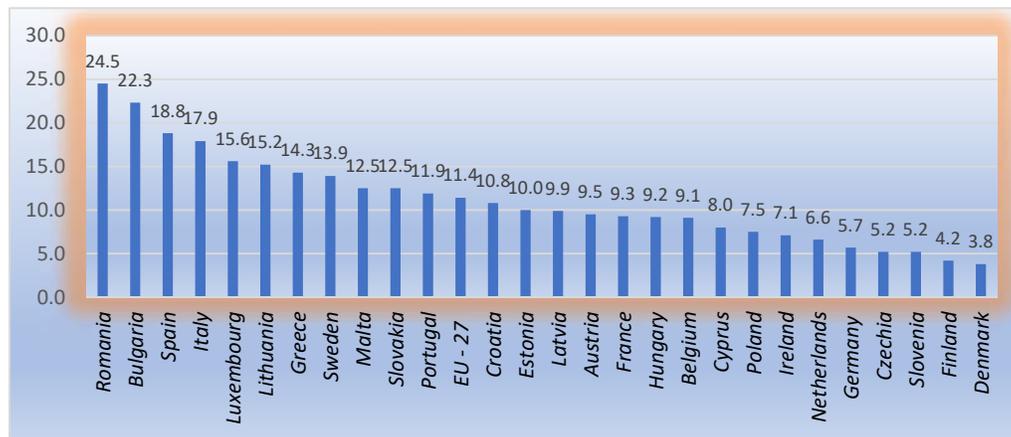


Figure no. 1. Children at risk of poverty (cut-off point: 50% of median equivalised income) % of population age less than 18 years, 2019

Source: Eurostat, ilc_li02

Table no. 1 shows the average of the relative poverty rates for children for the EU countries in 2019, being 11.13% with a range of 20.7% between the rate for Romania (the highest poverty rate for children) and the rate for Denmark. The highest level of inequality is founded firstly in Bulgaria, followed by Romania, Latvia and Lithuania on the fourth place. The average of revenues inequalities has the level of 4.7, meaning that on average, the income of the richest persons are 4.7 times bigger than the revenues of the poor persons. This ratio range is 4.7 between Bulgaria (the highest inequality) and The Czech Republic (the smallest inequality), as per Figure no. 2.

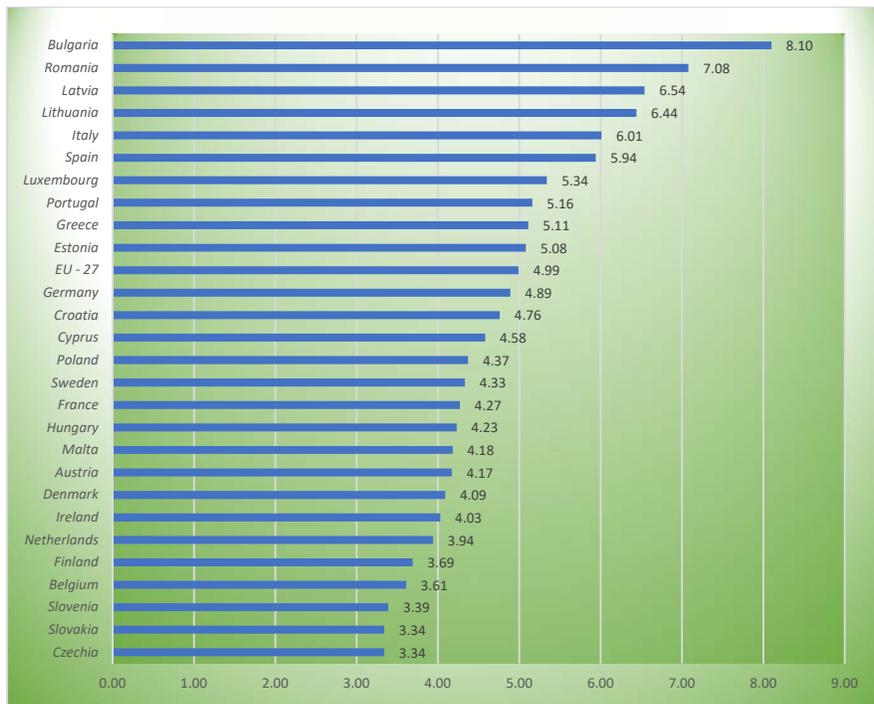


Figure no. 2. Income quintile share ratio S80/S20 for disposable income in EU Countries in 2019

Source: Eurostat Database, *ilc_d11*

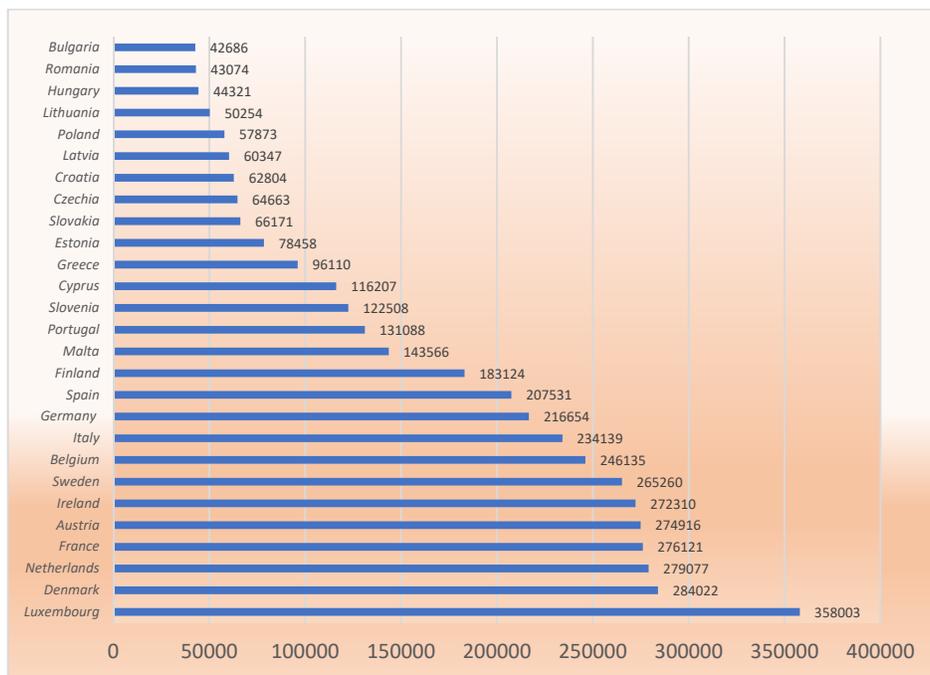


Figure no. 3. Wealth per adult in EU Countries in 2019 (USD)

Source: Global Wealth Databook 2019, edited by Credit Suisse Private Banking & Wealth Management, Research Institute, Switzerland

Average wealth per adult was used to measure the wealth, expressed in current USD/adult. In Figure no.3, we found that the highest level of wealth per adult is characterizing Luxembourg with a value of 358003 USD/adult, followed by Denmark with 284022 USD/adult, and Netherlands and France. The lowest values stand for Bulgaria, Romania and Hungary with values less than 50000 USD/adult. The average wealth value is 158423 USD for a typical EU-27 country, and the range of the measure is of 315317 USD.

Table no. 1 Descriptive statistics for the analysed series (EU Countries, 2019)

Results	Children of risk of poverty (%)	Income quintile share ratio S80/S20 for disposable income	Wealth per adult in EU Countries in 2019 (USD)	Government debt/child (age 0-14) (\$)
Mean	11.13	4.70	158423	141936
Standard Error	1.03	0.19	19011	18642
Median	9.90	4.37	131088	117165
Mode	12.50	3.34	-	-
Standard Deviation	5.35	1.01	98785	96868
Sample Variance	28.65	1.02	9758558798	9383417335
Kurtosis	0.37	-0.08	-1.35	-0.43
Skewness	0.86	0.74	0.34	0.61
Range	20.70	3.74	315317	358850
Minimum	3.80	3.34	42686	10788
Maximum	24.50	7.08	358003	369638

Source: Own calculation

Concerning the public debt per child, in Figure no. 4 we can stress that Italy has the highest level with an average debt of 369638USD/child, approximately 36 times bigger than the smallest registered level of 10788USD/child for Estonia. For this measure, Romania has a level of 29099 USD/child, registering a low level of this indicator. High values are also characterizing Belgium.

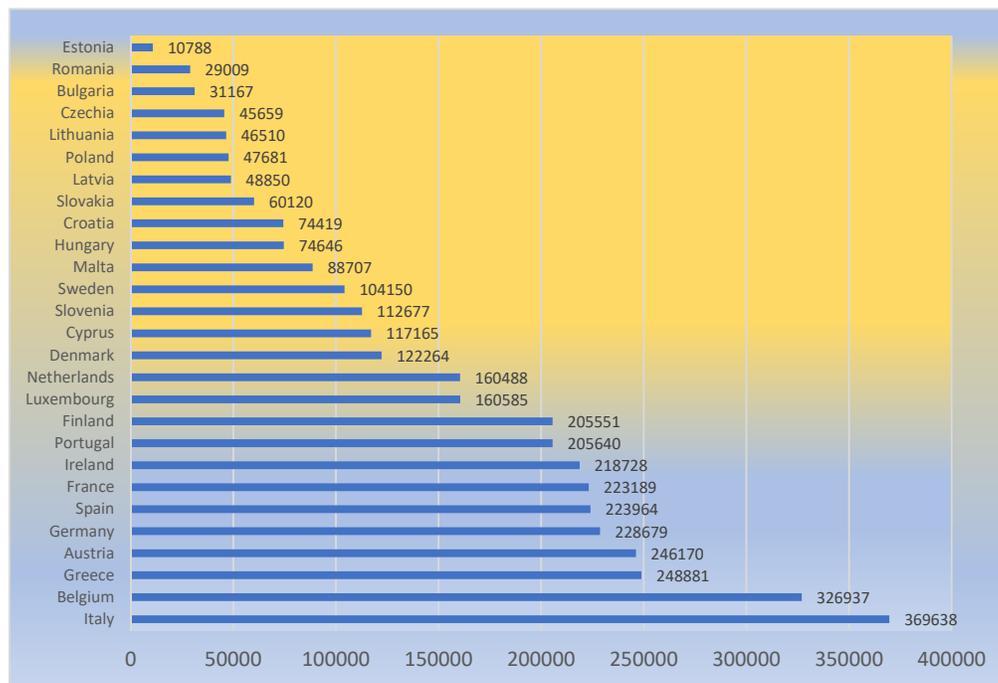


Figure no. 4. Government debt/child (age 0-14) (\$) in EU Countries in 2019

Source: For Government Debt <https://countryeconomy.com>, for Population Age 0-14 www.worldbank.org

The average debt/child calculated for EU- 27 countries has the value of 141936 USD/child, and the range of variation between Italy and Estonia’s levels is of 358850USD/child.

The comparative analysis is placing Romania on first places with low debt/child and last places with high values of the relative poverty rate for children as well as for the revenues inequality S80/S20.

Further, we used the min-max normalization technique for the previous indicators, with the intention to insure an overview of economic justice pillars at the EU level. The normalised indicators maintain the original hierarchy of values, while transforming all these scores into a common interval [0;1].

After normalizing the indicators and the additive aggregation we can have an overall image of the EU countries hierarchy concerning the convergence toward the economic justice. The results of min-max normalizing method show that Denmark and Netherland are characterized by values over 3 units, being placed on the first places. On the last 3 places we founded Italy, Romania and Bulgaria.

Table no. 2. Values of the aggregated normalized indicators for EU Countries in 2019

Countries		The Values		Countries		The Values	
1	Denmark	3.30	15	Cyprus	2.47		
2	Netherlands	3.07	16	Belgium	2.45		
3	Czechia	2.90	17	Estonia	2.45		
4	Slovenia	2.89	18	Hungary	2.38		
5	Ireland	2.84	19	Croatia	2.25		
6	Finland	2.81	20	Latvia	1.98		
7	Sweden	2.75	21	Portugal	1.96		
8	France	2.69	22	Lithuania	1.72		
9	Austria	2.63	23	Spain	1.66		
10	Luxembourg	2.59	24	Greece	1.63		
11	Poland	2.55	25	Italy	1.37		
12	Germany	2.53	26	Romania	1.16		
13	Slovakia	2.52	27	Bulgaria	1.05		
14	Malta	2.51					

Source: Own calculation, using the previous indicators analysed

Conclusions and discussions

In the opinion of the authors, investment in education is one of the most important factors for reducing relative poverty, for all and especially for children. Also, increasing the level of education can help to reduce income inequality and provide more wealth for entire world population. On the same note, GDP per capita growth, lower stress of government debt per child and an efficient investment in education are the primary conditions for convergence towards economic justice, for increasing life expectation, for an equity life for us and for our descendants.

The study can continue by extending the sample of countries, analysing the issue of economic justice into OECD countries. Also, a further research can investigate the econometrical aspects of the correlations between the economic justice, the human development and the economic freedom, in order to establish the way these stochastic correlation is influencing the opportunities for each citizen for a dignify and more productive life.

Day to day reality of EU countries shows that the member states are hardly trying to reach their European objectives to promote sustainable development and human development in the same time with obtaining the decline of the poverty and increase of welfare, reducing economic inequalities, and offering equal chances for the human development of all citizens. Some states are already following the path of convergence toward the economic justice and equal economic chances of the current and next generations. They should be an example to be followed by the states which are behind and are still far away from the economic justice. Public policies applied by governments should reduce the economic and social problems generated by inequity and inequality. The challenge is representing by concrete actions into an Europe with increasing interdependencies.

Acknowledgement

This work was supported by the project “Excellence academic routes in the doctoral and postdoctoral research – READ” co-funded from the European Social Fund through the Development of Human Resources Operational Programme 2007-2013, contract no. POSDRU/159/1.5/S/137926.

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Globalization of Airport Management Groups

Sorin Eugen Zaharia¹, Casandra Venera Pietreanu², Adina Petruta Pavel³ and Ruxandra Elena Boc⁴

¹⁾²⁾³⁾⁴⁾ Politehnica University of Bucharest, Bucharest, Romania

E-mail: sorin.zaharia@gmail.com; E-mail: casandra.pietreanu@yahoo.com

E-mail: adinappavel@gmail.com; E-mail: ruxandra.elena.boc@gmail.com

Please cite this paper as:

Zaharia, S.E., Pietreanu, C.V., Pavel, A.P. and Boc, R.E., 2021. Globalization of Airport Management Groups. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 698-704

DOI: 10.24818/BASIQ/2021/07/089

Abstract

The Airports have a significant role in boosting the economic activity of one region. Thus, the quality of airport policies, infrastructure, facilities, multi-modal link development or quality assurance and customer satisfaction are reflected in key performance/economic indicators. In this regard, the consortiums responsible for airport competitive management that have evolved progressively for the last 30 years, but especially since 2010, show sustainable business involvement and support local economies. In order to provide a thorough examination of the leading airport investors, an analysis on their evolution, specificity and major contributions is performed, highlighting their commitment on the social, economic and environmental priorities.

The paper presents the ownership, organization, innovative strategies and programs, investments and global activities of airport management companies, impacting the development of airports. The authors study not simple financial investors, but managing groups showing responsible business commitment. However, financial results support the analysis and reflect the development of global airport operators indicating their strengths and weaknesses, but also highlighting the threat of economic/sanitary crisis. By collecting data from multiple airport organizations or groups, but also from academic sources, the authors analyze the opportunities offered by airport top investors, taking a look in their business philosophy for cultivating innovative market oriented solutions or brand development strategies. This way, the realities and perspectives of modern airport management are reflected.

Keywords: Airport globalization, brand development, competitiveness, internationalization, ownership, privatization.

DOI: 10.24818/BASIQ/2021/07/089

Introduction

The gradual liberalization of air transport profoundly impacted the market structure, airline strategies, but also airport operational models. Jarach (2001) indicated that the airport business proved proactive, capable of serving various demands and showing a marketing-driven approach. Pitt, van Werven and Price (2011) showed that in order to be a major player, airports need to focus on capacity, the development of low-cost carriers and privatization. Outlining the importance of airline-airport relationship, the airports become rivals in their will to attract air carriers which can drive business development (Zaharia, et al. (a), 2020).

After 34 years from the beginnings of airport privatization (Graham, 2020), studies indicate this is a measure of ensuring airport success. In 2016, 41% of European airports had private shareholders (Sadler, 2016) and in 2018, this was the case for more than half of the airports, doubling the number

from 2010 (ACI, 2018), (Future Travel Experience, 2018). Thus, the difference between individual operators and managing groups lies in the amount and variety of resources (human, financial, technological, etc.) that have the power to increase profit, the quality of the services and adaptability. This phenomenon is widely represented in all continents, transforming airport management groups into global ones. The international expertise of the investors was capable of shifting the airport industry from a national to a global one (Forsyth, et al., 2011).

Following airport investors expanding plans, seeking business opportunities in international markets reflects in growing the connection between states. In this sense, the relation between globalization and tourism is improved by the increase in passenger mobility.

Methodology

Using qualitative and quantitative analysis, and mainly a review of secondary data, the authors study how the changes in airport management have introduced essential alterations in the aviation industry, and analyze competitive airport business models developed in the last ten years, revealing the specificity of airport private investors. The financial results evolution support the analysis and give indications on development opportunities and investment criteria prospects/expanding plans.

After the examination of documentary information from multiple academic sources citing aeronautical associations and regulators like International Air Transport Association (IATA) or International Civil Aviation Organization (ICAO), but also from airports and airport organizations such as Airports Council International (ACI), results regarding airport management targets will be quantified by the instrumentality of achieved goals analysis and expected performance defined in the mission statement of the airport groups.

The global airport investors are analyzed considering different criteria. First, the characteristics of the 6 major global investors are displayed, then the analysis will be narrowed to the European level and the target group of the analysis will contain key management groups/operators from 6 countries (France, Germany, Spain, Switzerland, Netherlands and Italy). For each of the countries, the investors with most performances are analyzed in terms of their values, goals and results.

Analysis of leading airport investors

The development of specialized airport management groups has a long tradition (Figure no. 2), but many of the groups can be considered simple financial investors. The success of a global airport consortium (Table no. 1), however, seems to be determined by a holistic approach, implying not only financial involvement, but developing a management system that ensures the optimization of responsible business processes.

The distribution of the 6 top airport investors/operators (Table no. 1) places Spain's group AENA as the leading consortium with regard to the number of airports in portfolio, while Group ADP from France has penetrated most countries. In the case of Fraport AG, although penetrated a number of countries double than its competitor from Spain, serves less than half of AENA's airport number.

Table no. 1. Top global airports investors/operators by number of airports served-2019

Crt.	Airport investor	Airports	Countries	Employees	Pax (mil)	Revenue (bil €)
1.	Aena (Spain)	69	6	13,000	293.4	4.5
2.	Capital Airport Holding (China)	54	1	38,000	206	5.4
3.	Corporación América Airports (America)	52	7	6,299	84.2	1.6
4.	Vinci Airports (France)	45	12	15,000	255	48.1
5.	Fraport AG (Germany)	31	12	22,514	70.5	3.3
6.	Group ADP (France)	26	15	26,122	243.2	4.7

Source: based on data from Lioutov, 2019; Bates, 2020

Capital Airport Holding (CAH), founded in 1988, but established in 2002 in its current version, is one of the few groups representing Asia, serving just one country. However, occupies the second place in the rankings regarding the number of airports served. CAH shows a few particularities, being governed by China’s Civil Aviation Administration and providing a wide range of airport services, but also real estate or hotel/accommodation facilities. Although it isn’t among the top 6 airport investors, a good model is provided by an Asian group: Changi Airports International (CAI), representing 10 airports in 7 countries. It has time to catch up, since it was only founded in 2004. CAI’s aim as a strategic investor is to “create world-class airports worldwide”, considering them a vital part of a country, being connected to economic growth and development (CAI, 2021). CAI’s expertise is firmly outlined by the management of Changi International Airport, globally recognized as one of the best airports (CAI, 2021).

The largest private airport operator in America and the third one in global rankings also by the number of airports, was also established in 1998. It shows the smallest number of passengers served before the pandemic crisis (84.2 million pax. in 2019) and also the lowest revenue in the same year (i.e. 1.56 billion \$) (CAAP, 2021), focusing on an organic growth strategy.

Data of all airport investors (Figure no.1) indicates a decrease in all financial and non-financial indicators. For Fraport, the year 2020 ended with a reduction of 1350 employees and more than 50% reduction in its revenues. For AENA, the pandemic situation induced even more problems: in 2020 figures show a reduction of 71% in passenger traffic and the revenues reduced by half. Surely, the pandemic context has determined notable decrease in all performance indicators for all airport groups; in 2020, Group ADP only reached 39.6% of the passenger traffic from the previous year (Figure no. 1).

The other European managing groups on positions 4 to 6 (Table no. 1) have a rich history and experience, Group ADP showing 76 years seniority and Fraport 97 years (Figure no.2). Vinci Airports (established 21 years ago) climbed the charts in 2015, becoming the 5th airport operator, at that year looking after 3.5% of the global commercial traffic (Vinci Airports, 2021). Nowadays, it climbed one more position in the rankings, showing the biggest consolidated revenues (4 times higher than Capital Airport Holding and 37 times higher than the American group Corporación América Airports) and the largest number of passengers after AENA; however the Spanish group had a 9 year time before to establish its position.

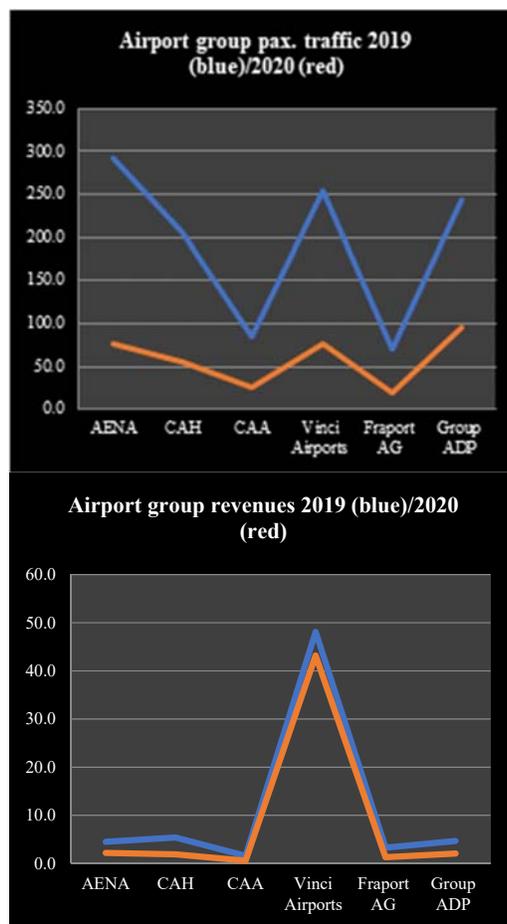


Figure no. 1. Leading airport groups revenues and traffic (2019/2020)

Source: based on data from AENA, 2021; CAH, 2021; CAA, 2021; ADP, 2021

In the light of the above mentioned, figures show that the proficiency of one airport investor pales in front of the results offered by a good team of airport service management professionals. Groups like AENA or Vinci Airports, although with a shallow experience, have proved best outcomes, offering services of the highest quality to their clients. On its website, Vinci exposes 10 reasons for joining the group, excelling in its marketing strategy, emphasizing on the benefits they are offering as a way of optimizing airport's business development.

Airport management groups – improving efficiency through responsible business commitment

Airports are enhancing international competitiveness, accelerating economic development and optimizing regional traffic layout (Chen, 2020). It is very hard for an airport group on the market for 21 years to compare with another one that has an experience of 100 years; however, as stated previously, figures show no direct connection between market experience and performance (Table 1, Figure no. 2). Likewise, the mission and vision of an airport, although may be well defined, do not assure that they will reach their goals or be competitive. Hereinafter, the performances of the rewarding European airport consortiums will be studied in terms of their values, goals and results (Table no. 2).

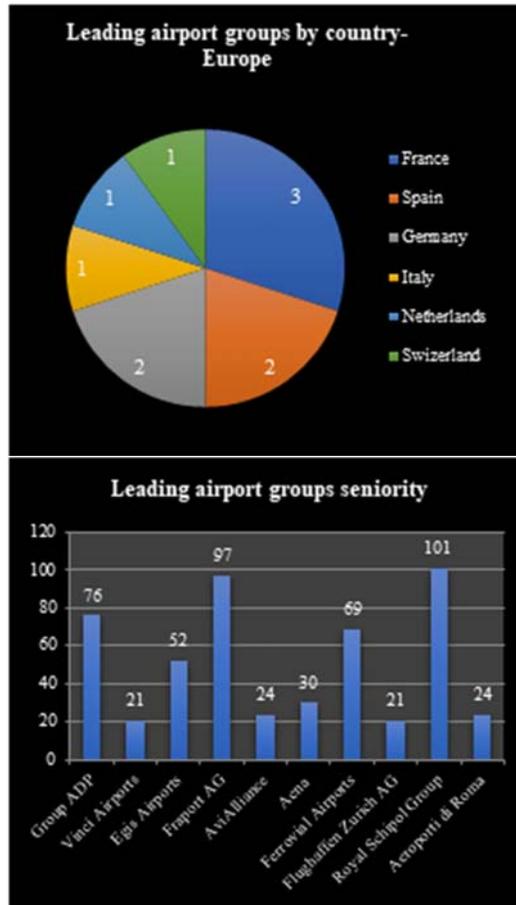


Figure no. 2. Leading European airport groups characteristics (2021)

Source: based on data from ACI, 2018; Lioutov, 2019 and Rates 2020

Table no. 2. Vision of top 10 airport investors/operators in Europe

Crt.	Country	Operator	Vision
1.	France	Group ADP	Worldwide leader in the airport industry
		Vinci Airports	Provide a true experiential journey. Committed for positive mobility
		Egis Airports	A holistic vision of airports; from preliminary planning through to operation
2.	Germany	Fraport AG	Europe's best airport operator, setting standards worldwide
		AviAlliance	Identifying potential, creating value
3.	Spain	Aena	Be a leading, benchmark company in the airport infrastructure management sector worldwide
		Ferrovial Airports	Creating value for society customers, investors and employees
4.	Switzerland	Flughafen Zurich AG	Constantly developing the airport as a high-quality travel hub
5.	Netherlands	Royal Schiphol Group	Creating the world's most sustainable, high-quality airports
6.	Italy	Aeroporti di Roma	Concentrates its commitment on the environmental, social and economic priorities

Source: based on data from the global airport groups declared vision

The world's leading airport operator by numbers of passengers - AENA, with 30 years of expertise, outlines the importance of international competitiveness, exclusively managing 47 airports in Europe

(46 in Spain and one in UK), but also having shares in other airports in America (12 in Mexico, 6 in Brazil, 2 in Colombia and 2 in Jamaica) (AENA, 2021). In other words, in 2020, AENA has fully owned and operated 67% of its airports (the largest number of airports 100% owned), while having interests in the other airports from America, Africa or the European one outside Spain. The group has 51% share in London Luton Airport, half of the shares in Cali Alfonso Bonilla Aragón and between 30-40% interests in Cartagena de Indias, Aeropuertos Mexicanos del Pacífico, etc. (Bates, 2020). Although, it seems that no one can compete with the Spanish group, it's mission aims to increase its presence as a "global aeronautical infrastructure operator" (AENA, 2021). AENA shows special attention on environmental issues, having an office specialized in assisting the enquiries on this subject and has implemented an integrated model for quality and environmental management. No wonder that it is the most performant airport consortium, since its responsible business commitment means that unlike all the other investors, it offers a special employment site, showing one more time care for people/employees.

The Spanish Ferrovial Airports, with 69 years of seniority, but only 23 in the aviation industry, does not have the same results as the rewarding group from the same country (AENA); however, it is very involved in UK's airports and bounces about being included in prestigious sustainability indexes.

On the other hand, the German operator AviAlliance doesn't fully own any of the airports managed, but has a share of up to 55.44% (e.g. in Budapest Airport), while for the other airports, data show shares less than 50% (49% in Hamburg, 40% in Athens and respectively 30% in Düsseldorf) (Bates, 2020). AviAlliance did a great job during the 20 years of operation of Athens Airport, and so did for the German Hamburg and Düsseldorf airports, turning them into "user-friendly enterprises" (AviAlliance, 2021). In the same country, Fraport AG declares it is "a global player", having 22,514 employees on 4 continents, 12 countries and 31 airports (Fraport, 2021). 27% of Fraport's activity is international business, the German group committing to environmental protection, responsibility and transparency, ethical aspects and gender equity, outlining that 31,6% of the management positions are held by women. Fraport is also committed to the principles of the UN Global Compact and supports development goals defined by the UN in its 2030 Agenda (Fraport, 2021).

From the statement of its vision, Egis Airports could have been on a higher position among the top airport managing groups. Egis considers itself creative, developing a holistic approach to airport management, concerned about operation, consulting and development (Egis Airports, 2021). For the moment, its network comprises 16 airports from 7 regions, but among its employees, only 6,100 are in operations, the other 8,750 are in engineering (Egis Airports, 2021).

Group ADP, founded in 1945 outlines an integrated managerial model, sustains collaboration with its partners and differentiates itself by the involvement in all aspects of the airport value chain (ADP, 2021) and seems to be committed to education. Focusing on the development of its employees, ADP emphasizes on future skills requirements and interdisciplinary qualifications: aviation, computing, telecommunications – as required by the evolving status of the aviation labor market. The requirements of future air transport market will generate new categories of jobs and occupations, asking for interdisciplinary qualifications in order to cope with the technological and social changes brought by Aviation 4.0 (Zaharia, et al. (b), 2020).

In the same responsible managerial manner, Vinci Airports from the same country, is keen on providing career opportunities and prospects for its employees and declares that its approach to corporate management is designed specifically for the passengers.

Just like Vinci Airports, Flughafen Zurich AG is "on the market" for 21 years, and although is not on the podium among the most prolific airport investors, it defines itself as a successful operator and outlines a strong code of conduct, ensuring the care for its 1,700 employees in all its business areas. In the same manner, one of the oldest airport groups globally - Royal Schiphol Group (Figure no. 2), emphasizes on socio-economic aspects. For the 71.7 mil passengers transported in 2019, the investor sets aspirational goals through its "Vision 2050", assuring the continuous improvement of the fundamental qualities it offers by being a sustainable business.

For an airport to be competitive it must offer quality, safe and efficient services and must be adaptable to new technologies. The way to achieve this state is through modern and performant management.

Efficient airport management is extending the concepts of Airport Collaborative Decision Making (A-CDM) and Total Airport Management (TAM) (Classen, et al., 2017) as a proactive approach for optimizing operations. Aeroporti di Roma (ADR), a winner of Customer Experience Award in 2019 and 2020, outlines the expected gains of CDM, ensuring that all its airport partners will obtain benefits from implementing this operational procedure. Although parsimonious with declaring its results, ADR shows 6 areas of interest (ADR, 2021), commencing from company innovation, providing excellent service to clients, its commitment to quality and the wellbeing of people/employees, to paying attention to the region and environment. Always considering the impact on people and environment, Aeroporti di Roma's business philosophy defines the key points of responsible business. But it's not just the case of this last investor analyzed, the study was meant to outline that all the airport groups reviewed seem to be committed to responsible business, mirrored in shaping a bright future of the airports in their portfolio.

Conclusions

The paper showed that competitiveness of airport groups is not directly linked to their seniority, but influenced by the ability to understand and adapt to the business environment. Also, the key to airport managing group's success is determined by a merger between financial investment, know-how and innovation leadership, sustained by the values that drive the consortium.

The detailed examination of global airport group reports reflected that 67% of the leading airport investors that are also operators are from Europe. Considering the number of airports in portfolio, the numbers of countries in which they invested or the traffic statistics, management groups from France, Germany or Spain are rated as the most prolific airport investors. The fact that nowadays more than 50% of European airports have private shareholders indicates market availability, with still important possibilities for expansion.

Uncertainties for the aviation industry in the pandemic context persist, determining notable decrease in all performance indicators of airport groups, inducing operations and financial risks.

Future demands for the development of global airport groups take into consideration innovative solutions for sustainable business commitment, enhancing international competitiveness and comprising an integrated business model.

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Rural Modern Retailing in Romania

Andreea Strătilă (Irimia)¹

¹⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: irimia_andreea_elena@yahoo.com

Please cite this paper as:

Strătilă (Irimia), A., 2021. Rural Modern Retailing in Romania. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 705-710
DOI: 10.24818/BASIQ/2021/07/090

Abstract

Purpose - The purpose of this paper is to identify and present the landscape of modern rural retailing in Romania and the premises through which modern retailers should expand in this area.

Design/methodology/approach – The literature review is presenting the variables that make the rural area attractive for modern retailers. Then, is presented the actual scenario of Romanian rural retailing. Thirdly, are presented the premises that makes the rural areas attractive for modern retailers.

Findings – Corroborating the literature review with the actual context of Romanian rural retailing, the paper highlights the frame for modern retailers' expansion to rural area.

Research type – Analytical and descriptive.

Originality/value - This study is an important instrument for further research and for retail managers. It offers a valuable response that retailers should have to rural retail market specificities.

Keywords: Retail Marketing, Rural Retail Marketing, Retail Marketing Strategy, Rural Marketing, Modern Retailers.

JEL Classification - L81, M31.

DOI: 10.24818/BASIQ/2021/07/090

Introduction

The research in the field of modern rural retailing is quite poor, especially if we talk about Europe, where in emerging countries there is a recent interest in expanding modern international chains in rural areas (Twardzik and Heffner, 2019). In USA and Australia (Pearce, et al., 2008; Liese, et al., 2007; Bustillos, et al., 2009), the literature highlights research related to proximity trade and in close connection with the need for a healthy diet in rural areas, especially between the years 2005-2010. We find a greater interest in Asia, respectively India due to the high level of population density, including in rural areas, but also in China, Russia, Mexico and southern Africa (Pandey and Kaur, 2018).

In Romania, the modern grocery retailing has undergone numerous changes, following the trend of developed countries. However, adapted to the needs and specifics of the Romanian market, the large commercial chains have directed their expansion strategy mainly to urban areas. The agglomeration of large urban centers has led to their expansion in several formats. In the city centers, accessible and pedestrian proximity formats have been developed, while the large hypermarket formats have been developed mainly in large shopping centers outside the cities, in the neighboring localities within a radius of 20 km. Therefore, the paper will refer strictly to the shops inside the rural localities, located over 20 km away from the city.

Although at European and national level the legal framework and sustainable development strategy recommend the transition to short food chains to be distributed, the expansion of large commercial networks in villages, the development of regional storage centers and regional producer associations are slow to take shape in Romania. What are the reasons that prevent these aspects? Is traditional trade still preferred in villages? Is the independent trader in the village ready for change?

The aim of the paper is to identify and present the Romanian rural retail market specificities and the premises through which modern retailers should expand in this area.

Literature review

The definition of the concept *Rural Retailing* is approached by adding the definition of *Rural* with its multitude of ways with the definition of the concept *Retailing* (Paddison and Calderwood, 2007) and can be defined as 'sale of goods and services to the ultimate rural consumers'. The concept *Rural Retailing* is considered similar with the concept *Rural Retail Marketing* which has been derived from *Rural Marketing*. *Rural Retail Marketing* can be defined as 'a set of decisions which a retailer undertakes in order to identify the needs of the rural customers and satisfying them' (Pandey and Kaur, 2018). From another point of view, retailing is known as the final gate in delivering products to consumer and is matching the needs of people with those of manufactures and agriculturists (Lakchan, et al., 2020).

Analyzing rural retail along the entire land supply chain, the literature highlights the presentation of advantages (Pandey and Kaur, 2018) of expansion in rural areas but also disadvantages and even factors of decline and failure, there are assessments such as many concerns in this research area with a negative character, with a focus on problems and decline (Vias, 2004).

Financial issue, entrepreneur knowledge, geographical location, owner's perception and government support (Lackan, et al., 2020) are the factors that can impact for fail a retail business in rural area, thus the large international retail chains could be more appropriate for approaching rural areas. There is a need to grow all the rural business domains to lead regional development, in accordance with the economic development, expanding consumption and raising the living standards of the population (Greenberg et al, 2018). The need for education and entrepreneurship is also required for the dynamic change of retail and for customer expectation satisfaction as rural consumer can be incredibly challenging - they have lower incomes, are less sophisticated and often cling to local habits (Kotler and Keller, 2016). Big brands as Coca Cola, Unilever or Procter & Gamble have adapted to rural people consumer behavior in order to determine by education a new habit, for instance using hair shampoo by women in India rural area who were using only soap for washing their hair.

Considering India an example for less developed countries with its recent literature research contribution in rural retailing, in the following table are presented the specificities of rural retailing in terms of advantages, consumer behavior and marketing strategies.

Table no. 1. Rural retailing specificities

Advantages	Consumer behavior	Marketing Strategies
- extremely low or no promotional cost	-rural people are looking for utility, durability and quality	-credit services, occasional discounts, home deliveries based on personal relationship
- high and no cost personal relationship with the customers	-they have low literacy level which could be very risky for e-commerce or new technologies as electronic payments, self-checkouts	<p>- 4 Ps (product, price, promotion, place)</p> <p>product: special assortment, avoiding bulk as rural people want to try before purchase, special packages, for instance -pouches and sachets for shampoo and detergent</p> <p>price: as competitive as possible</p>

		<p>promotion/communication: adapted to local needs, especially print media, CSR initiatives</p> <p>place: full coordination of the supply chain</p>
-inexpensive distribution channel, easy and convenient	-no stocking purchase, they buy only what they need, looking for the price of commodity and value for money	<p>- 4 As (acceptability, affordability, awareness, accessibility)</p> <p>acceptability: customized and multifunctional products</p> <p>affordability: low prices fitting rural people capacity purchasing</p> <p>awareness: the major objectives of rural marketing communication are to create awareness and to induce trial-communication through rural perspectives, rural tradition, rural mentalities and rural values</p> <p>accessibility: creating sustainable channel partner relationships</p>
-no high expectation of people, their tastes are simple and static		
-government support	-low brand perception – need for education and CSR (Corporate Social Responsibility) initiatives	

Source: own research based on Pandey and Kaur, 2018; Naidu, 2017; Kalotra, 2013

Research Methodology

The methodology is based on online research. The secondary data revealed the actual context of rural modern retailing through the attractiveness and opportunities of the market, consumer profile and status of modern retailers' expansion in rural area.

Romanian actual scenario for rural modern retailing

On July 1, 2020, the population residing in villages in Romania represents 43.6%, being slightly increasing compared to July 1, 2019 (0.05%) (INSSE, 2020).

The COVID-19 pandemic also had effects on real estate, with a large part of the population choosing to move to the yard, most likely in residential complexes near large cities.

At the same time, the lockdown period and travel restrictions determined a specific behavior of the population eager to go out and socialize, who either spent more time online (gaming, movies, social networks, shopping) or chose agrotourism as the only possible option.

Another phenomenon registered as an effect of the pandemic was the definitive return to the country of many of those who went to work abroad due to the abrupt termination of employment contracts in various fields during the lockdown in countries severely affected by the pandemic such as Spain, Italy, Germany and England.

The web research unfortunately revealed data from 2017 the only and most recently report published by Nielsen Rural Romania Report. According to this report (Stan, 2017) we can highlight as following,

Rural Romania, with over 10,000 villages and 9 million inhabitants, has an insufficiently explored development potential, given that less than 10% of the modern shops are in rural areas. Moreover, rural stores represent numerically more than half (about 60%) of the total retail in Romania.

Rural residents generally have similar profiles to urban dwellers. Three of five identified typologies would represent a real potential for retailers in Romania, because they have a complex pattern of needs, a buying behavior and financial possibilities comparable to those in urban areas.

Regarding consumer behavior, they are influenced by access to different store formats, which implicitly determines the choice of different categories of products or brands. For example, over 70% of respondents who go to the hypermarket regularly have a car in the household. The traditional type of trade, available to most of the population, is the channel visited with the highest frequency, the considerations of convenience thus putting their mark on the elections, as it happens in the urban environment.

Among the most frequently bought categories are bread, cigarettes and beer, but also water or chewing gum. The shopping cart is made up of 66% food.

Moreover, the price and previous experience with the product are the main decision factors in choosing the brands purchased, and the preferred types of promotions are the discount and the gratuities.

On the other hand, the penetration of private labels is quite low (34%), mainly due to the distance from modern retail, but they are appreciated for good value for money.

The international retail chains that operate in Romanian rural area are Carrefour, Profi, Mega Image and Metro with the division 'La doi pași'.

The figures below 1, 2 and 3 are illustrating the current number of stores by channel type at national level, the annual evolution of the number of rural stores from 2015 and the number of annual rural stores new openings between 2015 and today.

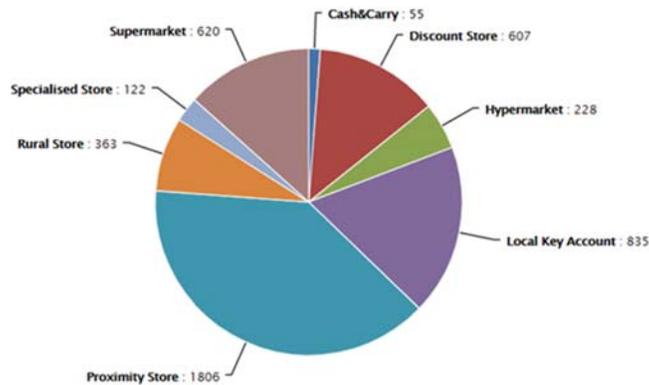


Figure no. 1. Current number of stores by channel type
Source: Universul de Retail (2021)

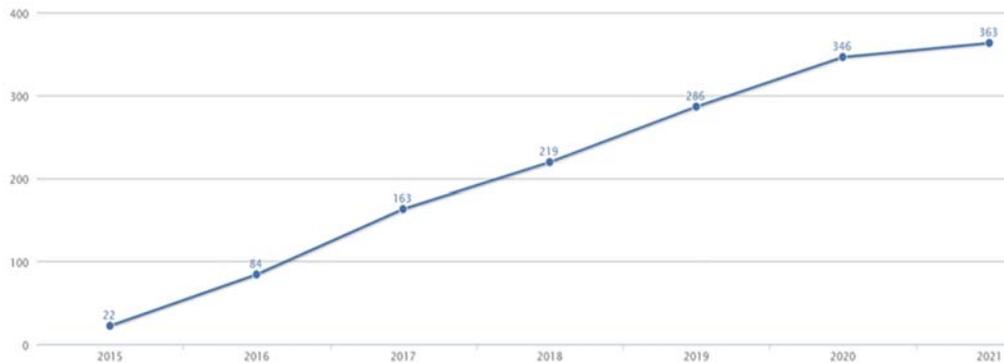


Figure no. 2. Evolution of rural stores
Source: Universul de Retail (2021)

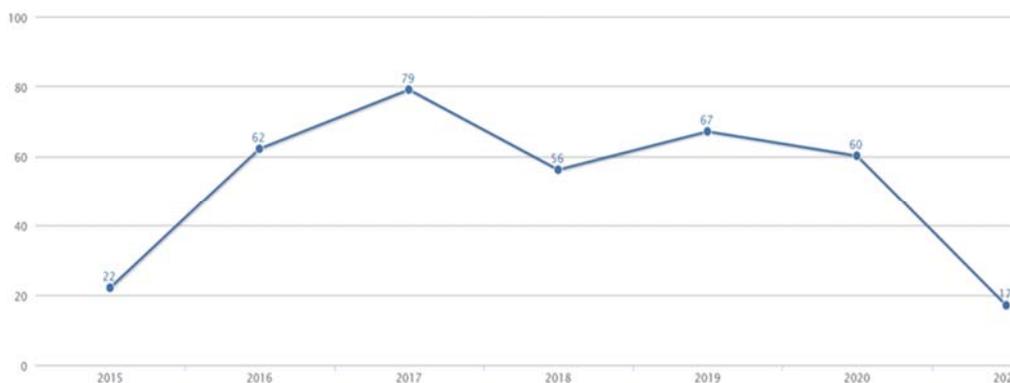


Figure no. 3. Evolution of new openings of rural stores

Source: Universul de Retail (2021)

The dynamic change of retailing and the emerging of e-commerce are also available for rural area. The technology development and the growing penetration of the smartphone have determined the growth of e-commerce even in rural area. The young generations opened to changes and more educated and also the new rural residents moved nearby big towns are illustrating the new customer profile for online sales from rural area. For instance, since 2018 a quarter of top 1 e-tailer eMag customers was represented by rural customers according to online publication Profit.ro (2018).

The future sounds very well for Romanian rural area as EU rural development policy has a long history of stimulating various forms of innovation in response to the challenges and opportunities that have raised in rural area and a relatively new initiative regarding the concept of 'Smart Villages'. Smart villages were further highlighted in the Commission Communication on the Future of Food and Agriculture (November 2017) as a priority to help 'local communities address issues related to inadequate broadband connectivity, employment opportunities and service delivery in a clear and comprehensive manner' (Highclere Consulting, 2021).

Conclusions and recommendations

According above corroborating research of literature review and the opportunities offered by the actual context of Romanian rural area, for surely the rural market can offer numerous privileges both to international modern retailers and small retailers. In the new context of COVID-19 pandemic, as in urban area brick and mortars are very threatened by e-commerce, in rural area, physical stores are preferred in detriment of e-commerce as the access to public spaces like bus stops will always be just as challenging as getting to the local store (Grewal and Levy, 2015).

Retailers should build efficient and innovative distribution systems to reach rural people (Naidu, 2017) in order to overcome this main disadvantage of long supply chains, in which goods pass through many hands, and therefore are additional products' cost (Grewal and Levy, 2015).

Considering that the rural customer could be very loyal to the traditional store, it is necessary for modern retailers to create value-added products, with attractive prices for current needs, to educate and to make him aware of the importance of the brand through promotion and CSR initiatives with high impact at the local community level.

There is a need for the involvement of retailers in building sustainable businesses in rural areas to support the development of the economy, by creating jobs. According to government policy and EU Commission future plans for rural area, retailers should be in first line to support regional development by enhancing short distribution chains and by serving local producers.

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Modelling COVID-19 Data for Economic Balance Towards Sustainable Consumer and Business Support

Silvia-Elena Cristache¹, Daniela Serban², Adina Țiței³ and Codrin Nisioiu⁴

¹⁾²⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

³⁾ *"Ovidius" University of Constanta, Constanta, Romania.*

E-mail: danielaserban2002@yahoo.com; E-mail: csilvia2005@yahoo.com

E-mail: adinatitei@yahoo.com; E-mail: nisioiucodrin@gmail.com

Please cite this paper as:

Cristache, S.E., Serban, D., Titei, A. and Nisioiu, C., 2021. Modelling COVID-19 Data for Economic Balance Towards Sustainable Consumer and Business Support. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 711-719 DOI: 10.24818/BASIQ/2021/07/091

Abstract

Although a series of restrictive measures have been implemented in Romania to fight the COVID-19 pandemics, the progress registered on the economic, social and sanitary level was relatively low in 2020 and in 2021. The objective of the study was to model the Romanian COVID-19 health crisis indicators in order to identify ways to support the economic equilibrium necessary for sustainable development of businesses and supporting the consumers. Using data collected from the WHO 2020 and 2021 database about Romania, a valid linear multiple regression model was obtained, in order to identify the influence factors over the total number of COVID - 19 cases. It was highlighted that a one-unit increase in mild forms of the virus will generate an increase of 5 cases in total disease, resulting in negative effects on the economy, labor market and eventually the final consumer. The **originality** of this study consists in the application of statistical and econometrical research methods and techniques to time series, which describe macroeconomic variables pertaining to the COVID-19 pandemic. This study highlights a number of **implications** of the COVID-19 pandemic: the inability of the Romanian public health system to cope with the sanitary crisis; major social and economic disequilibria (with respect to the growing unemployment rate and the decline in the people's standard of living). Another major implication cited in the current study is the consumers' inclination towards local products and services.

Keywords: COVID_19 pandemic, macroeconomic indicators characterizing the health crisis, multiple regression model, parameter estimation, economic equilibrium, labor market, consumer.

DOI: 10.24818/BASIQ/2021/07/091

Introduction

The pandemics generated by SARS COV2 inducing the COVID-19 disease, started in Hubei province in China (Die WELT, 2020). The exponential increase in cases as well as the global expansion has led to major problems in terms of long-term infection management world-wide. In this context, on March 11, 2020, the WHO declared the COVID-19 disease a pandemic. The objective of this study is to analyze the impact of the major indicators characterizing the Romanian pandemics on the number of total cases of disease due to this virus and to further characterize the influence of the pandemics upon the economic and social balances. The result of this study should answer the question: Will the improvement of the health status of the Romanian population and the decrease in the number of COVID-19 cases lead to the improvement of the economic and social aspects existing at this moment, not only at global level, but also in Romania? The economic situation depends on the level of development of each European country, the degree and stage of the pandemics and the access

to resources offered by EU and other international bodies. The COVID-19 pandemic has also had a social impact on social security systems, putting healthcare, unemployment insurance and pensions under pressure because the effects of the pandemic and increasing financial pressure. Within this context, the latest Ernst/Young Romania study from March - June 2020, considers the characterizing the patterns in consumer behavior in Romania, as well as possible predictions regarding the evolution of consumption in Romania. These scenarios and predictions stated by EY study is based on the latest changes in the socio-economic patterns, as well as in the preferences of the Romanian consumers, related to this completely new pandemic context. The study also states that a major trend among Romanian consumers was the reduction of budgets for non-essential expenditures, quality becoming the main purchasing factor followed by the price. Also, the EY study highlighted the fact that the volume of purchases increased, observing a migration to local products compared to the imported ones.

Considering the restrictions imposed regarding the social distance, implemented by the Romanian Government for the decrease of the transmission rate of the virus, the food and non-food products were ordered mainly online using the home delivery services. This consumer behavior to buy mainly from the online environment in conditions of health insecurity is also a consistent consequence (Pelau, at al., 2020) of the growing world population and unbalanced access to resources, the concept of food waste having an essential role in last years, even before the pandemics. Food waste has a negative impact on the economy, society and the environment. There has been a growing demand for organic and sustainable foods as COVID-19 raises awareness of the relationship between nutrition and health. Romanian Academy paper, "Assessments of the macroeconomic impact of COVID-19" from 2020, the crisis has affected and will continue to strongly affect certain segments of market services (tourism, hotels, restaurants, cultural services) and, through a chain effect, the industry, constructions and public services. The crisis caused by the COVID-19 pandemic severely affected the extremely fragile balance of the Romanian labor market (Albu, at al, 2020). This severe imbalance was the result of the action of divergent influences, at the confluence between the determinants of labor demand and supply. In conclusion, the COVID-19 pandemic that marked the past 13 months, led to a sudden and deep recession around the world putting pressure on the health and social protection systems, businesses and working relations. In this context, the analysis of the measures communicated to characterize the health crisis, represented in our study an important element for maintaining the economic and social balance necessary for sustainable business development and the support of the consumer.

A brief literature review

At the time of the declaration of the COVID-19 pandemic by the WHO in 2020 in the Raport 51, very little data and analysis about this virus and its effects in the population were known, namely: very high degree of contagiousness due to the acrogenic transmission of the virus; very high level of assessment due to the spread and severity of the damage; all age groups are affected; at that time, the data suggested that two age groups were considered to be at high risk with severe evolution of the infection: the elderly and people with comorbidities; the risk of severe infection increases in people over 40 years.

Health crisis

The 2020 PricewaterCoopers survey on post-COVID-19 consumer behavior, the 2020 Global Consumer Insights Survey, showed that the online shopping increased exponentially and intentions on expenditure are deeply affected by the pandemics. Consumer behavior changed in 2020, following the outbreak of the COVID-19 pandemic, highlighting three major trends: digital adaptation, concern for health and sustainability. A large part, 45% of consumers globally say that healthcare is one of the top three reasons to live in a city; 69% are more are concerned with mental health and well-being, and 43% expect businesses to be responsible for their impact on the environment. At the same time, the PwC study (2020) showed that consumers' interest in health, well-being, and diet has an increasing trend and will influence on the one hand the industries that offer products and services in these categories, and on the other hand, the general consumption habits.

Regarding the evolution of the number of cumulative cases COVID-19, for the period of analysis March 2020 -March 2021 (Coronavirus COVID-19 România Project, statistical analysis), in Romania it can be observed that the number of cumulated cases registered successive increases with a maximum point in January 2021. The new cases had a cyclical evolution during the period of analysis with a significant decrease in July and September 2020 (Figure no.1). Number of deaths and confirmed cases of COVID - 19 registered a steady upward trend between March 2020 and March 2021, with all restrictions imposed and the start of vaccination in our country in December 2020.

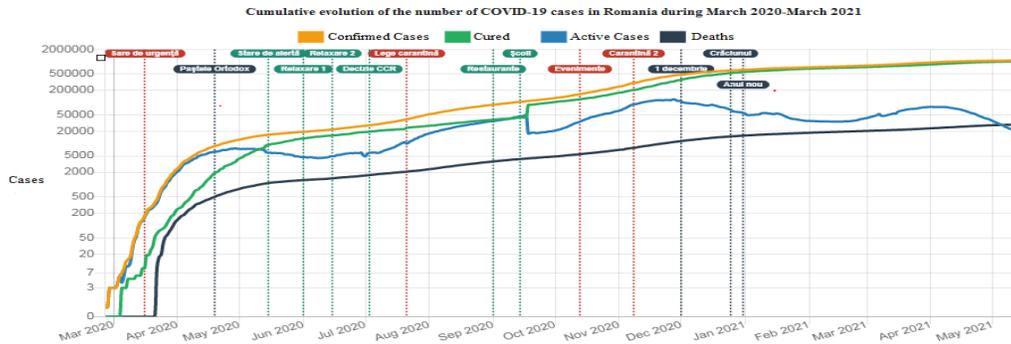


Figure no. 1. Cumulative evolution of the number of COVID-19 cases in Romania during March 2020-March 2021

Source: <https://covid19.geo-spatial.org/statistici/statistici-generale?chart=ziua-fata-de-cazuri-cumulative>

Regarding the number of daily deaths depending on gender, as a result of the COVID-19 pandemic (Coronavirus COVID-19 România Project), in Romania, during the period March 2020-March 2021, the highest values were registered in the period November 2020-January 2021 both in women as well as men. It should be noted that males were more affected by the pandemic during the analyzed period. (Figure no. 2) Regarding the analysis of the total number of COVID-19 cases in Romania by age groups, it is observed that until March 31, 2020 the age groups between 40-49 years and 50-59 years (51970 cases and 47084 cases) were the most affected in relation to the age group 0-9 years where the fewest cases were registered (5096). The total number of cases in Romania on March 22, 2021 by age groups keeps the same distribution, the most affected age groups being those between 40-49 years and 50-59 years (182436 cases and 165925 cases).

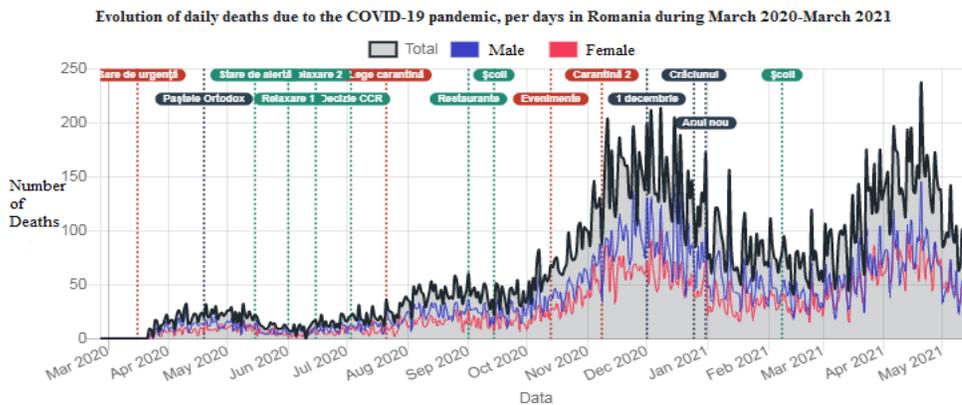


Figure no. 2. Evolution of daily deaths due to the COVID-19 pandemic, per days in Romania during March 2020-March 2021

Source: <https://covid19.geo-spatial.org/statistici/decese>

In the last month Romania experienced the third wave of the pandemic. Several cities are facing an exponential increase in confirmed cases and hospitals have reached their maximum capacity in terms of ER seats. Paradoxically, this increase seems to be against the increase in the vaccination rate of the Romanian population and the tightening of the restrictions on the free movement of the population.

Economic impact

The restrictive measures taken by Romania to limit the spread of the disease have led to a significant reduction in demand (consumption and investment) and supply (production of goods and services). This reduction was achieved in two stages. In the first stage, there was a significant decrease in supply as a result of the crisis triggered by the COVID-19 pandemic, a decrease due to the measures implemented in order to reduce the spread of the virus. Thus appears the second stage where the effect of reducing demand is manifested as a consequence of reducing the income of the population. The reduction of incomes was felt especially by those who lost their jobs or their incomes decreased as a result of the closure of companies or the reduction of activity (Vasile, et al., 2020). The National Institute of Statistics conducted a statistical survey among managers of enterprises in manufacturing, construction, retail and services on their perception of the outlook for business activity in March-April 2020. According to this research, a reduction in turnover was estimated by 32% in March 2020 and by 40% in April 2020 compared to the same months in 2019. In conclusion, economic activities were affected in several fields of activity such as: transport, retail, construction, tourism, industry, culture, also according to the KPMG study conducted in the first four months of 2020. Consumers stay and work from home more, prioritize savings and do business in a digital environment more and more. Therefore, for companies according to the KPMG study, it is more important than ever to perceive what motivates customers, to analyze their strategy and business model to determine how they can adapt to keep pace with the changing needs of customers. The KPMG study identified, as of May 2020, four key trends affecting consumers and changing consumption habits. The four trends refer to: economic impact, erosion of trust, digital growth and the home as a new center of activity. Therefore, the use of digital alternatives is becoming a priority in the current context. In 2018, a study by the consulting firm McKinsey noted that the states of Central and Eastern Europe (CEE) have the necessary foundations for digitalization, with good primary and secondary education systems, a high number of graduates in the fields of science, technology, engineering, mathematics and ICT (Novak, et al., 2018). Also according to (Pastiu, et al., 2020) the latest trends in e-commerce, explicitly show substantial changes in online consumer behavior. In Romania, during the COVID-19 pandemic, the opportunity for the economy to be launched faster by increasing the degree of digitalization is achieved at a much slower rate and with much higher costs compared to other European countries. (Cioaca et al., 2020) In Romania, investments in the ICT field were not high due to the low percentage allocated from GDP to this field of activity and its development occurred in the same time with the consumer concerns of energy savings, keeping the trend of a low energy consumption in the digital area (Pelau and Acatrinei, 2019).

The social impact

Achieving a compliant economic balance is the main long range objective of a country, contributing to reducing uncertainty, creating an attractive business environment, attracting foreign direct investment and contributing to economic growth (Haller et al, 2018). This increases the comfort and standards of living, reduces inequalities and creating the conditions for an economic justice to develop (Moise-Titei, 2015). The Romanian social protection measures, of the social categories affected by the external shock COVID 19, were in line with the practices of the European Union. (Beland, et al, 2020) In fact, there has been a forced digitization of certain activities, with effects on the diminishing the employment. In the same context, other researchers argue that in the new era of an developing European information society, scientific progress can be seen in all activities (Ghita, et al, 2020). This had a positive impact on the development of human society, as well as on the sustainable development of business in all sectors of activity by developing new skills and performance of employees (Busu and Gyorgy, 2016). Therefore, the Internet is becoming more and more important nowadays, even since starting before the pandemics, for the society and the economy (Pelau and Bena, 2010). Protecting consumer security must be done in accordance with all legal requirements and beyond so that users can fully benefit from the advantages of the modern interconnected and information-driven society (Dinu, 2011).

According to the study prepared by Deloitte Global Marketing Trends in 2021, an important part of consumers consider that the new digital experiences are a satisfactory substitute for the activities they carried out before the COVID-19 pandemic. The Deloitte Global Marketing Trends 2021 study highlights the openness of consumers to brands that focus on achieving their own goal during a crisis period.

Research methodology

The study conducted in the health field is a research based on secondary data provided by WHO (Romania: Coronavirus Pandemic Country Profile). As one of the major changes in consumer behavior in 2020 as a result of the pandemics has reached health care services, the study is analyzing the evolution and the correlations between the macroeconomic indicators characterizing the COVID-19 pandemic. (PwC, 2020) The main research method used is the multiple linear modelling of total total cases depending upon the total number of deaths, new daily deaths and cases, reproductive rate and estimated new cases, smoothed. The secondary data used in the study for the application of the stated methods took into account the period 22.03.2020-22.03.2021 and were used to estimate the relationship between the total number of COVID-19 cases and its determinants, with the help of specialised softwares (EViews, Excel). Therefore, the following initially developed hypotheses were considered:

H1: Total number of deaths due to COVID-19 pandemic is significantly positively impacting the total number of COVID-19 cases given by days

H2: Increase in new COVID-19 cases negatively affects the total number of COVID-19 cases by days

H3: The growth new smoothed cases have a positive influence on the daily total number of total cases COVID-19

In conclusion, it was used the single-factorial and multifactorial regression method which implies an estimation of the regression function parameters through the OLS method.

Results and discussions

Before moving on to the analysis of the influences that the selected independent variables (new cases, total number of deaths, new_cases_smoothed and number of new deaths) have on the dependent variable, respectively the total number of cases COVID-19, the main descriptive characteristics of the independent variables were analyzed in the case of the study, including the transmission rate (Table no 1).

Table no 1. Descriptive statistics for the independent variables

	REPRODUCTIVE_	TOTAL_	NEW_	NEW_	NEW_
	-RATE	DEATHS	DEATHS	CASES_	CASES
				SMOOTHED	
Mean	1.10	7628.09	60.84	2420.30	2640.35
Maximum	2.18	22268	213	8521.28	10269
Minimum	0.82	3	3	43.14	66
Std. Dev.	0.22	7202.43	48.47	2340.13	2485.89
Mode	1	Does not exist	22	324	320
Coefficient of homogeneity-%	20				

Source: own calculations, EViews estimation

The average daily number of total deaths due to SARS COV2 was 7628.09 cases/day, not representative for the dataset due to the homogeneity coefficient which has a value of over 94%. Regarding the average reproduction rate of COVID-19, the most common value of the transmission rate of the COVID-19 pandemic was the value 1, which means that mostly, an infected person

transmitted the virus to a single person, on average. The average reproduction rate of COVID-19 was 1.10/day, highly representative because the coefficient of variation of 20%. The daily new deaths average was around 61 cases/day, not representative for the dataset with an homogeneity coefficient of 79.66%. The average daily new cases value is 2641 new cases /day with a very low level of representativeness. Mostly, there were registered 320 new cases/day, over the last year. Regarding the new_cases_smoothed indicator, the most common value is 324 cases/day. This very high variation registered by some independent variables is due to the fact that this COVID-19 pandemic has a very dynamic unpredictable evolution with a high rhythm of change. According to the linear multiple econometric models further developed, see Table 2, 99.57% of the dependent variable TOTAL_CASES COVID-19 variation is explained by the regressors, holding constant the other factors of influence. There is a positive relationship between TOTAL_CASES COVID-19 daily and the independent variables NEW_CASES, NEW_CASES_SMOOTHED. From the regression output in Table no 2, it can be stated that the correlation coefficient for TOTAL-DEATHS daily with the value 41.09, is positive and statistically significant, showing that an increase with one death in the TOTAL_DEATHS will generate an increase of 41 cases per day in TOTAL_CASES. This is validating the first initial hypothesis.

Table no. 2. Multiple regression output between TOTAL_CASES COVID-19 as dependent variable and NEW_CASES, TOTAL_DEATHS, NEW_CASES_SMOOTHED, NEW_DEATHS as regressors

Dependent Variable: TOTAL_CASES
 Method: Least Squares
 Sample: 3/22/2020 3/22/2021
 Included observations: 366
 TOTAL_CASES=C(1)+C(2)*NEW_CASES+C(3)*NEW_CASES_SMOOTHED+C(4)*NEW_DEATHS+C(5)*TOTAL_DEATHS

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-43219.25	1762.993	-24.51470	0.0000
C(2)	-4.660849	1.266799	-3.679234	0.0003
C(3)	4.858041	1.475011	3.293561	0.0011
C(4)	188.0708	56.21540	3.345540	0.0009
C(5)	41.09173	0.188300	218.2246	0.0000
R-squared	0.995623	Mean dependent var		281965.3
Adjusted R-squared	0.995574	S.D. dependent var		302764.3
F-statistic	20527.48	Durbin-Watson stat		0.068010

Source: own calculation, EViews estimation

The Romanian economy is obviously imbalance, because the number of deaths due to the COVID-19 pandemic is constantly increasing (Vasile et al, 2020) leading to a decrease in the workforce both in private and the state one and because of the restrictive measures preventing the human contacts. Another argument for the existence of an economic imbalance is the fact that many private sector companies are facing insolvency (especially SMEs), some even going bankrupt (especially that in tourism and public catering). The negative relationship between NEW_CASES and TOTAL_CASES (the increase with one new case / day will generate a decrease of approximately 5 cases in TOTAL_CASES), is validating the second initial hypothesis. In other words, the increase of COVID-19 cases by multiplying the total number of cases leads to the collapse of the Romanian health system if the intensity of the infectious will stay high. In parallel with this negative effect, there will be a decrease in real GDP, i.e. business that generates investment and working places. On the other hand, the coefficients of the independent variables NEW_DEATHS and NEW_CASES_SMOOTHED have positive and statistically significant values (188.07 and 4.85, respectively) for a significance of 5%. Thus, the appearance of a new case with a mild form of virus manifestation generates an increase of approximately 5 cases/day in total, an aspect that validates the third initial hypothesis. Since

Significance F probability than the chosen significance level of 5%, the model is well specified and valid for the datasets. So the model is depicting a real correlation between the dependent variable, Romanian daily TOTAL_CASES and the selected independent variables, according to the equation:

$$\text{ESTIMATED TOTAL_CASES} = -43219.25 - 4.6608*\text{NEW_CASES} + 4.8580*\text{NEW_CASES_SMOOTHED} + 41.0917*\text{TOTAL_DEATH} + 188.0708*\text{NEW_DEATHS}$$

Being valid, the econometric model can be used to estimate future values of the dependent variable, disregarding other variables that might impact the total number of cases and have not been published or for which there are no continuous data series. The model is affected by multicollinearity between independent variables (Table no 3).

Table no. 3. Matrix of Correlations

	NEW-CASES	NEW_CASES_SMOOTHED	TOTAL_DEATHS	NEW_DEATHS	TOTAL_CASES
NEW_CASES	1.0000				
NEW_CASES_SMOOTHED	0.9372	1.000			
TOTAL_DEATHS	0.5496	0.5927	1.0000		
NEW_DEATHS	0.8909	0.9095	0.6214	1.0000	
TOTAL_CASES	0.5610	0.6084	0.9975	0.6376	1.0000

Source: own calculation, EViews estimation

It is found that between TOTAL_CASES and NEW_CASES there is a positive relationship of medium intensity (0.56) as well as between TOTAL_DEATHS and NEW_CASES_SMOOTHED (0.59). These correlations are explained by the evolution of the COVID-19 pandemic in the analyzed period.

Conclusions and future research

The economic and labor market recovery prospects are different from country to country, depending on several factors, as the degree of spread of the virus, the strictness and compliance of public health measures adopted to keep it under control, the sectorial composition of economies and the strength of national policy responses. The study based on secondary data showed that the health status in Romania depends significantly on the degree of infection of the population and the ability of the population to comply with the restrictions imposed by the competent government institutions. The study also highlighted that the variables that characterize and measure the degree of infection of the Romanian population are correlated, with direct effects on the standard of living, of pollution, changes in economic growth and the behavior of consumption. Due to the negative effects of the COVID-19 pandemic worldwide, the changes in consumer behavior will be occurring on long range if the restrictions will continue in all countries as well as the evolution of the COVID-19 pandemic goes on.

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Aspects Regarding the Statutory Audit of Non-Financial Entities Listed on the Bucharest Stock Exchange

Alexandru Vrejoiu¹

¹*The Bucharest University of Economic Studies, Bucharest, Romania.*

Email: vrejoiualexandru@gmail.com

Please cite this paper as:

Vrejoiu, A., 2021. Aspects Regarding the Statutory Audit of Non-Financial Entities Listed on the Bucharest Stock Exchange. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 720-729
DOI: 10.24818/BASIQ/2021/07/092

Abstract

According to the provisions of European and national legislation, the annual financial statements of companies whose securities are admitted to trading on a regulated market are subject to statutory audit.

The present study aims to evaluate the audit of the information entered during 2018-2020 in the annual financial statements issued by 30 non-financial entities listed at BSE (89 annual financial statements in total, one company being delisted in 2019). The purpose of this study is to identify whether the annual financial statements of the listed companies were accompanied by audit reports, how the audit reports complied with the requirements of international standards and national regulations and what differences and similarities are there between the respective audit reports.

The method used was quantitative and consisted in analyzing the data entered in the audit reports that accompanied the annual financial statements published on the BSE website.

The audit reports complied with the legal requirements, except in some cases, when in terms of similarities and differences, even though all reports contain in principle the same headings, differentiation was made by key audit issues.

Therefore, the study is addressed to authorities, audit firms and economic operators, who can use the results obtained, both in the regulatory activity and in the preparation of audit reports and their presentation in the financial statements.

Keywords: key audit aspects, audit report, annual financial statement, non-financial entities.

DOI: 10.24818/BASIQ/2021/07/092

Introduction

In the United States, following the financial scandals involving companies such as Enron in 2001, Adelphia, World Com in 2002, two Senate representatives (Sarbanes and Oxley) proposed and promoted the Sarbanes-Oxley Act in 2002, which was entitled "Public Company Accounting Reform and Shareholder Protection Law". The application of this law has led to financial reporting certificates being issued individually by senior management of entities and has increased the oversight role of boards of directors and the independence of external auditors who review the accuracy of corporate financial statements. Later, other states also considered that stricter financial governance laws were needed, with SOX-type regulations being adopted in Canada (2002), Germany (2002), South Africa (2002), France (2003), Australia (2004), India (2005), Japan (2006), Italy (2006), Israel and Turkey (Wikipedia - Sarbanes - Oxley Act)

In Europe, Fourth Council Directive 78/660 / EEC of 25 July 1978 on the annual accounts of certain types of companies and three other Directives (Seventh Council Directive 83/349 / EEC of 13 June 1983 on consolidated accounts, Council Directive 86/635 / EEC of 8 December 1986 on the annual accounts and consolidated accounts of banks and other financial institutions and Council Directive 91/674 / EEC of 19 December 1991 on the annual accounts and consolidated accounts of insurance undertakings), required the auditing of annual accounts or consolidated accounts by one or more persons authorized to carry out such audits.

The conditions for the authorization of the persons responsible for carrying out the statutory audit were laid down by the Eighth Council Directive 84/253 / EEC of 10 April 1984 on the authorization of the persons responsible for the statutory audit of accounting documents. The lack of a harmonized approach to statutory audit at Community level was the reason why the Commission proposed in its 1998 Communication on statutory audit in the European Union: a way forward, the creation of an Audit Committee that could develop future actions in close cooperation with the accounting profession and with the Member States. Based on the work of that committee, the Commission issued on 15 November 2000 a Recommendation on quality assurance for statutory audit in the European Union: minimum requirements and on 16 May 2002 a recommendation on the independence of statutory auditors in the EU: A set of fundamental principles.

With the publication of Directive 2006/43 / EC of 17 May 2006 on the statutory audit of annual accounts and consolidated accounts, which amended Directives 78/660 / EEC and 83/349 / EEC and repealed Directive 84/253 / EEC issued by the Council, the objective was to harmonize at high - though not full - level the requirements of legal audit. These refer to the qualifications obtained by statutory auditors under those directives which must be considered equivalent, to the fact that statutory audit requires adequate knowledge of issues such as company law, tax law and labor law.

As of April 2014, Regulation (EC) No 537/2014 of The European Parliament And Of The Council of 16 April 2014 on specific requirements relating to the statutory audit of public-interest entities, repealing Commission Decision 2005/909 / EC of public-interest entities, rules on the organization and selection of statutory auditors and audit firms applied by public-interest entities to promote their independence and avoid conflicts of interest, and rules on the supervision of compliance with these requirements by statutory auditors and audit firms. It also states that Union law provides that the financial statements, consisting of annual financial statements or consolidated financial statements, of credit institutions, insurance companies, issuers of securities admitted to trading on a regulated market, payment institutions, credit institutions collective investment schemes (UCITS), electronic money institutions and alternative investment funds are audited by one or more persons authorized to conduct such audits in accordance with Union law.

In Romania, the financial audit and the independent exercise of the profession of financial auditor were regulated by Emergency Ordinance no. 75 of June 1, 1999, amended by Law no. 167 of July 6, 2017 on the statutory audit of the annual financial statements and the consolidated annual financial statements. It stipulates that financial auditors and audit firms must perform the statutory audit in accordance with the international auditing standards adopted by the European Commission according to the provisions of art. 26 paragraph (3) of Directive 2006/43 / EC of the European Parliament and of the Council of 17 May 2006 on the statutory audit of annual accounts and consolidated accounts, amending Council Directives 78/660 / EEC and 83/349 / EEC and repealing Council Directive 84/253 / EEC, as subsequently amended and supplemented, and containing clarifications on the application of Regulation (EC) No 537/2014 of The European Parliament And Of The Council of 16 April 2014

Also, in 2019, at the initiative of the Romanian Chamber of Financial Auditors (CAFR), to meet the requirements of the Mandatory Norms issued by Global IIA (IIA) 1 and adopted by CAFR by Council Decision no. 111/2017, as well as to update the initial version of the Guide, issued in 2015 as a result of the collaboration between the Romanian Chamber of Financial Auditors (CAFR) and the Romanian Association of Internal Auditors (AAIR), the Guide on Implementing International Standards was developed of Internal Audit. The purpose of this new edition is to contribute to the maintenance of high quality standards regarding the organization, management and practice of internal audit missions by financial auditors, members of CAFR, who coordinate internal audit

activities, as well as those who are part of the mission teams. This publication does not replace the International Standards on Internal Audit nor the best practices recommended by the Institute of Internal Auditors, being a practical guide, as a reference material for practitioners in the field, the approach being limited to generally applicable aspects, which leaves room for a flexibility of approach, depending on the experience of the professional, the complexity or the specific character of the internal audit mission.

Synthesis of the specialized literature on audit reports

Numerous studies have been conducted over time on the factors that may influence audit reports. As early as the mid-1990s, Wayne Alderman, et al. (1988) examined audit adjustment records for 31 audits of three Big Eight public accounting firms. Financial variables and ratios such as net income, return on assets, return on equity, working capital, current ratio and debt-to-equity ratio were adversely affected to a significant degree by the audit adjustments recorded for the sample company.

Rahnl A. Wood (1996) studied as well the links between cultural, environmental and audit factors while empirically testing these relationships using the canonical correlation. The results suggested that globally, audit characteristics are associated with cultural and environmental factors. Moreover, the country's legal system, literacy level and economic wealth seem to be the most influential determinants of a country's audit environment. This may have implications for global audit harmonization.

At the same time, Nikolaos P. Anastasopoulos, Markos P. Anastasopoulos determined from a study conducted in 2012 that a critical issue in the audit is the reasonable assurance that the financial statements are free from material misstatement. The auditing detection problem can be seen as a two-player game, between the auditor and the auditee, if the auditor aims to eliminate distortions, while reducing his audit efforts, and the auditee seeks financial benefits and fraudulent breakdowns.

David Bryan (2017) also found that the power of trade unions is associated with the quality of audits and internal control, and trade unions have reason to demand high quality audits and strong internal control systems because they are based on financial information in collective negotiations.

Regarding the effects on the price charged by the audit firms in Big 4, Rouven Fleischer, Max Goettsche, Maximilian Schauer (2017), found based on research conducted on a sample of all listed German, Italian, Belgian and Finnish companies from 2007 to 2010, that audit prices differ sharply for existing clients from new Big 4 auditors. The first Big 4 exists only for mandates in which firms do not change their auditor, while when auditors change, Big 4 auditors are willing to give up their first or even accept lower fees than non-Big 4 auditors. This discount prevails in most post-change years. Big 4 applies a foot-in-the-door strategy and requires lower fees to earn new customers. Therefore, the existence of the well-known premium Big 4 is strongly influenced by a company's decision to change its auditor.

Another type of research was done by Habib, et al. (2018), on the relationship between political connections and the quality of financial reporting, audit results and the characteristics of the financial analyst's forecast. They saw the financial reporting system and audit infrastructure as potential missing links between political connections and business performance and, ultimately, economic performance. Thus, the survey revealed inconclusive aspects regarding the decisions of politically connected companies to appoint high quality auditors. However, empirical evidence seems to provide strong evidence for a lower quality of financial reporting of politically connected firms compared to their unconnected counterparts. Although significant progress has been made in understanding the implications of political connections on financial reporting and auditing, major challenges remain in the areas of correct variable measurement, endogenous problem solving and the integration of theories to incorporate policy connections, financial reporting and strong performance.

To test the global public audit policy, Christensen, et al. (2020) conducted a study, the hypotheses being motivated by statements made by regulators, audit standards and theory. On a sample of 246 professional investors in the main experiment and 91 professional investors in two additional experiments, no consistent evidence was identified that investors incorporate material disclosures into their investment decisions. Most importantly, evidence has been found that investors' understanding

of materiality is not in line with regulators' claims. For example, investors fail to make consistent connections between the amount of audit materiality disclosed and the level of the auditor's effort. The results are valid for debt and equity investment settings, for both public and private companies. In conclusion, the findings suggest that disclosures regarding the significance of the audit are not well understood by professional investors and are not considered relevant to the decision. This research informs practitioners, regulators and academics about the effect of disclosure of materiality on investor decision-making, as well as stakeholder views and expectations about overall materiality.

W. Robert Knechel, et al. (2020), concluded that audit research should pay more attention to successful cooperation between the service provider (audit firm) and the client to improve the quality of the audit. Using service network research, they draw attention to a broader perspective than the dyadic relationships of the service provider and the customer to show that the possible frictions between the value of service co-creation and the independence of the service professional are endemic, implying that efforts maximize independence. The central feature of economic services is the participation of the client in the production process. The need for the customer to be a co-producer introduces a greater heterogeneity in the provision of services in relation to the manufacture of goods which, in turn, creates a tension between service quality and service efficiency. One implication of this tension is that standardizing the audit process cannot increase the quality of the audit.

Research methodology

According to the provisions of European and national legislation, the annual financial statements of companies whose securities are admitted to trading on a regulated market are subject to statutory audit. The present study aims to evaluate the audit of the information entered during 2018-2020 in the annual financial statements issued by 30 non-financial entities (Table no.1), listed at Bucharest Stock Exchange (89 annual financial statements in total, one company being delisted in 2019), 12 in Premium Category, 17 in the Standard Category and one in the International Category).

Table no. 1. The composition of the sample grouped by field of activity and stock exchange category

Company Name	Field of activity	Category
Digi Communications NV	Telecommunications	International
Alro SA	Aluminum metallurgy	Premium
Antibiotice SA	Production of drugs	Premium
Biofarm SA	Pharmaceutical manufacturing	Premium
Conpet SA	Oil transport through pipelines	Premium
Electromagnetica SA	Production of electricity metering equipment	Premium
Medlife SA	Specialized healthcare activities	Premium
SN Nuclearelectrica SA	Electricity production	Premium
OMV Petrom SA	Oil and natural gas extraction	Premium
SNGN Romgaz SA	Natural gas extraction	Premium
Sphera Franchise Group	Fast food restaurants and food	Premium
CNTEE Tranelectrica SA	Electricity transport	Premium
SNTGN Transgaz SA	Natural gas transport through pipelines	Premium
Aerostar SA	Production of aeronautical industry components	Standard

Comelf SA	Manufacture of mining and quarrying equipment	Standard
Compa SA	Production of components for the automotive industry	Standard
Electroputere SA	Manufacture of electric motors and generators	Standard
IAR Braşov	Manufacture of aircraft and spacecraft	Standard
Prefab SA	Manufacture of concrete products for construction	Standard
Oil Terminal SA	Standard crude oil loading and unloading	Standard
Oltchim SA Rm. Vilcea	Supply of standard chemicals	Standard
Romcarbon SA	Manufacture of plastic packing goods	Standard
KMG Rompetrol SA	Manufacture of products obtained from crude oil processing	Standard
Ropharma SA	Retail sale of standard pharmaceutical products	Standard
Teraplast SA	Manufacture of plastic plates, sheets, tubes and profiles	Standard
TMK - ARTROM SA	Production of tubes, pipes, tubular profiles	Standard
Turism Felix SA	Hotels and other standard accommodation facilities	Standard
UAMT SA	Manufacture of parts and accessories for standard vehicles	Standard
Vrancart SA	Manufacture of standard corrugated paper and paperboard	Standard
Zentiva SA	Manufacture of standard pharmaceutical products	Standard

Source: data published on the website of the Bucharest Stock Exchange

Results and discussions

The purpose of this study is to find the answers to three questions:

- were the annual financial statements of the listed companies accompanied by audit reports?
- did the audit reports comply with the requirements of international standards and national regulations?
- what are the differences, respectively the similarities between the audit reports?

The method used was quantitative and consisted in analyzing the data entered in the audit reports that accompanied the annual financial statements published on the BSE website. In order to provide the answer to the first question, the situation of the contracts concluded by the audit firms and their periods of validity is presented in Chart no.1 -3, as follows:

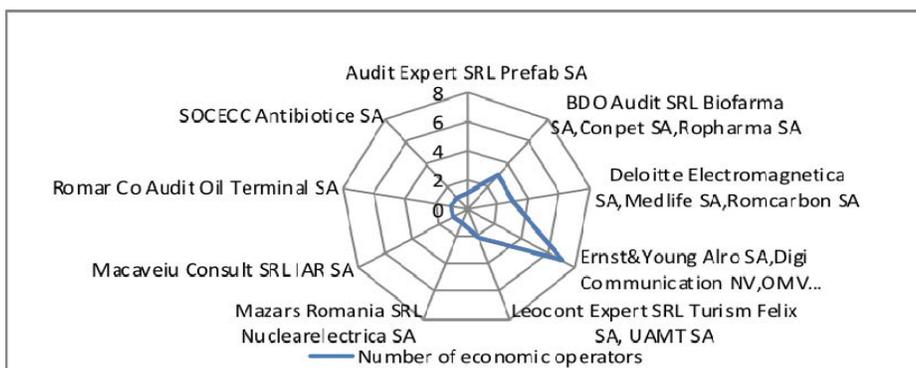


Chart no. 1. Audit firms that have concluded contracts for a period of three years
 Source: information resulting from the processing of data published on the website of the BSE

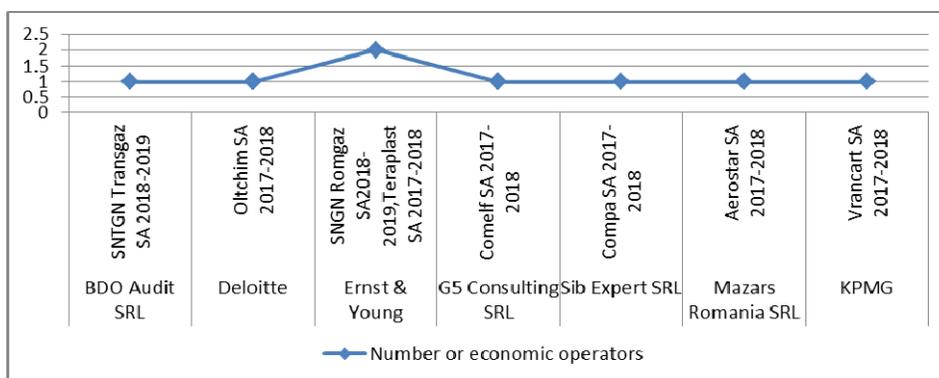


Chart no. 2. Audit firms that have concluded contracts for a period of two years
 Source: information resulting from the processing of data published on the website of the BSE

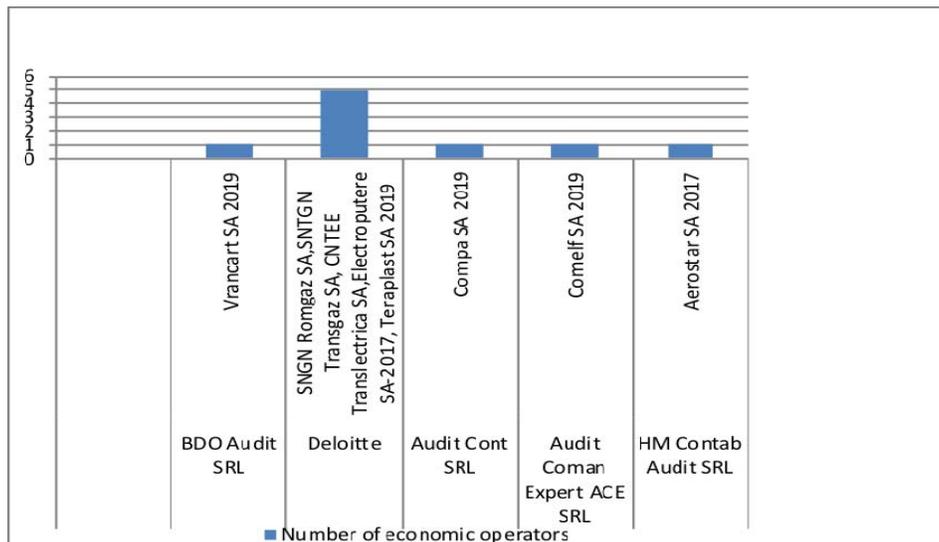


Chart no. 3. Audit firms that have concluded contracts for a period of one year
 Source: information resulting from the processing of data published on the website of the BSE

During the period under study, the 89 annual financial statements were audited by 15 audit firms (Figure no.1), five of which with an average turnover in the 2017-2019 reporting period of over 10

million lei and an average number of employees of more than 50 (KPMG, Deloitte, Ernst & Young, Mazars Romania SRL, BDO Audit SRL), and the remaining ten with an average turnover between 120,000 and 800,000 lei and an average of employees between one and three employees (Audit Coman Expert ACE SRL, AuditCont SRL, Audit Expert SRL, G5 Consulting SRL, HM Contab Audit SRL, Leocont Expert SRL, Macaveiu Consult SRL, Romar Co Audit SRL, Sib Expert SRL, SOCECC SRL, Audit & Consulting SRL).

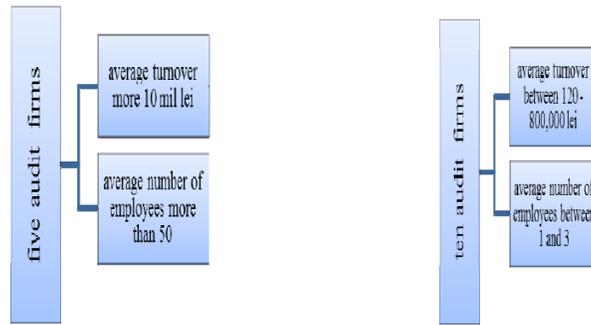


Figure no.1 Audit firms grouped by turnover and number of employees

Source: information resulting from the processing of data published on the website of the BSE

At the same time, it is noted that three companies have prepared the most audit reports, having concluded contracts with the largest economic operators in the sample (Figure no1). Thus, BDO Audit SRL had a contract with seven economic operators (16 audit reports), three in which the majority of shares is owned by the Romanian state (Conpet SA, SNTGN Transgaz SA and CNTEE Transelectrica SA) and four with private capital (Biofarma SA, Electroputere SA, Ropharma SA, Vrancart SA). Deloitte also issued 16 audit reports but for nine economic operators, four with majority state capital (Oltechim SA, SNGN Romgaz SA, SNTGN Transgaz SA and CNTEE Transelectrica SA) and five with private capital (Electromagnetica SA, Electroputere SA, Medlife SA, Romcarbon SA, Teraplast SA), while Ernst & Young prepared 25 reports also for nine economic operators, only one with majority state capital SNGN Romgaz SA, the rest having majority private capital (Alro SA, Digi Telecommunication NV, OMV Petrom SA, KMG Rompetrol SA, Sphera Franchise SA , Teraplast SA TMK Artrom SA, Zentiva SA).

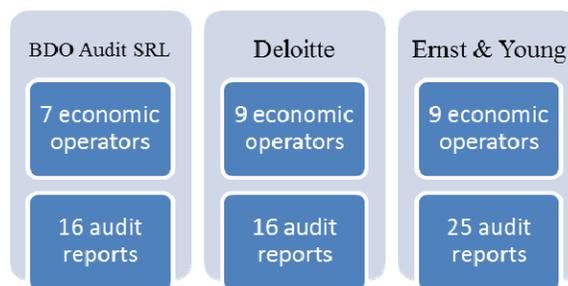


Figure no.2 Audit firms that have prepared the most audit reports

Source: information resulting from the processing of data published on the website of the BSE

Regarding the information about the contract or the additional documents based on which the audit operations are performed, only one company made these clarifications to Leocont Expert SRL, the rest of the companies specifying only the date of appointment of the General Meeting of Shareholders for auditing the financial statements.

Also, in the case of the audit report prepared by Deloitte for the evaluation of the annual financial statement for 2017, issued by SNGN Romgaz SA, the date of General Meeting of Shareholders is not entered, but only the year 2009, and in those prepared by HM Audit SRL- annual financial statement

2017 for Aerostar SA, G5 Consulting SRL- annual financial statement for 2017 and 2018 for SC Comelf SA, Audit Coman Expert SRL - annual financial statement 2019 for SC Comelf SA, Ernst & Young from 2014 - 2017 -2020, they do not contain any information about the contract or about the General Meeting of Shareholders.

Related to the inclusion of audit reports in the annual financial statements (Figure no.3), it was preferred to introduce a copy of the report in 75 cases out of a total of 89, in the remaining 14 cases, the report being presented as a chapter of the financial statement. In the case of introducing copies, they do not always have the auditor's signature, only 37 of 89 (41.6%) being signed. As far as their position in the annual financial statements is concerned, most (48) were presented within, 33 at the end and only eight at the beginning.

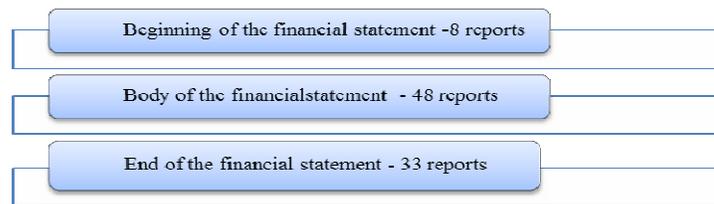


Figure no.3 Inclusion of audit reports in the annual financial statements

Source: information resulting from the processing of data published on the website of the BSE

Regarding the similarities, respectively the differences between the audit reports issued during the audited period, the analysis showed that in general the reports contain the same seven headings (*Opinion, Basis of Opinion, Key Audit Issues, Other information, Management responsibility and those responsible for governance for financial statements, Auditor's responsibilities for auditing financial statements, Report on legal and regulatory requirements*), the only differences being the key audit issues addressed.

These differences present potential risks whose manifestation may jeopardize the good development of the company's activity and which, based on professional reasoning, are of the utmost importance in auditing the financial statements issued over a certain period. As of December 2016 they became mandatory to be published in the case of listed entities, according to the International Standard on Auditing (ISA 701). However, there have been situations when in audit reports prepared by a single audit firm for a company for three consecutive years, all key audit aspects were common, the audit being performed by the same auditor throughout the period (BDO –Biofarma SA, Ropharma SA, Conpet SA, Macaveiu Consult SRL - IAR Braşov SA, E&Y – KMG Rompetrol SA) or even different auditors (Deloitte – Electromagnetica SA, Romcarbon SA). A similar situation is in the case of audit reports prepared for the same company, which changed the audit firm in three consecutive years. This is the case of Compa SA, two different audit firms Sibexpert Expert SRL in 2017 and 2018 and Audit Cont SRL in 2019, highlighted the same key audit aspect.

On the other hand, in the case of audit reports prepared by an audit firm for a commercial company for three consecutive years, it was observed that there were situations when the same auditor of the firm did not notice any common key aspects of audit in any year (Romar Co Audit SRL- Oilterminal SA, Ernst & Young -Zentiva SA) or in the case of audit reports prepared for the same SC, which changed the audit firm during the analysis period, no common key audit aspects were recorded (SNGN Romgaz SA Deloitte 2017, Ernst & Young 2018-2019, SNTGN Transgaz SA – Deloitte 2017,BDO 2018-2019, CNTEE Transelectrica SA – Deloitte 2017, BDO 2018, 2019, Aerostar SA HM Contab Audit 2017, Mazars 2018-2019, Comelf SA – G5 Consulting SRL 2017-2018, Audit Coman Expert ACE SRL – 2019, Terplast SA – Ernst & Young 2017, 2018, Deloitte 2019).

Regarding the audit reports prepared in 2019 by different audit firms for different economic operators, the lack of common key issues for a number of entities was highlighted (Electromagnetica SA, Romcarbon SA, Medlife SA, Terplast SA - the audit firm being Deloitte or Alro SA, SNGN Romgaz SA, KMG Rompetrol SA - the audit being performed by Ernst & Young).

In the case of the reports prepared in 2019 for companies operating in the same field of activity (Figure no.4), it was observed that no common audit aspects were identified both in manufacture of standard pharmaceutical products (BDO – Biofarma SA, E&Y – Zentiva SA, SOCECC-Antibiotice SA) and in the production of automotive components (Audit Cont SRL – Compa SA, Leocont Expert SRL – UAMT SA).

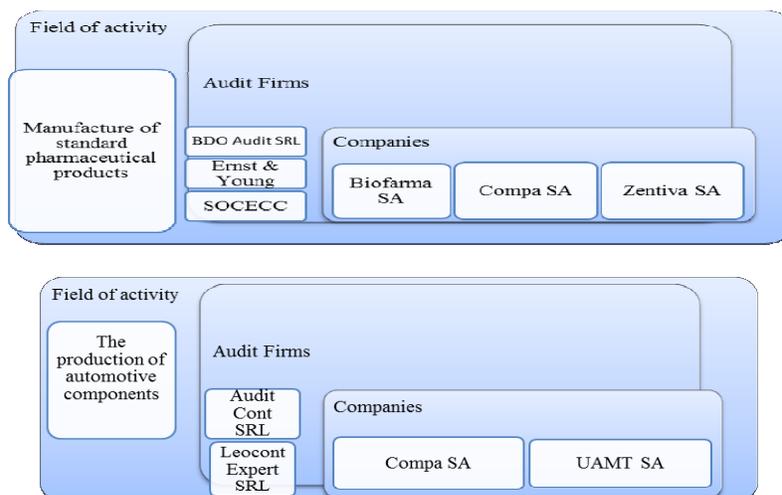


Figure no.4 Companies operating in the same field of activity and for which common key audit aspects were not identified in the audit reports in 2019.

Source: information resulting from the processing of data published on the website of the BSE

At the same time, situations were identified when no key issues were identified in the audit reports, the auditor stating only that he determined that there are no key issues to communicate (Deloitte – SNTGN Transgaz SA - audit report 2017) or that there are no key issues to communicate in addition to the aspects described in the section “Basis for the opinion with reservations” (Deloitte – SNTTE Transselectrica SA- audit report 2017, Audit Expert SRL Prefab SA -audit report -2019).

Conclusions

Following the evaluations, it was observed that all the financial statements were audited, the economic operators preferring that the audit of the financial statements be done by specialized companies that have a large market share and implicit experience in the field. Therefore, three audit companies with an annual turnover of over ten million lei prepared 58 audit reports out of a total of 89. Thus, Ernst & Young prepared 25 audit reports, for nine economic operators, Deloitte, 16 reports also for nine economic operators and BDO SRL 16 reports for seven economic operators.

The audit reports that accompanied the financial statements were introduced as scans of the report in 75 cases out of a total of 89, the positioning being mostly in the financial statements (48), 33 at the end and only eight at the beginning.

With regard to the compliance with the legal requirements, the audit reports have generally complied, with some exceptions. They do not contain information on the legal commitment (contract) under which the audit was conducted, but only the date of approval in the General Meeting of Shareholders, on issuing the opinion with / without reservations or were not signed by the auditor who performed the activity.

In terms of similarities and differences, even though all reports contain in principle the same headings, differentiation was made by key audit issues. Thus, situations were identified when no key audit issues were identified, when for different companies, the same audit firm through the same auditor or different auditors identified the same key issues or no key audit issue was identified, the companies adapted the approach according to the specifics of the activities.

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Data Protection as Predictor for the Acquisition of AI Devices

Mihaela Stanescu¹, Corina Pelau² and Maria Barbul³

¹⁾²⁾³⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: miha_stanescu2019@yahoo.com; E-mail: corina.pelau@fabiz.ase.ro

E-mail: mariabarbul@gmail.com

Please cite this paper as:

Stanescu, M., Pelau, C. and Barbul, M., 2021. Data Protection as Predictor for the Acquisition of AI Devices. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 730-737 DOI: 10.24818/BASIQ/2021/07/093

Abstract

The significant development of AI has started to have an important impact on how people interact with robots and intelligent devices in the near future. Starting from the simplest AI forms, such as mobile applications for consumers' daily activities (example: e-commerce or health apps) to more complex forms of AI (example: robotic surgery), people represent its main beneficiary. Still, the consumers' acceptance and embracement of AI can depend on different factors. An important issue is represented by the collection of the individuals' private information, as mobile applications require different permissions in order to be installed and to be used. AI devices will also have the capacity to register private data, under specific forms. The main objective of this research is to analyze if the data protection associated with the AI usage directly influence the buying decision. The study was constructed using three pillars: willingness to buy an AI device, vulnerability of consumer related to data privacy concerns and the ability to control the private data used by AI devices. Using structural equation models in Smart-PLS3, it was shown that the vulnerability generated by the data accumulated by the AI does not influence the buying decision, while the ability to control the private data does play an important role for the willingness of consumers to buy AI devices. The practical implication of the research is given for the design of future AI devices as well as their future marketing and sales strategy. It should be taken into consideration the fact that for consumers it is important to control the availability of private data usage. Therefore AI devices should incorporate the possibility of consumers to switch-off the intelligent devices and enjoy their private life.

Keywords: Artificial intelligence, data protection, data privacy, consumer, buying decision, computer-human interaction.

DOI: 10.24818/BASIQ/2021/07/093

Introduction

The multifaceted applications and forms of artificial intelligence (AI) are manifested today by machines that are able to exhibit aspects of human intelligence, mimic human gestures and perform actions in the most accurate and human-like manner (Huang and Rust, 2018). It is no secret that data gathering, information processing and problem solving are often achieved with the help of AI, in its many forms and different ways of working. Starting from simple mobile applications that help us achieve daily activities and going further to more complex tasks (e.g. consumer profiling or even social engagement), AI has become, without any doubt, an indispensable part of our daily life and routine.

Driven by data and information, AI-based software reach an out-standing performance by collecting, processing and analyzing consumers' data, whereby consumers' data protection becomes a more and more debated and researched subject nowadays. In many cases the need to protect personal data and the privacy associated with the use of AI devices comes to the fore and it is likely to be valued higher, sometimes even outweighing the benefits provided by the performance and accuracy of AI-systems (Kaplan and Haenlein, 2020). Moreover, theoretical research proves that privacy is sometimes to be

defined context-specific as a *subtle good*, whereby it is about context-dependent economic properties of the related data (Farrell, 2012; Pelau, et al., 2019). In the digitalization era and the current AI context, the vulnerability of consumers related to privacy concerns and the ability to control the private data used by AI devices may become exchange goods in order to get the best of AI technologies. This interchange between data protection and the acquisition and further usage of AI came to be context-dependent and AI users may not always be aware of it.

To assess the influence of private data and the users' control ability over it on the willingness to buy an AI device, the present paper tries to examine if both data protection and the need for privacy influence the buying decision of consumers for such AI-devices. In the following sections of the present article, we review some existing applications and uses of AI. We then propose and empirically test an econometric model for private data as predictor for buying decision of AI devices. After conducting the quantitative research, we present and discuss the model results.

Literature review

The fabrication and usage of artificially intelligent devices has registered significant increase during the last period (Duan, et al., 2019). Starting from the robots used in factories for assembly lines to the ones used already in the hospitals for performing complex operations, AI is starting to be described as a necessary component in the production process. The increase of AI's abilities to replace human actions (Anthes, 2017; Anica-Popa, et al., 2021) like translating human language, conduction online search, can be only a part in the AI future evolution.

One of the primary lines in which people enter in contact with AI, are the smartphone mobile applications that perform a higher number of complex functions. The mobile applications represent a significant business sector as 1.85 million different apps are available for users to download from iOS App Store and 2.56 million available through the Google Play Store (Iqbal, 2020). Consumers are more familiar with the apps, due to the fast and easy access and use them in daily basis activities such as buying products, socialize with friends, sports activities being also more attracted by the brands that are offering mobile aps (Bellman, et al., 2011).

A large number of apps are using information received from the users. Therefore, they adapt constantly to the user behavior in terms of preferences, historical searches, GPS location. There is a permanent "learning process", based on which applications personalize consumers' information (Vesanen, 2007). The most common example in this sense is Nike + Run Club or Samsung Health that creates users collectivities in which information can be shared through the users. Mobile applications are also used by the brands in advertising campaigns, in order to increase brand loyalty (Wang, et al., 2015). They are developed for an easier communication with the users (Pantano and Priporas, 2016) or as support for the experience in the shopping environment (Albastroiu, et al., 2018; Dabija and Babut, 2019) During COVID pandemic lockdown, more and more brands convergence to the digital environment by creating apps or associating with existing apps in order to sell their products.

Another form of AI interaction with consumers are the chatbots used by companies in order to transform the customer service perspective (Cath, et al., 2018; Wirtz, et al., 2018). They represent automated programs that can communicate with the consumers by text (Przegalinska, et al., 2019; Radziwill and Benton, 2017; Sivaramakrishnan, et al., 2007). Consumers are open to this kind of communication that provides various services from food delivery to bank information (Sivaramakrishnan, et al., 2007; Luo, et al., 2019). The main benefit of chatbots is that they are easy to use and assures low cost services for companies (Przegalinska, et al., 2019; Radziwill and Benton, 2017). Based on PointSource estimation, by the end of 2020, chatbots will provide 85% from the total customer services area (PointSource, 2018). Another important element is that consumers can interact with chatbots on all available platforms like tablets, desktop or mobile devices (Araujo, 2018; Luo, et al., 2019). The major advantage of chatbots is that they can offer assistance to consumers at any given time and place (Chung, et al., 2018; Holzwarth, et al., 2006). The chatbots can also help increasing customer satisfaction by offering permanent assistance services (Radziwill and Benton, 2017). The AI presented above can be seen as a basic interaction form with AI, with which users are nowadays familiar and that can be used and implemented in day by day life. Another AI area is represented by robots that are used in hospitality and

tourism sectors. With the help of IBM, Hilton Worldwide created a robot concierge named “Connie”. Residence Inn by Marriott and Aloft Hotels use robots for delivering room services called “Relay” and “Wally” (Crook, 2014; Silva and DeSocio, 2016; Marin-Pantelescu et al., 2019). In Amsterdam, KLM has “Spencer”, a robot for customer services to guide passengers (KLM, 2016) and Royal Caribbean’s Quantum of the Seas use robots at the bar (Majendie, 2015).

Due to the increased development of AI, its adoption is on an increasing curve. Besides, AI devices and robots are constantly improved in order to deliver higher quality services based on an increased data storage and processing speed (West et al., 2018). From the company’s perspective, this can lead also to operational cost decrease by reducing human workload (Cobos, et al., 2016; Marinova, et al., 2017; West, et al., 2018; Busu and Gyorgy, 2020; Or, et al., 2021).

During the last years, a large number of studies have been developed in order to test people willingness to accept and interact with AI. For example Niemel et al., (2017) discovered that hedonic motivation is the main premise that directly influence customers’ intention to use AI in retail stores. Other findings are related to the usefulness and ease to use characteristic of AI (Davis, et al., 1989; Hsiao and Yang, 2011; Ozturk, et al., 2016; Wang, et al., 2018b), previous experiences (Morgan-Thomas and Veloutsou, 2013), social influence (Pelau, et al., 2021) or cognitive process (Venkatesh and Davis, 2000). Lu, et al. (2019) has highlighted six factors for using AI devices and robots in service delivery: performance efficacy, hedonic motivation, anthropomorphism, social influence, facilitating condition, and emotion. In the last period, social robots have been used in various services (Kuo, et al., 2017), from tourism to medical areas.

One of the customers’ main concerns is related to the fact that robots can in a near future replace a serial of human jobs, some researchers even think that a total replacement of humans is possible (Ivanov and Webster, 2018; Microsoft, 2018; Banacu, et al., 2019; Li, et al., 2019). Still, people are becoming more familiar with AI and with the benefits provided by it. It is possible that a step by step transition will conduct to high benefits in the near future.

Research methodology and data collection

The objective of our research is to determine if the protection of data and privacy associated with the use of AI devices has an impact on the buying decision of consumers for such devices. Data collection took place based on an online survey, which has been carried out in September 2020 on a pilot sample of 76 respondents. The questionnaire contained several items for the following constructs: willingness to buy an AI device (4 items self-determined and adapted after Bruner (2019); Kumar and Pansari (2016)), vulnerability of consumer relate to data privacy concerns (5 items adapted after Bruner (2019); Kelly, et al. (2018)) and the ability to control the private data used by AI devices (4 items adapted after Bruner (2019); Kelly, et al. (2018)). The data has been analyzed with the help of SPSS 20.0 for the confirmatory factor analysis and with Smart-PLS3 for determining the relation between the variables.

Results of the factor analysis

In order to test the reliability of the data a confirmatory hierarchical factor analysis with varimax rotation has been performed in SPSS20. The Kaiser-Mayer-Olkin criterion of 0.803 (Chi=898.7, p=0.000) indicates a good fit of the data for the factor analysis. The result of the three determined factors have a cumulated variance of 81.597. The loadings of each of the items can be observed in table no. 1.

The item loadings with values higher than 0.7 indicate a good fit for the determined constructs. Only the item info6 had a loading of 0.634 but has been kept for the further analysis. It can be observed that the items related to the private data have been split among two factors.

Table no. 1. Results of the confirmatory factor analysis with varimax rotation in SPSS20

Var	Item	Buy	Data1	Data2	Cronbach-Alpha
Buy1	I wish I had a robot to help me with my daily activities	.858			0.934
Buy2	I am willing to buy a robot to help me with my daily activities	.935			
Buy3	I will continue my interaction with the robot in the near future	.910			
Buy4	The purchase and usage of a robot make me content	.871			
Info1	Personal information used by robot makes me insecure	.884			0.947
Info2	Personal information used by robot makes me exposed	.936			
Info3	Personal information used by robot makes me threatened	.861			
Info4	Personal information used by robot makes me vulnerable	.903			
Info5	Personal information used by robot makes me susceptible	.930			
Info6	I believe I have a control over what happens to my personal information in relation to the robot		.634		
Info7	It is up to me how much the robot uses my information		.860		
Info8	I have a say in how my information is used by the robot		.936		
Info9	I have a say in whether my information is shared with others		.898		

Source: Own research results.

The first factor contains the items about the perceived vulnerability of exposing private information. These are associated with feelings such as insecurity (0.884), exposure (0.936), threat (0.861), vulnerability (0.903) and susceptibility (0.930). The second factor contains items about the consumers' perception to have a control over the data provided to the robot or AI device. It contains items about the belief of having control over the provided private data (0.634), the amount of the provided data (0.860), the way in which the information is used (0.936) and if it is visible to others (0.898).

Results and discussion

In order to test the impact of the consumers' perception of private data use by AI on the buying decision a structural equation model in SmartPLS3 has been tested. For this model, there have been used the previously determined independent variables related to the perceived vulnerability of consumers by exposing the private data (private data 1) and the consumers' ability to control the exposed private data (private data 2). The dependent variable is the consumers' willingness to buy AI devices, as it has been previously determined in the confirmatory factor analysis. In order to test the relations, a two-tailed bootstrapping method based on 500 subsamples has been performed by applying a partial least square structural equation model. The results of SEM can be observed in table no. 2, while the graphical representation of the model can be observed in figure no. 1.

Table no. 2. PLS-SEM results about private data as a predictor of the buying decision of AI devices

Path	Coefficient (original sample)	Coefficient (Sample mean)	t	p	CI
Private data 1 → Buy	0.357	0.092	1.562	0.119	[-0.324; 0.417]
Private data 2 → Buy	0.426	0.431	4.188	0.000	[0.204; 0.621]

Source: Own research results.

The results of PLS-SEM show that only the variable private data 2, about the perceived control of the exposure of private data through AI devices has a significant influence on the buying decision of AI devices. The bootstrapping coefficient mean has a value of 0.431 (t=4.188, p=0.000) and a confidence interval with positive values CI=[0.204; 0.621]. This shows that the ability to control the exposed private data influences in a positive way the buying decision of AI devices. On the other hand the vulnerability created by the exposure of data does not influence in a significant way the buying decision of

AI devices. In spite of the positive value of the coefficient for the original sample of 0.357, the bootstrapping coefficient mean of samples has a lower value of 0.092. This is also confirmed by the t-value $t=0.119$ ($p=0.119$) and the CI= $[-0.324; 0.417]$ containing the value 0. Probably it depends on each consumer how he/she perceives his/her vulnerability by the exposure of private data and information. It is not the vulnerability that predicts the buying decision, but the ability to control the exposed private data and information.

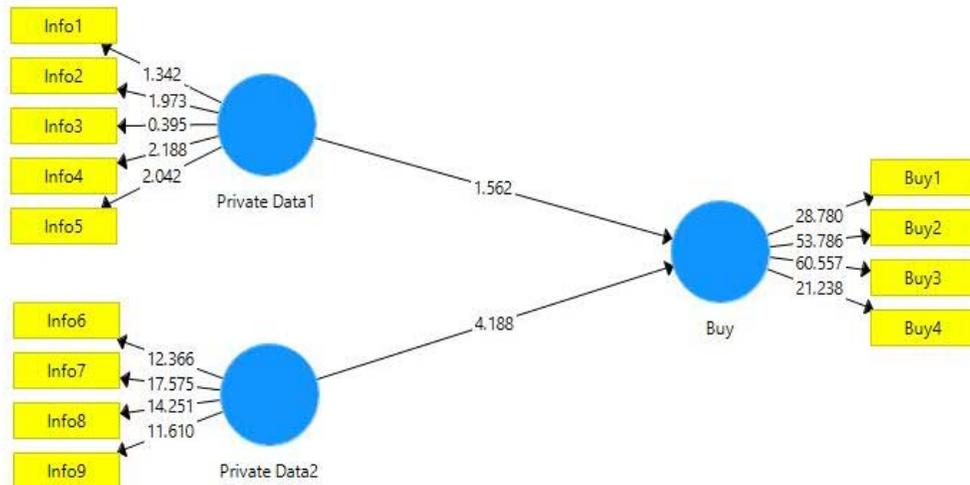


Figure no. 1. Econometric model for private data as predictor for buying decision of AI devices – Results from SmartPLS3

Source: Own research results.

Conclusion

The results of our research show that the buying decision of AI devices is influenced by their ability to collect private information. Based on the study, it is not the collection of private data gather by AI that have a direct impact on the buying decision, but the important factor that counts for the consumers is their ability to control the private data collected by AI.

Nowadays the development of AI plays an important role in almost all the fields. Due to the COVID pandemic, people were forced to embrace rapidly new forms of AI, starting from mobile apps (e-commerce, grocery delivery apps, food delivery apps) to more elaborated forms (online meetings, doctor online appointments). A change has been made in this direction and after half year of COVID pandemic, people are more willing to use and interact with AI, for their own benefit. Still, the problem of private data is a concern, but apparently this influences less the buying decision. Consumers understand their privacy vulnerability but they also consider that they can manage it by the ability to control how much information they are sharing.

In the near future, probably the human civilization is going to relay more on AI, starting from simple tasks that can improve an individual activity to more complex one. The most important factor will be to find a balance between the private data that consumers are sharing and the benefits that results from it.

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Digital Technologies in Agriculture: Developments and Perspectives

Angela Tarabella¹, Andrea Apicella² and Biasino Farace³

¹⁾²⁾³⁾ *University of Pisa, Pisa, Italy.*

E-mail: angela.tarabella@unipi.it; E-mail: andapice@gmail.com

E-mail: biagiof90@gmail.com

Please cite this paper as:

Tarabella, A., Apicella, A. and Farace, B., 2021. Digital Technologies in Agriculture: Developments and Perspectives. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 738-746

DOI: [10.24818/BASIQ/2021/07/094](https://doi.org/10.24818/BASIQ/2021/07/094)

Abstract

Purpose – It is widely considered how the world of agriculture has been changing in recent years in relation to recent technological innovation developments. Technological and communicational innovations that, in an increasingly connected world, have changed all sectors of the economy and agriculture is no exception. **Design/methodology/approach** – This article aims to highlight what are the relevant aspects of digital technologies used by agriculture framed in the industry 4.0 paradigm through a research that analyses the most diffused technologies in order to highlight common patterns and technological overlaps. These show how the domains under analysis are directly connected and describe the most important technologies able to drive digital transformation processes in the agricultural sector.

Findings and Originality/value – The outputs of our empirical research highlight: a dictionary of Precision Agricultural Technologies includes 324 terms; a graph, describing the most cited technologies composing the dictionary and the connections between themselves; a representation of main technological clusters which describes the overlap between Industry 4.0 and Precision Agriculture.

Keywords: precision agriculture, Industry 4.0, digital transformation, text mining, enabling technologies.

DOI: [10.24818/BASIQ/2021/07/094](https://doi.org/10.24818/BASIQ/2021/07/094)

Introduction

The fundamental role of technologies in the innovation process of companies all over the world, regardless of the commercial sector they belong to, is sublimated by the wave of the Industry 4.0 paradigm which aims to integrate digital technologies into business processes by developing new business models (Chiarini et al., 2020). This new innovative concept is based on the advanced digitization of factories, the Internet and future-oriented technologies that bring intelligence into devices, machines and systems (Lasi, et al., 2014). Also in the agri-food sector, the evolution of innovation technologies is playing a key role for companies in strengthening their production processes and organizational structures through automation, monitoring and information technology (Foglia and Reina, 2006; Kamariotou, et al., 2019; Zhang and Kovacs, 2012). Technological innovation has therefore become necessary over time for the development of companies that grow in size and structure, with new paths oriented towards the integration of the most advanced technologies in the cultivation processes (Zhang et al., 2002). From these premises we can highlight the two main challenges that modern agriculture must face in the next future: the need to increase production and reduce environmental impacts. The digital technologies behind precision agriculture are the resources to be exploited to tackle these two sustainability issues, optimizing the entire production system of companies taking into account environmental and economic constraints (Zheng et al., 2021). In this article we try to shed light on the

nature and application of the technological tools at the basis of the paradigms of Industry 4.0 and Precision Agriculture. We analyse connections and overlaps between these two paradigms, in order to create a dictionary that identifies the most innovative technologies applied in agriculture, with the aim of helping to make this topic clearer by illustrating existing digital technologies and promoting managerial practices in the current agri-food landscape.

Framing Precision Agriculture

Precision Agriculture (also called Precision Farming) has developed since the end of the twentieth century with the aim of promoting agricultural management which, based mainly on digital technologies, allows to improve production processes and increase profitability, minimizing environmental damage and preserving the quality standards of agricultural products. It is precisely digital technologies that open the door to the possibility of making agricultural production processes precise taking into account the actual crop needs and the biochemical and physical characteristics of the soil. The concept of Precision Agriculture emerged in the United States in the nineties, where the House of Representatives (1997) defines it as an application of technologies, principles and strategies to monitor and optimize agricultural production processes in order to manage agricultural production in relation to the real needs of the plot. Over time, there has been an evolution of the various provisions of the PA that have slowly allowed to establish the constitutive elements of the concept and its fields of application in order to intercept, among other things, the PA as a management tool alongside with concepts of economic and environmental sustainability. Table 1 shows the main definitions based on a careful selection of the existing literature. Starting from a literature review carried out on the Scopus database (see Table 1) focused on the analysis of definitions of the concept of Precision Agriculture, it emerged that technology was the first central element of Precision Agriculture. However, over the years the attention of the scientific community has also focused on other elements, such as: General Benefits, Sustainability and Applications. This development path can be detailed in Table 1, thanks to which it is possible to understand how the definitions of Precision agriculture have been enriched over time with new and more complex contents until reaching the definition of management strategy. Pierce and Nowak (1999) highlight the central position of Technology and the Generated Benefits as the two key elements of Precision Agriculture. Then we arrive with the definition of Zhang, et al., (2002) to strengthen these two distinctive elements, recognized in literature. Kirchmann and Thorvaldsson (2000), also stressed on the technologies and completed the definition with the introduction of the Sustainability concept. Bongiovanni (2004) instead, emphasizes the environmental theme by defining Precision Agriculture as an application that can help manage harvest production inputs in an environmentally friendly way. In a study of the European Union (Schrijver et al., 2016) entitled Precision Agriculture and the future of farming in Europe, the PA definition introduce the concept of digital techniques and optimization of production processes; which brings out the concept of field application. Finally, in 2019, the International Society of Precision Agriculture (ISPA) adopted an univocal definition that connects all the definitions given above and frames the PA as a management tool.

Table no. 1. Literature review, definitions and technologies of Precision Agriculture

<u>AUTHOR</u>	<u>DEFINITION</u>	<u>TITLE AND JOURNAL</u>	<u>YEAR</u>	<u>DISTINCTIVE ELEMENTS</u>
F.J.Pierce, P. Nowak	Precision agriculture is the application of technologies and principles to manage spatial and temporal variability associated with all aspects of agricultural production for the purpose of improving crop performance and environmental quality. Precision agriculture is technology enabled.	Aspects of Precision Agriculture- Advances in Agronomy vol. 67, pp. 1-85	1999	Technology Generated Benefits
H. Kirchmann, G. Thorvaldsson	Precision agriculture is a discipline that aims to increase efficiency in the management of agriculture. It is the development of new technologies,	Challenging targets for future agriculture - European Journal of Agronomy 12, pp. 145–161	2000	Technology Generated Benefits

<u>AUTHOR</u>	<u>DEFINITION</u>	<u>TITLE AND JOURNAL</u>	<u>YEAR</u>	<u>DISTINCTIVE ELEMENTS</u>
	modification of old ones and integration of monitoring and computing at farm level to achieve a particular goal.			
N.Zhang, M.Wang, N.Wang	PA is conceptualized by a system approach to re-organize the total system of agriculture towards a low-input, high-efficiency, sustainable agriculture.	Precision Agriculture- a worldwide overview Computer and Electronics in agriculture, 36, pp. 13-132	2002	Technology Generated Benefits Sustainability
R. Bongiovanni, J.Lowenberg-Deboer	Precision Agriculture (PA) can help in managing crop production inputs in an environmentally friendly way.	Precision Agriculture and Sustainability Precision Agriculture, Vol.5, pp.359-387,	2004	Generated Benefits Sustainability
A. McBratney, B. Whelan, T. Ancev	One generic definition could be “that kind of agriculture that increases the number of (correct) decisions per unit area of land per unit time with associated net benefits”.	Future directions of Precision Agriculture - Precision Agriculture, 6, pp. 7-23 Springer Science Business Medis Inc.	2005	Generated Benefits
Y. S. Tey, M. Brindal	Precision agriculture is a production system that involves crop management according to field variability and site-specific conditions. Precision agricultural technologies are those technologies which, either used singly or in combination, as the means to realize precision agriculture.	Factors influencing the adoption of precision agricultural technologies: a review for policy implications, Precision Agriculture, Vol.13, pp 713-730	2012	Technology
E. Pierpaoli, G. Carli, E. Pignatti, M. Canavari	Precision Agriculture is a fairly new concept of farm management developed in the mid-1980s. PA bases its applicability on the use of technologies to detect and decide what is “right”.	Drivers of Precision Agriculture Technologies Adoption: A Literature Review, Procedia Technology, Vol.8, pp.61-69	2013	Technology
R. Schrijver, K.Poppe, C. Daheim	Precision agriculture (PA) or precision farming, is a modern farming management concept using digital techniques to monitor and optimize agricultural production processes.	Precision Agriculture and the future of farming in Europe-Scientific Foresight Study	2016	Digital techniques
International Society of Precision Agriculture (ISPA)	Precision Agriculture is a management strategy that gathers, processes and analyzes temporal, spatial and individual data and combines it with other information to support management decisions according to estimated variability for improved resource use efficiency, productivity, quality, profitability and sustainability of agricultural production	International society of precision agriculture (ISPA). https://www.ispag.org	2019	Management Strategy

Methodology

The work focuses on the creation of a dictionary which identifies the most innovative technologies that are applied in Precision Agriculture by investigating the overlaps with Industry 4.0 technologies to create clusters and to analyse the connections between them. The dictionary aims to analyse the technologies related to the Precision Agriculture domain and to identify those belonging also to the Industry 4.0 paradigm. Concretely, the dictionary is a list of Precision Agriculture technologies that were identified by analysing papers retrieved from the international database. First of all, the twenty-five most cited scientific papers were identified by using the query “precision agriculture”, among those published on Scopus between 2002 and 2017. These 25 papers were analysed manually in order to identify the technologies mentioned in them and belonging to the Precision Agriculture domain. This list composed of 137 technologies was used to feed the next research steps how described in Figure 1 flowchart.

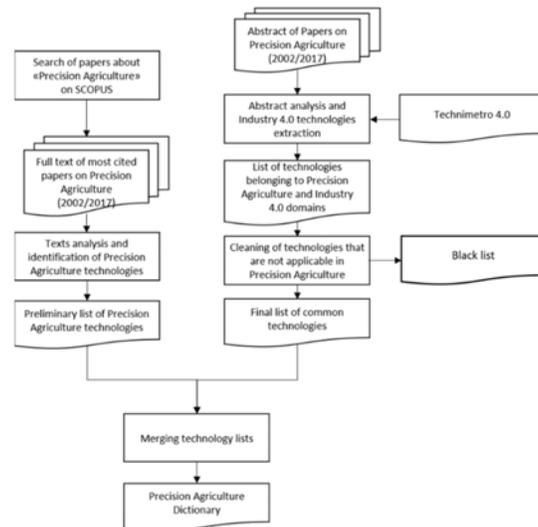


Figure no. 1. Process to create precision agriculture dictionary

However, this list of technologies was not considered exhaustive because of the limited number of analysed sources, which however provided the basic information to build the background of the analysis. Moreover, according to the goal of the research to investigate the connections between Industry 4.0 and Precision Agriculture domain, it was necessary to include Industry 4.0-based knowledge into the process. To address the above-mentioned limitations and given the proximity of the founding concepts of Industry 4.0 and Precision Agriculture, the Technimetro® was used to expand the list of technologies at the base of the dictionary. Technimetro® (Chiarello, et al., 2018) is a dictionary that contains more than 1500 technologies belonging to the Industry 4.0 paradigm and was created by selecting the Industry 4.0 technologies found in manuals, technical documents and scientific publications on Scopus. The relationships between these technologies were studied through a text mining activity to describe possible clusters and to understand how technologies are linked one-another. Therefore, the Technimetro® was used to understand if the Industry 4.0 domain contains Precision Agriculture technologies so to analyse the overlaps between the two sectors. To answer this question, all abstracts of the publications on Precision Agriculture (published on SCOPUS from 2002 to 2017 for a total number of 4320 papers) were analysed using the software “R Studio”. In this way, technologies belonging to the Technimetro® that were also mentioned in the Precision Agriculture publications could be identified. Such analysis allowed to identify more than 1000 technologies belonging to the Technimetro® which were cited in the abstracts. Moreover, among the technologies extracted through the Technimetro® only those cited at least three times were selected to be part of the final list so to avoid casual citations of technologies that do not belong to the Precision Agriculture field. The remaining technologies were checked again to manually eliminate not applicable terms, which were stored in a blacklist. Technologies were removed with the help of control groups. Finally, the new list of technologies

obtained, was compared to the list of technologies identified at the beginning with the analysis of twenty-five papers for removing duplicates and creating the Precision Agriculture dictionary.

Results and discussion

This study confirmed the relationship between Industry 4.0 and Precision Agriculture domains and allowed to create a list of over 1000 technologies referring to the Precision Agriculture domain, by expanding the list generated thanks to the analysis of the 25 most cited papers on Precision Agriculture. This analysis shows how the intersection between the technologies belonging to Industry 4.0 and Precision Agriculture is very broad and makes the two concepts very close from a technological point of view. The dictionary of Precision Agricultural Technologies includes 324 terms. Thanks to a graph, the most cited technologies and the connections between them allowed to identify at least 6 technology clusters. The graph in Figure 2 shows the structure of the dictionary containing the technologies related to Precision Agriculture and the relationships between the technologies that compose it. This representation allows to deepen the connections between the different clusters and technologies. The connections are represented by the lines that join the different nodes (which represent Precision Agriculture technologies) of the graph. The size of the nodes varies proportionally to the number of papers they are cited in, instead their position depends on the number of connections between the different technologies: the most connected ones acquire a more central position into the graph and vice versa. Table 2 shows the technologies present in the six different clusters.

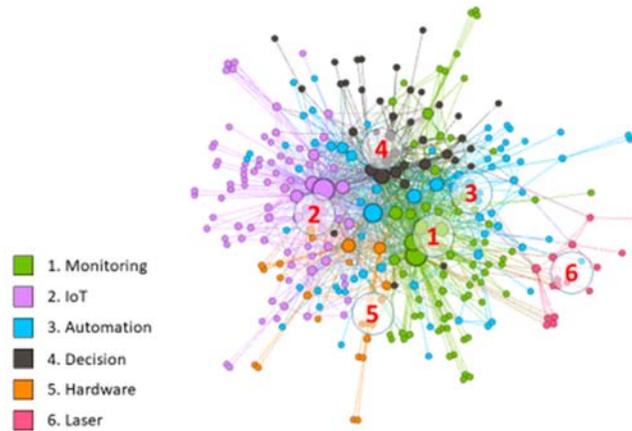


Figure no. 2. Graphical representation of precision agriculture dictionary

Table no. 2. Clusters in the Precision Agriculture dictionary

#	CLUSTER	TECHNOLOGIES
1	Monitoring	GPS, GIS, Data processing, GSM, Satellite, Ultrasound, Lidar, Broadband, Cellular, ...
2	IoT	Wireless sensor network, Internet of things, RFID, Bluetooth, Zigbee, Wi-fi, Micro-controller, Arduino, ...
3	Automation	Autonomous vehicle, Mobile Robot, Unmanned aerial vehicle, Agricultural robot, Computer vision, Data management, ...
4	Decision	Artificial intelligence, Data mining, Expert systems, Forecasting, Machine learning, Semantic web, Smart grid, ...
5	Hardware	Embedded system, Cyber-physical system, Manure spreader, Raspberry pi, CMOS, FPGA, ...
6	Laser	Laser, Laser transmitter, Laser receiver, Laser surveying, Optical fiber, Photonic sensor, ...

Monitoring systems

Monitoring systems represent a very important research topic in the panorama of studies focused on innovation in the agri-food sector. The growth of data generated by the entire agricultural supply chain represents an opportunity for companies to adopt new business models more suited to changes in the context in which they operate. The monitoring activity it includes activities that take place in many aspects of agriculture, in particular, thanks to the high-resolution satellite images is used for analysis of the soil and crop conditions (e.g. crop growth, yield and stress) in order to make the interventions of the farmers prompt and effective (Stafford, 2000; Warren and Metternicht 2005; Zhang and Kovacs, 2012). In recent years, thanks to the evolution of Internet technologies, significant opportunities of monitoring have also been obtained thanks to the use of mobile devices, which can contribute to the development of agriculture, businesses and rural areas by supporting the traceability of production, trade, services and products (Li, et al., 2010; Szilagyí and Herdon, 2006).

Internet of Things (IoT)

The term Internet of Things (IoT) refers to a new technological paradigm in which many objects or “things”, such as wireless sensors network, microcontroller and other tools, interact with each other for the purpose of extract information that helps companies to undertake innovation paths (Farooq et al., 2015, Lee and Lee, 2015) and, as the term “Internet” implies, networking capability is the other core features of the IoT devices (Tzounis, et al., 2017). These technologies offer significant opportunities that can contribute to the innovation of many industrial sectors, acquiring an ever-greater centrality in business dynamics (Xu, et al., 2014; Vermesan and Friess, 2015). The exponential increase in the adoption of the technologies for the Internet of Things (IoT) has also reached the agri-food sector, increasing the interest in research and innovation towards the development of reliable, verifiable and transparent traceability systems (Caro, et al., 2018) and as Brewster, et al., (2017) argues, IoT technologies could contribute to food security and the reduction of agricultural and food waste, using sensors, RFID, actuators, drones, navigation systems, cloud-based data services and analyses that offer a variety of decision support tools (Al-Fuqaha, et al., 2015; Kumari, et al., 2015; Tzounis, et al., 2017). In particular, sensors are used by farmers in the field to measure environmental parameters such as temperature and humidity and these data can be used to make production more efficient (Sethi and Sarangi, 2017). Another major application of IoT technologies in agriculture occurs in production within greenhouses. In this case, information on humidity, soil, temperature is often collected in real time and subsequently sent to servers for analysis (Zhao, et al., 2010).

Automation management

The automated management of farms represents one of the most fascinating challenges in the panorama of current Industry 4.0 technologies applied to precision agriculture. Among the technologies used in the automation field, the expert and intelligent systems based on artificial vision algorithms are becoming successful drivers in the management of agricultural business processes and automation technology based on computerized vision is increasingly used to increase productivity and efficiency (Foglia and Reina, 2006). The rapid evolution of artificial intelligence has provided many suggestions for improving the efficiency of agricultural production in automation and a more correct and effective management of resources (Vazquez-Arellano, et al., 2016). Machine vision technology provides numerous tips and insights to support agricultural decisions and practices thanks to the evolution of techniques such as GPU (Graphics Processing Unit) and DBN (Deep Belief Networks) (Li, et al., 2019; Mochida, et al., 2019).

Decision Support Systems in the agri-food sector

Among the technologies supporting decision-making processes in the agri-food sector, the importance of Decision Support Systems must be underlined. The DSS concept emerged in the literature around the 1970s, when computer-based software was studied for the first time in order to solve problems by analyzing semi-structured and unstructured data (Anthony, 1965; Gorry and Scott Morton, 1971; Simon, 1965). In the following years, due to their flexible nature, the DSS have made significant

contributions to face today's challenges to make agriculture more productive and sustainable at the same time (Mysiak et al., 2005). In literature, several authors attest the effectiveness of these tools, just remember the application of DSS in the analysis of food safety and quality (Wijtzes, et. al, 1998); on the compaction of agricultural soils (Canillas & Salokhe, 2002); minimization of waste in wine production (Musee, et. al, 2005) and support for logistics managers in identifying the most effective solution to implement in their activities (Kamariotou, et. al, 2019). Furthermore, through the DSS tool, solutions can be implemented in the agricultural context aimed at optimizing processes which may include the identification of a correct timing for the sowing phase and a better use of water resources that can be framed in the paradigm of environmental and economic sustainability (Trogo, et al., 2015).

Hardware and Laser

These clusters could be integrated in the previous ones, but their importance and their specificity in terms of application allow them to emerge among other technologies. Laser measurement systems represent one of the most used technologies in Precision Agriculture, and there are several applications of these tools in agricultural systems. Research shows that an effective application of these technologies is found with reference to soil levelling processes, with improvements in crop activities, increasing the efficiency and precision of the processes, the yield and the quality of the products (Li, et al., 1999; Zheng, et al., 2007). With laser information collection systems, new hardware technologies have come to the storage of input data and production monitoring. In this regard, it has been found that it is possible to design an accurate system using hardware and open systems to record the Open source hardware (OSH) (Mesas-Carrascosa, 2015).

How shared knowledge and understanding facilitate development paths identification

To date, the evolution of digital techniques in the framing logic of innovation technology inherent in the Industry 4.0 paradigm has made many steps forward. The agricultural sector and investors seem to have welcomed the PA market with great interest, although the margins for improvement still seem to be great in order to exploit its full potential. In this sense, the use of the dictionary could be very interesting for companies operating in the agricultural sector. The possible applications of the dictionary are manifold and mainly refer to the field of text mining for business intelligence purposes or to support policy makers in the evaluation of projects and proposals. The application of the dictionary would allow to know more easily and faster whether a given company adopts the technologies of PA or whether it uses any PA Paradigm related to ICT technologies to visualize the development path. The growing diffusion of digital technology techniques in a context of Precision Agriculture aimed at marginalizing the costs and the pervasiveness of the industry 4.0 paradigm in the agricultural context may favour innovative processes in the primary sector and face new challenges deriving from the current socio-economic context.

Conclusion

The study, therefore, confirms the relationship that exists between Industry 4.0 and Precision Agriculture and can be useful in various aspects, both on a theoretical and practical level. From a theoretical point of view, the dictionary offers the possibility to identify how some domains of Industry 4.0 overlap and can be used in the agricultural context. From a practical point of view, the analysis of the technologies that emerged from the study of the literature offers the opportunity to better understand how they are applied in the agricultural sector. Overall, the study intends to suggest how to overcome the gap between farmers and the application of innovative technologies. Future works will explore, with qualitative studies based on the use of Case Studies and in-depth interviews, the effects of digital innovations in the agricultural sector and verify if, and what extent, the conditions for their application exist.

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Social Supermarket and Sustainability

Mihaela Mihai¹, Andrei-Cosmin Gușă², Daniela-Ioana Manea³, Răzvan-Cătălin Dobrea⁴ and Mihaela Cazacu⁵

¹⁾³⁾⁴⁾⁵⁾ Bucharest University of Economic Studies, Bucharest, Romania

¹⁾³⁾ Institute of National Economy, Romania

²⁾ Vienna University of Economics and Business, Vienna, Austria

E-mail: mihaela.mihai@csie.ase.ro; E-mail: cosminandreigusa@gmail.com

E-mail: daniela.manea@csie.ase.ro; E-mail: razvan.dobrea@man.ase.ro;

E-mail: czc.mihaela@gmail.com

Please cite this paper as:

Mihai, M., Gușă, A.C., Manea, D.I., Dobrea, R.C. and Cazacu, M. 2021. Social Supermarket and Sustainability. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 747-755

DOI: 10.24818/BASIQ/2021/07/095

Abstract

Food waste increases the amount of food waste, which, combined with the amount of waste from other areas or due to industrial surplus, has irreversible consequences on the environment. To avoid disastrous consequences with economic, social, political and ethnic implications, it is necessary to identify viable solutions so that the food surplus can be redistributed to food banks, food pantries or social supermarkets, in optimal conditions, thus becoming a sustainable social good.

This study aims to analyse the link between food banks, considered charities and social supermarkets. It is also useful to identify policies to support food donation actions but, simultaneously, to identify solutions to improve supply management in the field. Simultaneously, it wants to identify functional solutions at the level of European countries that may have applicability in the US, giving people who face food and financial insecurity, dignified access to products needed for daily consumption. The authors consider it necessary to identify innovative solutions to reduce food losses and waste but also promoting actions to raise public awareness for a rational and healthy consumption.

Keywords: Social Supermarket, Sustainability, Food bank, Food insecurity, Poverty, Social benefits.

DOI: 10.24818/BASIQ/2021/07/095

Introduction

Building a sustainable society is more than economic development through automation and digitisation. While social inequality, corruption and environmental issues are some of the barriers to sustainable development, government policies to green production and consumption are less destructive approaches to the environment. Thus, an adjustment of production can reduce waste of resources, sustainable waste management but also to a responsible consumption.

Insufficient resources, especially food resources, are a pressing problem and reducing food waste is considered a solution with economic, social, ethical and ecological implications (Bräutigam, et al., 2014). Reducing the amount of food waste is an immediate effect of reducing food waste, a fact noted by the impact on the environment, the economy and society and can be achieved at the individual or community level. This goal can be achieved both by identifying the cause, to reduce the amount of food waste generated, but also by donation or recycling. If some of the waste can be recycled, food that is considered safe and does not pose a danger to society can be donated to food banks, anti-hunger organisations, and social supermarkets (The Food Waste Reduction Alliance (FWRA)).

Globally, about 1.4 billion tons of food waste are generated annually, while in the United States more food is dumped annually than in any other country in the world, about 40 million tons, with estimated

costs of around 92 billion euro (Recycle Track Systems 2021), in the European Union (EU) are generated approximately 88 million tons with associated costs estimated at 143 billion euros (Stenmarck, 2016). However, poverty and food insecurity are substantial problem in today's world, the last period emphasizing the "food paradox" (Gali, 2019; Berti, et al., 2021).

Waste reduction is a challenge for all states, regardless of the level of development, one of the unanimously accepted approaches being the identification of new public policies in the field. Among the innovative social solutions identified, both in the US and in the EU, we can list: the development of policies to stimulate food donation or the use of alternative storage methods: waste composting or the creation of anaerobic digestion stations.

This paper proposes an assessment of how to reduce food waste by donating to food banks and social supermarkets and its impact on food poverty and insecurity.

Review of the scientific literature

The "food paradox", generated, on the one hand, by food waste, and on the other hand by poverty and food insecurity was the subject of several studies in the field, but also the attempt to identify new social policies by governmental and non-governmental organisations (Pfeiffer, et al., 2015; Garratt, 2020). Generally, food insecurity has been identified as a response to low incomes and, most often, as a characteristic of the unemployed or those with social assistance (Dobre, et al., 2020). Other categories covered by food insecurity are the elderly or those living on rent, women, single-parent families, people with lower education or those with disabilities. More than that, starting in March 2020, the rate of food insecurity is on the rise due to the economic and social consequences of the COVID-19 pandemic.

A solution to address this phenomenon is given by design networks of food banks or social supermarkets. The controversy caused by this solution is that, most of the time, these organizations can only remedy the effect of the food paradox but do not aim to address the structural causes. Through the common goals, on the one hand, reducing poverty and hunger among disadvantaged groups, and on the other hand, reducing food waste, food banks and social supermarkets actively contribute to achieving the Sustainable Development Goals (SDGs) of the UN 2030 Agenda (United Nations, General Assembly, 2015):

- **SDG1** *"No poverty: End poverty in all its forms everywhere"*;
- **SDG2** *"Zero hunger: End hunger, achieve food security and improved nutrition and promote sustainable agriculture"*;
- **SDG12** *"Responsible Consumption and Production: Ensure sustainable consumption and production patterns"*.

In its 2020 report, the Global Food Banking Network aims to serve 50 million people by 2030, as well as meeting **SDG2 Zero Hunger** and **SDG12.3 Reducing global waste and food losses per capital** (The Global Food Banking Network, 2020).

Thus, we can say that, in addition to providing access to people from vulnerable social categories (mentioned above) to products of strict necessity and reducing losses of producers and traders, these social solutions also offer the possibility to increase employment and living standards (Boukhris-Ferré, 2020). In specialised studies, references to social enterprise and social entrepreneurship are complemented by references to supermarket social responsibility policies (Defourny and Nyssens, 2010; 2010a).

The principle of corporate social responsibility (CSR) is reflected in: donating surplus food to food banks or social supermarkets; reduction / reuse of food waste; sustainable supply; food safety governance and increasing the number of own brands (Pulker, et al., 2018; 2018a). According to CSR principles, the social enterprise (social supermarket), in addition to providing social services, improves individual and collective well-being (Hicks and Kenworthy, 2003; Laguir, et al., 2019). Thus, in the case of social supermarkets, the amount of food waste can be reduced by reducing food waste (Holweg, et al., 2011; Holweg, et al., 2016) or by optimising supply management (Spang, et al., 2019). Basically, responsible eating behaviour must be identified at both individual and community level (Schanes,

2018). However, there are also researchers who do not identify any direct association between the purchase of food in social supermarkets, often at the limit of expiration and the amount of household food waste (Giordano, 2019).

Bank food and Social Supermarkets: goals, taxonomy and sources of funding

Food Bank

The first food bank was called the "St. Mary's Alliance" and was founded by John van Hengel in Arizona - United States in 1967, and since then the phenomenon has spread around the world. A few years after the opening of the first food bank in the United States, the concept was taken over by Canada. Defined as organizations that "function by acquiring donated food, much of which would otherwise be wasted, from farms, manufacturers, distributors, retail stores and consumers, and makes it available to those in need through an established network of community agencies" (Global Food Banking Network, 2016), food banks were first mentioned in Europe in 1984 (France) and 1986 (Brussels), respectively. These formed the basis for creating the European Federation of Food Banks (FEBA) at the end of 1986. The development of a single, organised body at European level, representing food banks, was necessary for evolving food banks in European countries. At the level of 2018, the association includes approximately 400 food banks and branches in 29 European states, of which 5 are associate members (Caraher, et al., 2014; Riches, 1986). Food banks are the foundation of the US emergency food system whose main objective is to fight hunger. However, increasingly often, the employees of these organizations promote the consumption of nutritious and healthy foods, to prevent obesity or diseases caused by inadequate nutrition, among people subject to food insecurity (Handforth, et al., 2013). This is also observed in Australia, the Foodbank of Western Australia (Caraher, et al., 2014a) or in EU Member States, especially in Austria and the United Kingdom.

In the United States, the Food Waste Reduction Alliance (FWRA) is an organization that advocates for reducing food waste by donating food and recycling food waste (energy, composting) and is governed by the following principles:

- complies with the food recovery hierarchy of the United States Environmental Protection Agency (EPA) and initiates, as a matter of priority, actions for the prevention and recycling of food waste (Figure no. 1);

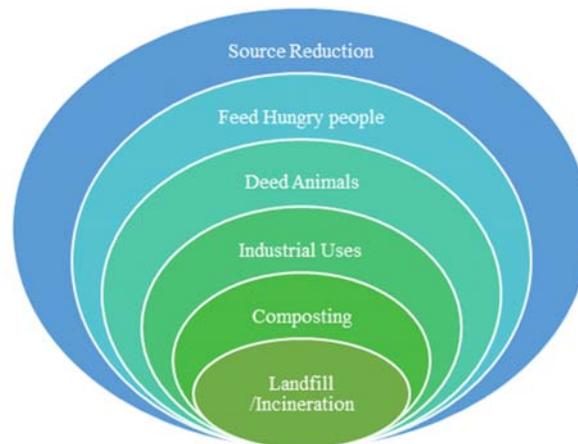


Figure no. 1. Food Recovery Hierarchy

Source: United States Environmental Protection Agency (EPA) - <https://www.epa.gov/sustainable-management-food/food-recovery-hierarchy#about>

- supports voluntary actions to reduce food waste;
- undertakes educational actions aimed at raising public awareness of healthy and responsible consumption in order to reduce food waste;

- supports the identification and creation of policies to develop food waste recycling and donation infrastructure in the US;
- supports the development of global policies and strategies for US states and forms of organization, related to economic reduction, recovery and recycling, with the aim of reducing food waste and increasing donations;
- supports the development of a legislative and fiscal framework that provides greater protection for donor liability and stimulates food donation from donors.

Social Supermarket

Originally created as a social safety net, Social Supermarkets (SSM) are initiatives that contribute to mitigating the effects of poverty and social vulnerability. Unlike food banks, they give the feeling of normalcy to low-income people, in increasing numbers lately, through the dignity conferred by the possibility of choosing the necessary products, and their impact on them cannot be underestimated.

The first Social Supermarket, launched in 2013 in Goldthorpe, South Yorkshire, was followed in the next 4 years by 7 other "parent" initiatives (with several branches / franchises). In 2020, the first SSM was opened in New Zealand.

Complying largely with the operating principles of food banks, SSMs mainly store food surplus as well as some non-food goods:

- products close to the expiration date;
- products with damaged or old packaging;
- incorrectly labelled goods,
- products from too much stock, due to a supply error or due to a sudden change in customer demand etc.;
- stained fruits and vegetables etc.

Not least, social supermarkets can be considered social enterprises with *economic objectives* - selling or providing access to food cheap, *social objectives* - supporting people in need of help and the *environment objectives* - reducing food waste by facilitating the redistribution of food surplus. Holweg interprets all this as a “win-win-win” relationship between producers / traders, organisations that own SSM and customers (NPR.org, 2013).

The element of innovation introduced by social supermarkets is also highlighted in the feasibility study developed within the EU FUSIONS project (Schneider et al.). At the level of SSMs included in the analysis, out of the 380 European organizations active in the field, an assessment was made of the social impact of product redistribution activities. Thus, together with the FUSIONS partners, a logical map was created to include the strategic objectives of the feasibility study (Figure no.2).

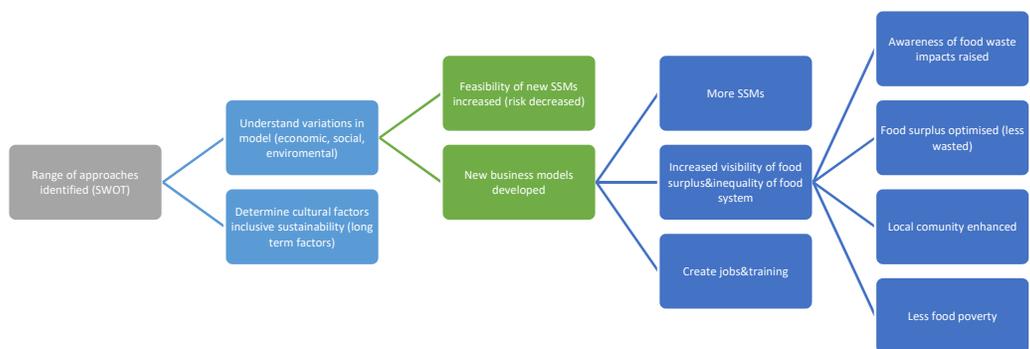


Figure no. 2. Social supermarkets

Source: Feasibility study - Implementing social supermarkets in Europe (2015), p. 8

In the United States, if food banks and food pantries are well-defined organizations, spread across all states, setting up social supermarket chains is a real challenge. Analysing the literature, as well as the results of the feasibility study mentioned above, we can say that there is a basis for identifying the factors that contribute to the expansion of this concept. Thus, in addition to the social benefits offered, the possibility of purchasing products at a reduced price, this system offers people the status of customer and the possibility of a dignified life.

To identify the possibility of successful implementation of SSMS in the US, a study of the current economic framework and the parties involved or interested in this phenomenon is needed:

1. US Government

Reducing excess food and food waste has economic, but also social and environmental benefits. Complications caused by food waste are reflected in:

- 1.1. **economic problems** – in the United States, at the level of retail and consumption, food waste and food waste total about 161 billion dollars (US EPA, OLEM, 2018).
- 1.2. **social problems** – in the US, more than 37 million people, of whom more than 11 million are children, live in households that have faced food insecurity in 2018 (US EPA, OLEM, 2018);
- 1.3. **environmental problems** - food waste, which reaches landfills, produces greenhouse gases (methane).

The fact that in 2018, the United States Environmental Protection Agency (EPA) estimates that approximately 63 million tons of food is wasted confirms that food waste is becoming a growing problem in American society. At the same time, the fact that food that reaches landfills or incineration plants has the largest share of household waste can be a challenge for the authorities. Thus, the possibility of looking at food waste as an untapped opportunity can give governmental and non-governmental organizations the opportunity to create public policies that can reduce on the one hand the amount of food waste and on the other hand can reduce the risk of insecurity food and can combat poverty.

Simultaneously, the EPA provides funding opportunities for optimal solutions for developing a sustainable food system management (US EPA, 2019).

2. US retailers and manufacturers

To ensure a legal framework to support the reduction of food waste by donating healthy food but at the same time to ensure the protection of donor liability, the Federal Government has established provisions, including:

- 2.1. **1996** – "*The Bill Emerson Good Samaritan Food Donation Act*" – encourages the donation of food to non-profit organizations for distribution to people in need (U.S. Government Information, 1996);
- 2.2. **INTERNAL REVENUE CODE** – large tax deductions for businesses to encourage donations of healthy food to specialized non-profits serving the poor and unwilling (U.S. Government Information, 2011);
- 2.3. **2008** – "*Federal Food Donation Act of 2008*" – which encourages federal agencies and federal agency contractors, as far as possible and safely, to donate healthy, excess food to eligible nonprofit organizations to feed people with eating disorders in the United States (U.S. Government information, 2011).

3. American citizens at risk of poverty and food insecurity

In addition to the social benefits offered, the activity of Social Supermarkets aims to solve, long-term, economic, political and environmental problems, leading to the achievement of the sustainable development objectives proposed by the 2030 Agenda:

- 3.1. Decreased unemployment;

- 3.2. Reducing the share of food waste – through innovative approaches to reducing food losses and waste;
- 3.3. Reducing the risk of food insecurity and poverty (Figure no. 3).

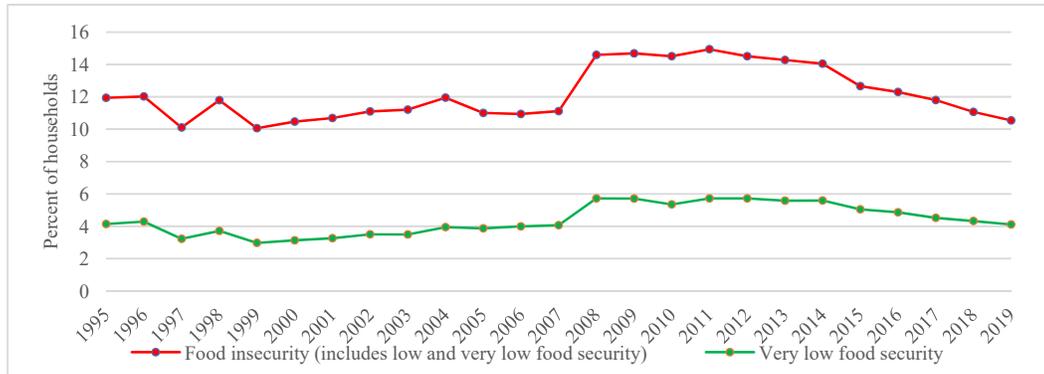


Figure no. 3. Trends in prevalence rates of food insecurity and very low food security in U.S. households, 1995-2019

Source: USDA, Economic Research Service, using data from the Current Population Survey Food Security Supplement

A major importance in achieving the objectives of SSMs is the awareness-raising activities with the purpose of changing their eating behaviour, which will lead to better food waste management at the individual level and, implicitly, at the community level.

Currently, 37% of US food waste is at the household level, which requires the development of policies and strategies for the recovery, recycling and reuse of food waste.

Table no. 1. EPA’s food waste generation methodology for food banks

Scope	Paramater	Quantity	Source
Feeding America	Excess food received that is disposed of (tons)	60787	Feeding America, 2014
	Number of Feeding America locations providing excess food data	203	Feeding America, 2014
	Food waste generated per food bank (tons/food bank)	299	Calculated
National	Total number of food banks nationwide	1263	Hoovers, 2017
	Total quantity of food waste generated by the food donation sector (tons)	378198	Extrapolation calculation

Source: Wasted Food Measurement Methodology Scoping Memo (p. 84)



Figure no. 4. General methodological

Source: Wasted Food Measurement Methodology Scoping Memo (2020), p. 6

The paper "Wasted Food Measurement Methodology Scoping Memo", published in 2020 by the US Environmental Protection Agency, describes the possibilities for measuring food waste used by the EPA (Table no.1), as well as the improved methodology that the EPA developed during 2017 and 2019, through specific estimates of excessive amount of food and food waste (Figure no. 4) and can be a foundation for establishing a chain of SSMs in the US (US Environmental Protection Agency, 2020).

Conclusions

Addressing food poverty by combating food waste in a way that promotes the dignity and accessibility of those facing food and financial insecurity may be one of the definitions of the social supermarket.

Certainly, we can say that food banks have saved lives, but they do not have to be a long-term solution for a family. However, the safety offered by the social supermarket and the creation of an inclusive environment regardless of the financial situation of customers, is doubled by the necessary dignity of people going through difficult situations.

Future research opportunities aim at an analysis of economic and social indicators considered essential in reducing the food paradox. Thus, we will include in the analysis aspects related to the food desert and the distance to the nearest store specific US items.

But then, the sudden change in demand since the emergence of COVID-19 highlighted the weaknesses of the existing supply chains. The cancellation of contracts, the closure of businesses in the food and hospitality segment, have sometimes led to food surplus stuck in farms or warehouses. In order to strengthen the business of American farmers, which would also lead to food donation, it is useful to develop policies that optimize the way food is supplied: on the one hand, the elimination of intermediaries and the possibility for farmers to sell through new distribution channels directly to consumers, and on the other hand the supply of fresh and nutritious products to families in food insecurity, in order to provide them with a healthy diet.

However, social supermarkets are also vulnerable. The risks to their survival stem from the complexity and unpredictability of supply links with food surpluses, the heavy reliance on volunteers in some cases and their financial viability. This raises questions about their sustainability and the positive results they are expected to achieve in supporting vulnerable people.

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The Risks of Agile Methods in the Context of Digital Transformation

Teodora Elena Fogoroş¹, Marieta Olaru², Gabriela Elena Biţan³ and Eleonora Dijmărescu⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: teodora.elena@icloud.com; E-mail: olaru.marieta@gmail.com

E-mail: gabriela_bitan@yahoo.com; E-mail: eleonora.harsan@gmail.com

Please cite this paper as:

Fogoroş, T.E., Olaru, M., Bitan, G.E., and Dijmărescu, E., 2021. The Risks of Agile Methods in the Context of Digital Transformation. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleşea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 756-764

DOI: 10.24818/BASIQ/2021/07/096

Abstract

This paper highlights the main elements of a doctoral research regarding the risks of agile methods in the context of digital transformation. The actual innovative times are conducting organizations to roll and improve their processes by using digital practices in an agile pattern. Turning projects teams to adapt agile methods in different scopes are aiming to improve the quality, to deliver excellent customer value and to drive velocity. If in the last years, innovation slowly entered the market, but it did not provide credibility that someday it will monopolize the organizational processes, the actual days are convincing skeptics that it is mandatory to digitalize the processes to compete the market. Therefore, organizations are strongly involved in the process of usage the agile methods. Though, one of the main project management activity is thought-out the risk management which in the agile methodology is related as well to risk prioritization. There are several risks areas that should be taken into consideration by projects teams before toiling the agile path. The aim of this study is to provide a theoretical framework for further studies on the risks of agile methods used by organizations, in the context of innovation usage. Based on a total of 100 publications, including recognized publishers, in this study we strive to provide a holistic overview on current risks of agile methods and possible risk prevention methods for organizations.

Keywords: Agile methods, agility risks, digital transformation, organizational innovation.

DOI: 10.24818/BASIQ/2021/07/096

Introduction

Reduced costs, reduced time, reduced risks, process simplification, value prioritization and quality improvement are some often encountered keywords in organizations' processes, so they align with the continuous improvement criteria. As today business environments are perceived as ultra-dynamic and hyper competitive, being agile is not considered anymore as optional, but needed to adapt its strategies and to provide successful actions (Ravichandran, 2018). Unlimited internet connection offers to clients the possibility to identify instantly better restaurants, better hotels and better services by a single phone touch (Fogoros, et al., 2020). Agility offers to the client structured deliverables, transparency, communication, swiftness and reasonable prices. Over and above, teams using agile methods are regrouping on a regular basis, daily or weekly, so they are continuously challenged: some demands become far-reaching or involves new ones to prioritize. They are prepared every time to schedule changes and push to other functionalities, by quickly reacting to scope. In this way, the value-based prioritization is one of the main capacities of this teams. Hence, not a single change is easy; clearly, people are used to traditional approaches and may be reticent to use other methodologies than the ones

known so far. This is why adopting agility in organizations can be a sensitive and risky process to implement.

One of the fundamentals of project management activities is represented by the risk management. Though, once starting using agile methods in different activities, risk prioritization must be taken into consideration as well. If not correctly managed since the beginning, a project may encounter issues right before it starts. All teams should first understand the agile methods and its possible impact before starting using it, by considering a plan to alleviate risks (McGee, 2014). Based on the project's characteristics, the agile teams may have different size and departments involved, which raises different dilemmas: deteriorated productivity due to long meetings or communication gaps due to different spoken languages.

Based on statistics provided by the Project Management Institute in 2017, the agile methods have been integrated in organizations on a percentage of 71% (Project Management Institute, 2017), as observed in Figure 1.

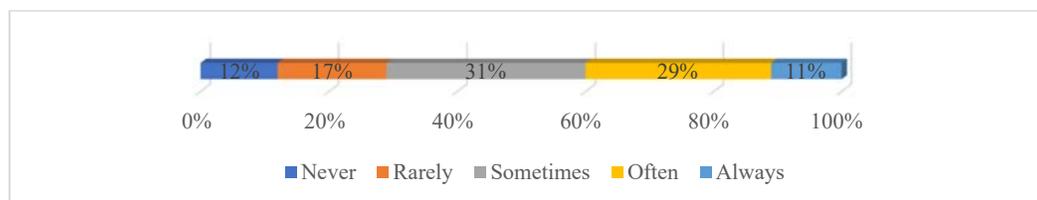


Figure no. 1. Agile approaches in organizations

Source: Project Management Institute, 2017. [online] Available at: <<https://www.pmi.org/-/media/pmi/documents/public/pdf/learning/thought-leadership/pulse/pulse-of-the-profession-2017.pdf>> [Accessed 20 March 2021]

Though considered by several senior executives that agility is a key to success, 2018's statistics showed that agile has not fully spread throughout organizational processes. It is considered that one of the reasons would be the lack of official line up in risk management protocols, opposite of the traditional waterfall risk management procedures, which are more proper. Agility offers continuous improvement and change, but sometimes these often-considered strengths of processes, may turn out as being risky. Risks are often considered as a reason of alert, but it's not the risk itself the controversy point but its management strategy. As specified by Cagan, M. (2008) in her research, risk is a needed element in the innovation processes: the project and product owners should encourage up to a certain point risk-taking among teams or at least consider the possible advantages of it before the final decision. There is not a specific definition for agility, but researchers tend to rely on it to market determinants and challenges, such as IoT (Internet of Things), innovation, digitalization, sustainability and technology (Skare and Soriano, 2021) and to consider it as part of an organization's success. Turning an organization into an agile one means to provide first several skills, such as a clear vision, a governance and a strategic planning. It is considered that committing people in several organizational restructuring processes, they are more likely to create systems based on people needs who are aiming to be open to change and to new learning approaches (Skare and Soriano, 2021). It represents the process of removing agility barriers, such as eliminating complex rules, to allow greater flexibility (Hoelbeche, 2019). Agility is not only related to organizational processes, but to human being as well. In everything people use to do as employees or as humans, agility should be present in everything we do. Using agile methods while developing a software between a company is indeed a good idea to quickly react and respond to the client's needs. Though, letting someone else take the place to the checkout while arranging your products on the tape at the supermarket is also defined agility. So, people must adopt agile reactions in everything they do. Undoubtedly, companies can no longer afford to work on a specific project for years – the current dynamic times we are facing may suddenly change the client's needs so the product developed at the end will no longer represent a current need.

In their research, Bris and Caballero (2015) defined firm's agility as a determinant of specific organization capability and regional/industry level factors. Innovation and digitization brought fast and unexpected changes, each of them turning into challenges for organizations on the market. Hence, agility must seem redundant in a business environment which focus is risk-only. Nowadays businesses

are facing multiple categories of risks: business continuity risks, compliance risks, e-commerce risks, financial risks or fraud risks. In their research, Marquardt, et al. (2018) specified that the lack of IT skills of the employees and the availability of specialists is the biggest obstacle in the alignment with digitalization projects. Consequently, organizations are struggling to offer responses for all these risks, such as: risk avoidance (by eliminating the cause), controlling (reducing the consequences by severity of impact), acceptance (problem-solving oriented organizational culture) and allocation (insurance or subcontracting). In reverse, the usage of agile methods brings transparency, collaborative planning and customer involvement. Though, none of the above should reject the other. It is often considered that traditional risk management and the agile methods' risks are complimentary.

Review of the scientific literature

Digital transformations in organizations

To stay competitive, organizations are nowadays continuously challenged by digital technology, as implementing robust digital tools is crucial to stay on the market. Moreover, digital transformation affects the business structures by implementing a new playing field and changing the competitiveness of firms on various levels (Grab et al., 2019). Fast actions, adaptability and digital practices implementation are elevating the whole industry. Anticipations made by Accenture in a survey report (Awalegaonkar, 2019), shows that by 2022, strategic scaling will be imperative to success. The predictions show that 40% of industrial organizations will adopt IoT and artificial intelligence, 83% of executives confirm that the growth objectives won't be achieved without scaling to AI and 75% of organizations consider they risk going out of business in the next years if they don't scale to (Awalegaonkar, 2019). In the latest research on the concept of digitization and innovation it was concluded that an innovation process that constraints the contribution of several stakeholders are turning into the principal source of sustainable development (Meselu and Berhan, 2020). Even if digital technologies are the departure point for process innovation, other factors such as customer's expectations and digital competitors are very important. Furthermore, traditional business models are as well influenced by technology in the global market: the hotel industry was suddenly replaced by Booking or AirBnb, the music industry is continuously challenged by Spotify and Starbucks was digitalized by offering the possibility to pay with their own card for gaining points and obtaining several benefits (Feroz, et al., 2021).

Digital transformation doesn't represent a single step designed to upgrade some organizational processes, but a process which includes fundamental changes, and which has the capability to create additional opportunities of improvement (Feroz, et al., 2021). It was also debated by Verhoef et al. (2019) in their study that digitization, digitalization and digital transformation should not be perceived as the same: while digitization means automated tasks, digitalization brings extension of digital components to product or service offerings and digital transformation includes the business model innovative criteria and digital platforms. Initially introduced in the manufacturing industry, 4.0 in the scientific literature, the fundamental design principals of 4.0 Industry are the following: decentralization, horizontal integration, interoperability, modularity, product and service individualization, real-time capability, service orientation, smart factory, smart product, vertical integration and virtualization. On the other side, there are the technology trends: advanced manufacturing, augmented and virtual reality, automation and industrial robotics, big data analytics, blockchain, cloud data and computing, internet of people, internet of services, internet of things, simulation and modelling and cybersecurity. Companies are adopting several sustainable and innovative business practices, such as artificial intelligence, IoT, big data analytics and blockchain. Between them, blockchain is considered a software with hyper potential to achieve sustainability in business and industrial practices (Leng, et al., 2020). It can increase the product life cycle, maximize the resource usage and contribute to increased sustainability (Esmailian, et al., 2020). In 2013, Bharadwaj et al. considered that organizational strategy is defined and accomplished by extracting digital resources to create differential value. Later in 2021, Kurtz, et al. mentioned that there is a gap of knowledge on archetypical strategic orientations concerning the ability of organizations to adapt.

Holding an optimistic view, digitization and innovation offers many opportunities for organizations to improve its processes, but as well to create sustainable product life cycles. As Maier, D. (2018)

specified in his research, innovations are defined as new creations of economic significance, performed by organizations.

Agile methods and agility usage in organizations

Once introduced on the market, agile software development methodology was described as the opposite of the traditional waterfall model. The logic of agility offers a flexible approach, followed by a learning from failure, while waterfall stood in a rigorous process management (Fogoros, et al., 2020). As the traditional approach supposes a predefined model with planning based on a work classification structure with landmarks and work processes (Overhage and Schlauderer, 2012), agile focuses on a process control based on meeting’s clients’ needs. As nowadays change is constant and brutal, agile methods are proposing three levels of planning: the release planning (basic strategic aspects), the sprint planning (operational details) and the daily scrum (daily meetings of members for tasks and current state of the project. In Table no.1, we observe the differences between agile methods and traditional methods.

Table no. 1. Opposite perspective between agile and traditional

Method	Planning	Requirement	Documentation	Controlling	Collaboration	Reflection
Traditional method	Landmark planned in advance	Fixed since the beginning of the project	Essential part of the development process	Part of achievement is on team members	Tasks assigned by the project manager	Discussions only at the end of the project
Agile method	Repetition is the base of the process	Constant talk between clients and editors	Unequivocal documentation	Constant meetings on the progress	Flat hierarchy	Continuous communication at the end of each sprint

Source: Overhage and Schlauderer, 2012

Agile methods are running from the philosophy of close, intermittent and compiled collaborations, having as main characteristics adaptive planning evolutionary development, flexibility in the face of changes and continuous communication (Akil Rafeek, 2019). In their research, Lopez-Alcarria, et al. (2019) specified that agile methods praise adaptive development by short and continuous cycles of planning, action, correction and adjustment to provide valuable outcomes. Hence, agility means an ability to respond to change. As noticed by Gannod, et al. (2015) in their article, a special emphasis is exhibited by agile methods on facilitating interactions and team dynamics, supporting collaboration between different departments, articulating goals and encouraging innovation and experimentation. In 2001, Fowler and Highsmith, for the first time, gathered together a team of 17 software developers and agile coaches and practitioners and managed together to define the manifesto for agile, as it follows: individuals and interactions over processes and tools, working software over comprehensive documentation, customer collaboration over contract negotiation, responding to change over following a plan.

Organizations are facing competitive times during the current uncertainty and turbulence in the business environment, so quickly answering to client’s needs is the key to market dynamics. Agile methods presume quickness (fast answer to businesses and clients’ needs), resources (people, technology, processes, knowledge) and adaptability (organization’s flexibility). As there are multiple influencing factors on innovation processes, to apply the concept of agility to innovation requires a clear definition due to specificity. Brand, et al. (2021) in their article considers that the main three capabilities of agility (respond quickly, proactively drive change and integrate the environment) provide a basic understanding of it. Based on their research, the corporate strategy and the organizational system are in charge of shaping innovation between an organization (Brand, et al., 2021). Moreover, Ahlback, et al. (2017) noticed in their recent research that 81% of respondents on a survey observed an increased business performance once agility adopted. During a qualitative analysis, Walter (2020) identified four agility categories in the organizational agility: agility drivers, agility enablers, agility capabilities and agility dimensions. Though, agility should not be considered as a radical approach, which can apply or not, but rather as an integrated holistic concept, taking into account the organizational context and the business environment, as well as independent of the

industry. Walter (2020), specified in her research that an agile organization is oriented both internally and externally. The perception difference is represented as it follows: on the internal orientation, the organization focuses on the coordination of agility categories, while on the external one, it shows a high level of vigilance on the competitive market and the environmental changes.

To conclude, the investment in the level of digitization of an organization, on RandD and design, new product development, market research and branding are considered the main determinants of an agile form (Skare and Soriano, 2021).

Research methodology

Considering as milestone a previous research in the agile lifecycle, where a study on the agile digital transformation in relation to organizational innovation was developed, this article proposes an empirical research based on the existing scientific literature, relied on statistics and results obtained before the possible future changes of the actual sanitary crisis. The aim of this study is to provide a theoretical framework for further studies on the risks of agile methods used by organizations, in the context of innovation usage. Based on a total of 100 publications, including recognized publishers and statistics at European level, in this study we strive to provide a holistic overview on current challenges of agility, risks encountered and recommendations for organizations. A step-by-step process of identification of articles and analyse was followed: selection of sources, search criteria settings (use of keywords), selection criteria (screening of the articles) and content analysis and synthesis (classification of articles based on theme).

Results and discussion

The unpredictable times companies are facing nowadays are conducting them to increase its level of flexibility, by applying methodologies that can answer to customers’ requirements fast, cheap and safe. By definition, agility is fast, cheap, safe, comfortable and easy, when correctly implemented and understood by its users. Though, several risks such as less predictability, lack of innovation and decreased level of staff knowledge are identified in the scientific literature. This study adds a contribution for further studies on the risks of agile methods used by organizations, in the context of innovation usage. Based on a total of 100 publications, including recognized publishers, we strive to provide a theoretical framework on the risks of agile methods used in organizations followed by some prevention methods.

Table no. 2. Risks of agile methods

Risk area	Identified risk of agile methods	Source of research	Authors’ statement	Prevention methods
Demographics	Less predictability	Garbar, D., 2020	Constant changes, no long-term predictions	Project split in smaller phases, requirement clarifications
	Time zone differences, local holidays, training plans	McGee, T., 2014	Iteration planning to know the availability of each team member	Find the best way to communicate to facilitate work between different time slots, alternate meeting times
Team skillset	Not sticking to Agile principles	Garbar, D., 2020	Agile usage while following traditional management principles	Guide the clients, teach them to apply the appropriate principles
	Lack of staff knowledge	Garbar, D., 2020	Agile training investment needed	Support knowledge sharing and mentoring practices
	Decreased productivity	McGee, T., 2014	Large Scrum teams increase the time	Work with small Scrum sub-teams

			spend in meetings and decrease productivity	
	Dispersed team members	McGee, T., 2014	Working face-to-face helps to identify the best methods of work	Often co-location of teams for even a short timeframe
	Lack of early gap acknowledge	McGee, T., 2014	Gaps from both technical and agile should be observed at the beginning	Provide specialized training and time to achieve abilities
	Not co-locate team members by discipline or role	McGee, T., 2014	Look to collocate similar skillsets team members	The product owner and the business analyst may increase partnering chances
	Not pairing senior team members	McGee, T., 2014	Identify team members with specific technical skillsets	Usage of pair-programming method
	Lack of AgileMaster	McGee, T., 2014	Coaches have a deep understanding of agile methods	Coaches can be internal or external and can help the team ramp up more quickly
Culture	Agile is not suitable for a project	Garbar, D., 2020	The need for a clear scope, a clear requirement, fixed budget	Use another more profitable approach
	Not recognize or adjust to different cultures	McGee, T., 2014	Cultural differences play into project's dynamics, some cultures are more vocal than others	Team members must understand an individual's organizational culture
	No transparency	Buganova, K. and Šimíčková, J., 2019	Not revealing the errors	Regularly information about possible errors
	Absence of basic agile education between managers	McGee, T., 2014	Management should know the agile benefits and its possible impacts to the organizations	Training provided for management team
	Lack of communication with the clients	McGee, T., 2014	Customers should be part of the process development	Daily communication with customers which can prioritize the backlog evolutions
Supplier dependencies	Budget risks	Garbar, D., 2020	Agile methods assume constant changes of the product related to market needs	Lean development to manage costs
	Unexpected delays	McGee, T., 2014	Sometimes the development is completed earlier, but implemented in future release	Stay engaged with suppliers

Technical debt	Garbar, D., 2020	Many changes which lead to low system performance	Clarify at the very beginning the non-functional requirements related to performance quality
Not-added value	Buganova, K. and Šimíčková, J., 2019	Later usage of the product or its prototype	In order to make money sooner, the usage should start as soon as possible
Not adequately monitoring schedule, cost and scope variables	Nguyen, D.S., 2016	Some developments fail because of project managers which are not following all the variables	Leaders must be cognizant of organizational issues: motivation, team synergy, etc.
Market's feedback	Berg et al., 2020	Level of understanding of agile methodology	Continuous communication
Third-party vendors	Berg et al., 2020	Adoption of tools and components	Written agreements on services
Uncertainty	Tavares et al., 2019	Possible event that can affect the product	Continuous surveillance
Rare deliveries	Tavares et al., 2019	The customer will lose trust in the product	Make frequent deliveries
Quality of outsourced partners	Berg et al., 2020	Outsourced manual testing	Offer staff flexibility, develop internal staff and focus on core tasks

Source: Authors own research

In Figure 2 we observed the tendency of publishing scientific articles containing “agile risks” and “agile” as keywords, with a clear vision of the fact that 2020 represented the year when agility managed to penetrate the organizational processes, based on ScienceDirect. Indeed, in the pandemic context, agility was present in most organizational processes.

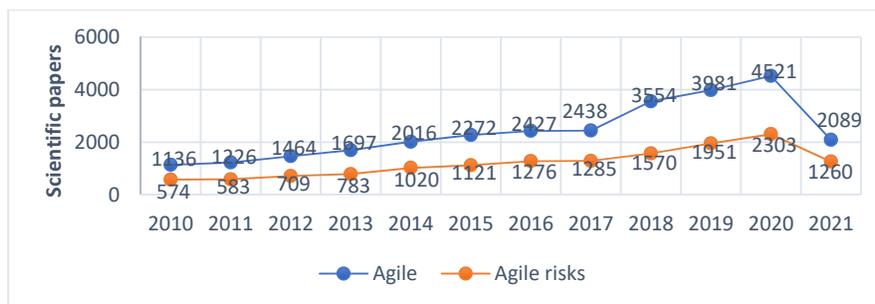


Figure no. 2. Scientific papers publication tendency on agile

Source: Elaborated by the authors

Conclusions

Based on the research results, this paper concludes that there are four main categories of agile methods risks identified in the scientific literature: demographics, team skillset, culture and supplier dependencies. Indeed, lack of knowledge and supplier dependencies are situated on the top. Agile

methods started to be used in organizations since 2000, but only in the latest years its importance increased in process' organizations; as observed before, 2020 represented the year when most of the authors started to invest time in agility's research. Clearly, in the pandemic context, all activity domains were affected, due to daily changes and unpredictable situations, so being agile was a mandatory adoption. The client's demand had to be rapidly answered and following a traditional methodology didn't represent anymore an option. We aim that this study will help organizations to prevent a part of the risks associated with agile methods grace to the preventing methods proposed, before adopting it in their processes, as adapting to challenges brought by digitization is nowadays necessary.

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Durum Wheat Straw as Enveloping and Insulating Material in Buildings: Is It Sustainable? Findings from a Comparative Energy and Environmental Assessment of Alternative Solutions

Carlo Ingrao¹ and Antonio Messineo²

¹*University of Foggia, Foggia, Italy.*

²*Kore University of Enna, Enna, Italy.*

E-mail: carlo.ingrao@unifg.it; E-mail: messineo.ingegneria@gmail.com

Please cite this paper as:

Ingrao, C. and Messineo, A., 2021. Durum wheat straw as enveloping and insulating material in buildings: Is it sustainable? Findings from a comparative energy and environmental assessment of different solutions. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 765-774
DOI: 10.24818/BASIQ/2021/07/097

Abstract

Application of Life Cycle Assessment (LCA) in the building sector is usually performed on the envelope scale, mainly for comparison of several sample-solutions, and provides in-depth analyses of the related energy and environmental performances. Doing so enable identification of the solutions that perform best in energy and environmental terms, and that are determined to be suitable for construction of sustainable buildings.

In this context, the objective of this study is to perform a comparative energy and environmental assessments of three external-wall samples that were designed using different sophistication rates in terms of assembly technologies and component materials.

The samples considered were properly designed as the initial step prior to the energy and environmental assessment. In particular, two ‘unconventional’ enveloping solutions providing the use of natural and recycled materials (durum wheat straw and recycled polyethylene terephthalate) in easy-disassembly and recyclable compositions with one conventional façade.

Results show that the unconventional wall samples perform quite well in both energy and environmental terms, and can be considered as clean construction solutions that are valid candidates for the design of environmentally sustainable and low-energy demanding buildings. The straw-based solution is the one that performs best from an energy and environmental perspective. The choice of one or the other is, however, strictly depending upon the type of buildings that is designed, and the architectural and structural requirements it needs to fulfil.

Finally, the authors believe that the study provides helpful insights on the environmental sustainability of eco-friendly materials and technologies, that can contribute to enhancing the specialised knowledge in the field and to supporting practitioners in similar LCA applications developed in the years following.

Keywords: Buildings; Wall compositions; Recycled material; Natural material; Life Cycle Assessment; Energy efficiency; Environmental sustainability.

DOI: 10.24818/BASIQ/2021/07/097

Introduction

To face the current challenges of energy consumption, climate change and resources depletion, the design of buildings should be centred upon taking environmentally sustainable solutions that allow for reduction of material and energy consumption (La Rosa et al., 2014). Those should be designed with a Life Cycle Thinking (LCT) approach to decrease the environmental impacts, that are associated not only with the building construction phase but, also, with the down-stream phases of use/maintenance and end-of-life that are included within the buildings' life cycles.

In this context, Life Cycle Assessment (LCA) can be used to orient the architectural design to maximising the environmental-sustainability and energy-efficiency rates of buildings throughout their life cycles (Ingrao et al., 2016, 2018a).

LCA has evolved significantly over the past decades, mainly thanks to the valuable work carried out by several research groups on the global scale, and so has become more systematic and robust for estimation of the environmental hotspots of products or complex systems, from the moment it is designed to the moment it gets to the end of its service life and becomes a waste, or an ensemble of wastes, to be treated (Jeswani et al., 2010). Currently, LCA is used for selection of products and processes, in the phases of design and optimisation, and is often coupled with simulation techniques and design tools. In this way, companies can be fully informed on the environmental consequences of their actions, both inside and outside the company gate (Compagno et al., 2014).

Together these developments have placed LCA in a central role to identify cradle-to-grave impacts of materials, products and energies, as well as of the complex systems in which they are utilised and processed. In the building sector, LCA allows for evaluation of important aspects like the energy embedded in the building materials utilised and the operational energy, the transportation of those materials to the construction yards, as well as the associated emissions of Greenhouse Gases (GHGs) (Malmqvist et al., 2011).

When LCA is used as a support-tool for building design, it should be coupled with an in-depth energy analysis, for application on the envelope scale. This practice is well-accepted in the literature and should be followed for all parts of the envelope, namely the perimeter and the inside walls, the ground-floor, the halfway-floors (for multi-storey buildings only) and the roof, through life cycle evaluations of several solutions. These are generally represented by samples characterised by a one square metre surface and a thickness which depends upon the composition designed. Comparison of the compositions hypothesised enable identification of the most energy performing and environmentally sustainable ones, that then are used for the modelling of the building life cycle by considering the related square metres installed (Ingrao, et al., 2016, 2018a).

In this context, this study was aimed at performing energy and environmental life cycle comparative assessments of three external wall samples that are characterised by different rates of sophistication in terms of assembly technologies and component materials utilised. According to the authors, the importance of energy-environmental studies like the one discussed in this paper is linked to the fact that the way an external wall is designed and assembled influences the consumption of the building operation energy, the environmental sustainability of the entire building's life cycle, and the well-being of the building's users. So, as also proven by the subject literature, the message that the authors wish to convey to readers through this manuscript is that due attention needs to be paid upon the building envelope if acceptable levels of energy performance, environmental sustainability, and human health and safety are desired to be achieved.

Materials and methods

The study reports upon a comparative Life Cycle Assessment (LCA) of a set of building envelope samples, to highlight those performing best in terms of energy efficiency and environmental sustainability. For this purpose, the study was carried out according to the subject International standards ISO (2006 a, b), which means that it was articulated in the three main phases of goal and scope definition, life cycle inventory, life cycle impact assessment.

Description of the designed wall composition sample

For the comparative analysis, three wall composition samples were designed in a way for them to comply with the thermal transmission limits foreseen for the area of interest. It was assumed that those compositions are implemented in the municipality of Piazza Armerina within province of Enna (the smallest city of Sicily located practically in its barycentre). With regard to the Italian climate classification, as for 70% of the Enna municipalities, Piazza Armerina falls within a 'D' climatic zone. Fig. 1 shows the thermal transmittance limits for all the Italian territory, from which it is possible to extract those for the D climatic-zone.

Actually, the three wall composition samples were designed with the aim of furthering energy performance and environmental sustainability of innovative building solutions compared with a basic solution that is representative of the current building construction practice in the Sicilian region. Those compositions were depicted in Fig. 2, with indications of the values of thickness and thermal transmittance for single-layer and for the entire composition; the thermal transmittance was calculated based upon the ISO (2007).

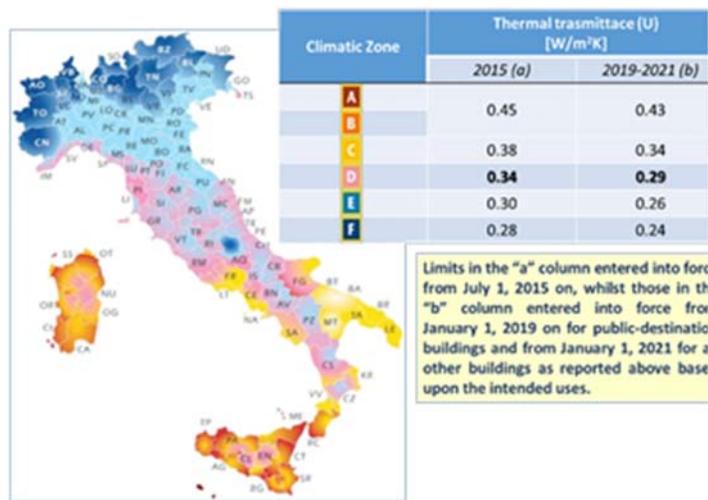


Figure no. 1. Italian climatic zones and related thermal transmittance limits for external walls.

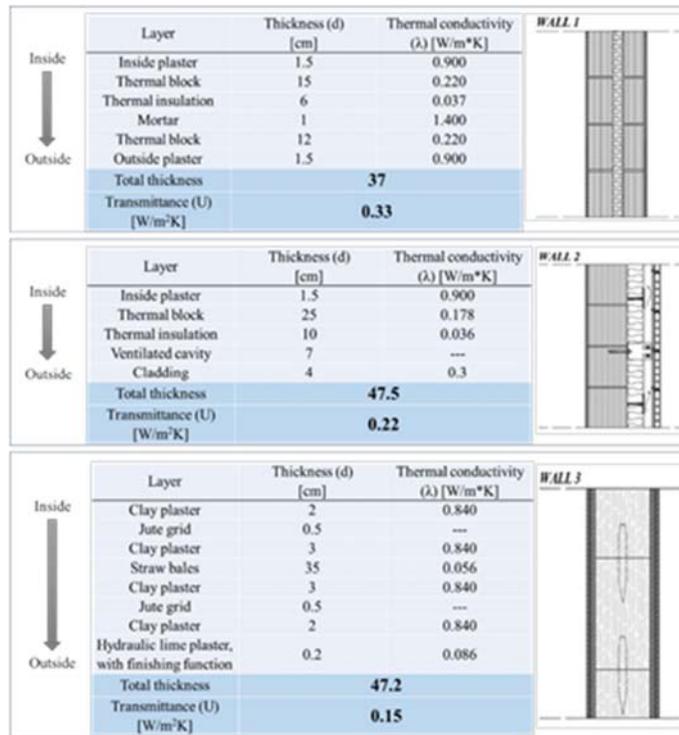


Figure no. 2. Thickness and thermal conductivity by layer, including the total thickness and the thermal transmittance for three wall composition samples assessed in this paper. In wall 2, the thermal insulation is realised using panels made out of recycled Polyethylene Terephthalate (R-PET), whose industrial production was environmentally investigated by Ingraio, et al. (2014).

In particular, as regards the ventilated façade, for calculation of the thermal transmittance the air cavity's thermal resistance was neglected, considering the resistance to the external surface as the value related to still air. This approach is widespread in the literature for a precautionary modelling of ventilated facades, not taking into account their positive contribution during the summer period (Ingrao et al., 2016). The values of thermal conductivity of the homogeneous layers and of equivalent conductivity of the non-homogeneous layers were declared by the manufacturers of each component material and, in the absence of this, the authors used the thermal properties proposed by the Italian reference standard (ISO, 1994).

Goal and scope definition

This can be considered as the starting phase in any LCA elaboration, and provides the identification of the objectives of the study and the limits of the system investigated in order to avoid neglecting relevant parts of it.

In this context, the aim of this study was to perform a comparative LCA of the three layer sets presented in the previous sections, and to highlight the most relevant inventories and environmental impacts.

In particular, the study was conducted by comparing two unconventional solutions with a conventional one, so to contributing to understanding if it is environmentally worth utilising more sophisticated assembly technologies in combination with recycled insulation materials (wall 2), and natural thermal-insulation and finishing materials (wall 3). In particular, it was provided to use R-PET fibre mats because they are characterised by thermal insulation performance rates that are quite comparable with those of other more widespread conventional materials (Ingrao et al., 2014, 2016). Durum Wheat (DW) straw cultivation was planned for usage in wall 2 as it is highly produced in - and so is highly representative of - the study area (Chinnici et al., 2015). In addition to this, it is increasingly used for unconventional applications, like in buildings, other than the most widespread use as animal bedding or feeding. Those applications contribute to improving the environmental sustainability of farming activities in a life cycle perspective, and enable extracting some of the largest value that is contained within straw.

As part of this phase, the functional unit (FU) was defined to be 1 m² of wall, with a 50-year service life, as also indicated by Pulselli et al. (2009) and Rossi et al. (2012).

With regard to the system boundaries, a "cradle-to-cradle" approach was considered as, for some components, the authors explored to reuse them as such or to recycle them, so reducing them back to the materials which they consisted of. For the assessment, the system boundaries were subdivided into four subsystems, as depicted in Fig. 3.

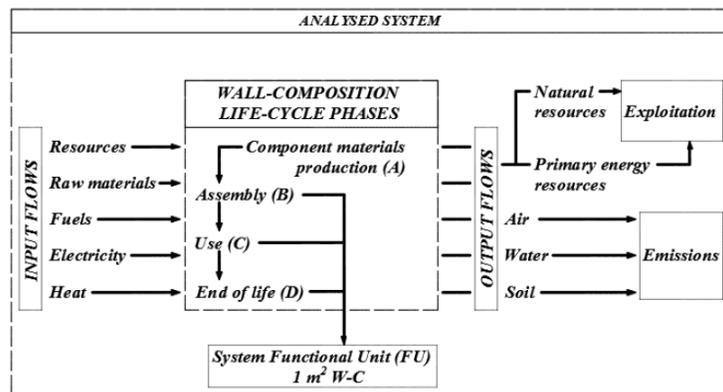


Figure no. 3. The figure shows the boundaries of the system investigated

Life Cycle Inventory

As part of the inventory phase, input and output flows were analysed starting from data collection and elaboration. In particular, since particularly specific systems were evaluated, priority was given to the use of primary data deriving from the design of the three wall compositions in terms of type and

quantity of the materials utilised. Furthermore, secondary data were taken from international databases such as Ecoinvent, and included the extraction of resources, the production of materials and energy, as well as the life cycles of the means involved in the input material acquisition. In addition to this, previously studies were accessed: in particular, data regarding the production of the recycled-PET panel used for thermal insulation of wall 2 was extrapolated from Ingrao et al. (2014), whilst straw was modelled as a co-product of DW cultivation in the same area of Sicily in which the wall were supposed to be installed. Primary data associated with the joint production of DW grains and straw were collected in collaboration with local farmers and producers by Ingrao et al. (2018b), and were published in the literature: those data were extracted from that paper, and were used for this assessment development.

Overall, data collection and processing were performed for each of the four subsystems which the system was broken down into, namely material preparation and acquisition, assembly of the three wall compositions, followed by its use and end-of-life. Moreover, data collection was carried out constantly accessing the Ecoinvent software, to check the need to create processes and raw materials that were actually missing in the database. Fortunately, it was found that all supportive data needed were already included within Ecoinvent, thereby avoiding creating new items or making assumptions and hypotheses for using secondary data within the database.

Finally, the following sections reports detailed discussion of the data and methodological approach used for the inventory analysis development.

Wall composition assembly from raw material preparation

In this research, the assembly phase of the three wall composition samples depicted in Fig. 3 was set-up to include production of the component materials. Therefore, the related modelling was made by considering 1 m² of wall composition as FU and accounting for the component materials in stake, based upon both surface mass (kg/m²) and transportation from the manufacturer to the Building Construction Yard (BCY) for installation. Input transport flow values were not reported for reasons of space: it can be asserted that all material inputs, but the recycled-PET panels, are supplied from manufacturers in the around of 50 km. By contrast, the recycled-PET panels are supply travelling for a nearly 1600km distance. All the elaborated data were listed in Table 1. From the table, it can be observed that the three walls have comparable mass values in the range 185-190 kg/m².

Table no. 1. Relevant input data and related total mass per unit area of the three wall compositions under study

Composing material	Thickness [cm]	Dimensions [cm]	Weight by piece [kg]	[kg/m ²]	[N. of pieces/m ²]
Plaster	1.5	-	-	2.25	-
Thermal block (bricks)	15	15x25x25	5.9	91	15.4
Thermal insulation	6	6x100x50	0.45	0.9	2
Mortar	1	-	-	2	-
Thermal block	12	12x25x25	4	61.6	15.4
Plaster	1.5	-	-	2.25	-
Mortar for brick installation	-	-	-	27	-
Total mass (WALL 1)		187		kg/m ²	
Composing material	Thickness [cm]	Dimensions [cm]	Weight by piece [kg]	[kg/m ²]	[N. of pieces/m ²]
Plaster	1.5	-	-	2.25	-
Thermal block (bricks)	25	25x25x25	8.7	134	15.4
Thermal insulation	10	10x100x50	1.5	3	2
Ventilated air cavity	1	-	-	-	-
Cladding	4	4x100x25	7.5	30	4
Aluminium structure for cladding support	-	-	-	2	-

Mortar for brick installation	-	-	-	13.5	-
Total mass (WALL 2)		184.75		kg/m ²	
Composing material	Thickness [cm]	Dimensions [cm]	Weight by piece [kg]	[kg/m²]	[N. of pieces/m²]
Clay plaster	2	-	-	28	-
Jute grid	0.5	0.5x200x200	14.6	7.3	0.5
Clay plaster	3	-	-	42	-
Straw bales	35	35x50x120	18.9	31.5	1.2
Clay plaster	3	-	-	42	-
Jute grid	0.5	0.5x200x200	14.6	7.3	0.5
Clay plaster	2	-	-	28	-
Lime mortar for the wall finishing	0.2	-	-	2.8	-
Wooden picket	-	5x35x5	0.324	0.648	2
Total mass (WALL 3)		189.55		kg/m ²	

Finally, the assembly phase modelling was complemented with the estimation of the energy consumption associated with the on-site installation activities: electricity and fuel use from different construction equipment and activities were considered for that purpose. In this regard, considering the subject literature Ingrao et al. (2016) highlighted that such an energy consumption generally varies between 1% and 4% of the total energy embedded within the construction materials utilised. Therefore, for the first two masonry samples, it was appropriate to assume an average value of 2%. As regards the third sample, electricity consumption is implied for the use of a construction site mixer for the installation of the extrados finishing layer, and a 0.224 kWh /m² was estimated.

Electricity consumption associated with the 50-year operation of the walls

This phase was modelled as the amount of electricity consumed for indoor heating and cooling, considering the heat losses and gains through the analysed walls both in winter and summer. The related energy analysis was carried out following Stewart (1948), Pizzetti (1986), Ciampi et al. (2003), and Ingrao et al. (2016), and results shown in Table 2 were obtained.

Table no. 2. Values of operational electricity with a 50-year temporal horizon

Wall	$E_{e(\text{cooling})}$ [kWh/m ²]	$E_{e(\text{heating})}$ [kWh/m ²]	$E_{e(\text{tot})}$ [kWh/m ²]
1	44.15	54.31	98.45
2	29.15	36.21	65.35
3	20.29	24.69	44.97

From the calculated values of thermal transmittance (U) reported in Fig. 3, there is evidence that all of them are in compliance with the limit established for the Italian Climate Zone D, namely 0.34 W/m² K, and both wall 2 and 3 are so energy performant that they meet the more restricted limit (see Fig. 2).

End of life

This phase is about disposing of the wall samples, and treating the component materials. Already in the design phase, it is necessary to select less impacting materials and assembly technologies that enable separating the various elements, so that the latter can be recycled separately into valued-added secondary raw materials.

In this paper, the end-of-life was modelled on the basis of the composition of each wall analysed, using background data, and on the local waste-management practice. In particular, different end-of-life scenarios were considered for the dismantle-derived materials, namely landfill, recycling, or re-use. Results from this phase development were shown in Table 3.

Table no. 3. Values of operational electricity with a 50-year temporal horizon

Wall	Composing elements	Quantity (kg) per m ² of wall sample	Percentage incidence on the whole wall [%]	Disposal scenario
1	All	187	100	Regeneration for the production of filling material for road embankments, in a special treatment plant
2	Bricks	134	72.53	
	Claddings	30	16.24	
	Plaster	2.25	1.22	
	Mortar	13.5	7.31	
	Recycled-PET panel (10%)	0.3	0.16	
3	Clay plaster	140	73.86	
	Jute grid	14.6	7.7	
	Outdoor finishing	2.8	1.48	
	Wooden material	0.648	0.34	
2	Recycled-PET panel (90%)	2.7	1.46	Recycling
	Aluminium frame	2	1.08	
3	Straw bales	31.5	16.62	Re-use as animal feed

Results and discussions

The Life Cycle Impacts Assessment (LCIA) phase was conducted using a joint mid-/end-point approach using Impact 2002+ as the assessment method (Jolliet et al., 2003), that is part of the Simapro software that was used for this study development. Results were expressed in the form of weighing points measuring the environmental damage affected. From the assessment, it was found that the three walls presented the following points: 0.0415 pt (wall 1), 0.0255 pt (wall 2), 0.0257 pt (wall 3). It is therefore clear that the two unconventional construction types are nearly 40% less impacting compared with the conventional one, consequently to a better behaviour in energy efficiency and environmental impact terms. The obtained results were divided into the three phases composing the life cycle system as shown in Table 4.

Table no. 4. Comparison of the three walls' environmental profiles based upon with environmental damage results per single life-cycle phase

WALL	Life cycle phases		
	Assembly	Use	End-of-life
	<i>Weighing points</i>		
1	0.0194	0.0202	0.0019
2	0.0189	0.0134	-0.0068
3	0.0268	0.0074	-0.0085

From the table, there is evidence that, in the assembly phase the building envelope made with straw (Wall 3) performed worst, due to the impacts associated with agricultural production and processing of straw and jute. With a score of 0.0151 pt and 0.0056 pt respectively, jute and straw represent 56.34% and 20.78% of the damage associated with the assembly phase (0.0268 pt). In addition to this, with a total damage of 0.0207 pt, they contribute to the damage overall associated with the wall (0.0257pt) for around 80%. However, a low value in the phase of use of the wall and a negative contribution during the end-of-life phase make the total score of this constructive solution not only quite comparable to that of the ventilated wall, but also far better than the conventional one. This wall has a total electricity

consumption during the use phase equal to 44.97 kWh/m², which leads to having a weighing point in the use phase which is about half of the other two casings analysed. As for the end-of-life phase, the negative contribution is due to the possibility of using straw as substitute in livestock feeding, thereby avoiding relevant impacts associated with conventional feed production. The negative contribution in the end-of-life phase of the ventilated wall is instead due to the type of construction adopted. In fact, the ventilated chamber is of the 'dry' type, which means that a properly designed aluminium frame was installed for layer assembly instead of the conventional mortars: doing so enable separating and recycling both the R-PET panel and the aluminium frame. As clearly shown from Table 7, wall 2 shows the best performance in the assembly phase: this should be attributed to the environmental benefits associated with the application of an insulation panel that is produced using an 80% recycled-PET granulate.

Finally, with regard to wall 1, while this satisfies the thermal transmittance limit of 0.34 W/m²K, shows the worst environmental performance. This derives from the worse energy performance in the use phase resulting in higher environmental damages, and from the environmental burdens associated with the wall treatment disposal being greater than the benefits obtainable from generation of a filling material substitute. In addition to this, it is the only wall among the three assessed having the environmental damage associated with the use phase exceeding – though slightly - that associated with the production one.

Entering into the merits of the damage categories being affecting by the wall in its life cycle, the values reported in Fig. 4 were obtained.

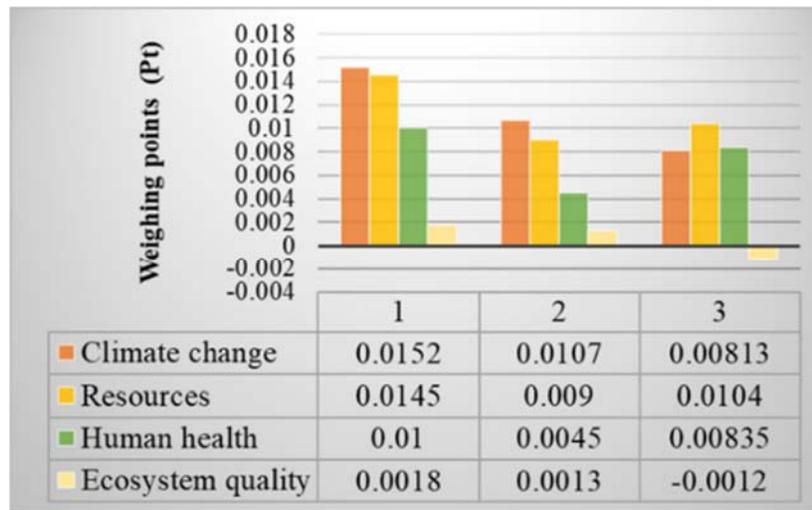


Figure no. 4. Comparison of the three walls analysed, based upon weighing results for the four damage categories considered by Impact 2002+.

The assessment was then extended to the details of the substances emitted and primary-energy resourced consumed associated with the damage categories that are most affected and so can be considered as most representative of the walls' environmental profiles, namely 'climate change', 'resources', and 'human health'. The weighing points associated with those substances and resources were depicted in Fig. 5.

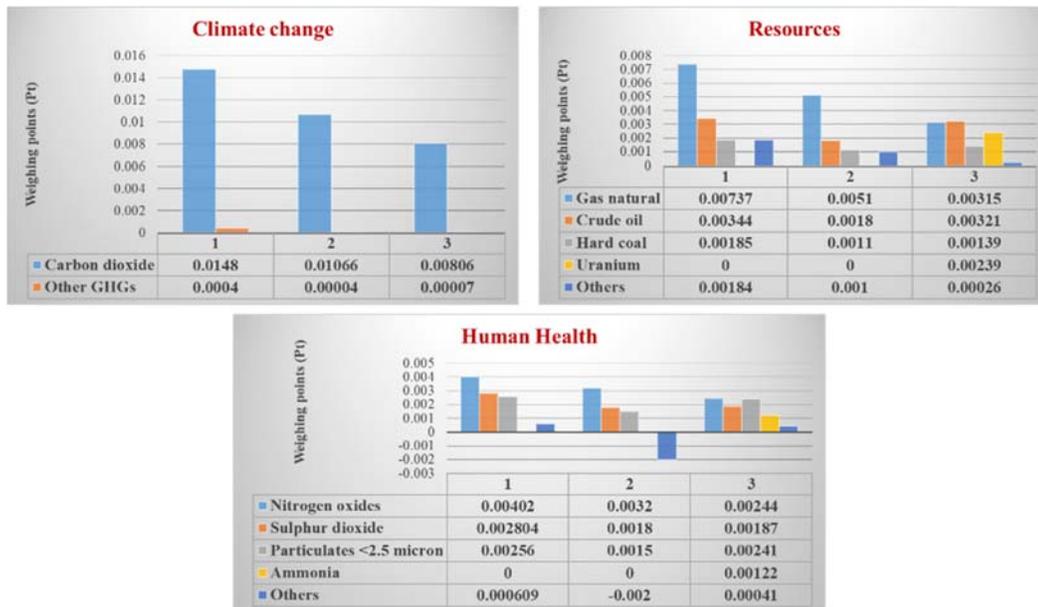


Figure no. 5. Most environmentally damaging substances emitted, and resources consumed for the three most affected damage categories within Impact 2002+.

Conclusions

The study attained the proposed goal of applying LCA to compare three external-wall solutions, constituted by different materials and put in place using different technologies, as the essential step to identify the best solution from both the energy and the environmental point of view.

Results show that, overall, walls 2 and 3 – and, especially, wall 3 - perform quite well in both energy and environmental terms, and can be considered as valid candidates for the design of environmentally sustainable and low-energy demanding buildings. The straw-based solution is the one that performs best from an energy and environmental perspective. Considering the both solutions present remarkable energy performances, the choice of one or the other is strictly depending upon the type of buildings that is designed, and the architectural and structural requirements it needs to fulfil.

Finally, thanks to this study the authors could observe that the usage of natural and recycled materials in easy-disassembly and recyclable compositions are clean construction solutions that can be considered as key design choices for environmental sustainable and low energy demanding buildings along their life cycles.

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Productivity in the Telework Era - A New Leadership Perspective

Andreea Bichel¹, Andrei Cepoi², Enas Aboura³ and Bogdan Frățiloiu⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: andreea_bichel@yahoo.com; E-mail: idandrei@gmail.com

E-mail: enaso1993aboura@gmail.com; E-mail: alexbogdan1977@gmail.com

Please cite this paper as:

Bichel, A., Cepoi, A., Aboura, E. and Frățiloiu, B., 2021. Productivity in the Telework Era - A New Leadership Perspective. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. *2021.7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 775-783
DOI: 10.24818/BASIQ/2021/07/098

Abstract

Digitalization has been a debated subject in the 21st century, especially during the SARS-CoV-2 pandemic when telework has become the base pillar for sustainable economy. This is the reason why, in this paper, the authors are analyzing the interplay between leadership, digitalization and how these two concepts are affecting the productivity in the business world. Starting from the recent articles and studies, our focus is to investigate how the organizations are implementing digital transformation, while aiming for better results and outcomes.

The analysis was carried out by referring to international literature for which the authors have enumerated different ways and situations where productivity was affected by telework; nevertheless, given that the pandemic is not over yet and that the timeframe these studies for mass remote working are less than a few years, there is a lot of room for further research on the effect of remote working, connected to productivity when longer periods are used as reference.

By exploring the results of the literature review and studies performed on different industries and in different countries, as well as by running a quantitative analysis of leaders' perception toward digitalization, telework and productivity in Romania, the authors identified a viable, long-lasting or even permanent trend for many leaders – to continue to work remotely as a beneficial and much better business plan with positive results in productivity.

Furthermore, the article develops a better understanding of future leadership trends and at the least, point toward three fundamental objectives specified as follows: identifying the growth rate of teleworking in the last two years, identifying specific decisions of organizations and leaders willing to prevent decreased productivity levels by changing their processes, and identifying possible new leadership trends for post pandemic business sustainability.

Keywords: Leadership; digitalization; productivity; sustainability; SARS-CoV-2.

DOI: 10.24818/BASIQ/2021/07/098

Introduction

Many articles, studies and books have been describing the leadership styles, competences, and values of the practitioners; during the last years, all concepts suffered different changes and updates along with the dynamic environment we all live in. Starting with the economy evolution, the generations and trends, leadership had different perfectible practices and methods.

Right now, as the entire society is learning to adapt to this unprecedented 21st century crisis, that had a worldwide impact across all areas of interest (economy, governments, communities), we encountered

increasing social differences, modified status quo of all aspects of life and even a different interest to new models of business.

Digitalization is an extensive process where “a firm employs digital technologies, to develop a new digital business model that helps create and appropriate more value for the firm” (Verhoef, et al., 2019). This new process will affect operational routines, and even business decisions and capabilities (Li, et al., 2018). Leaders should take a moment for creating a consensus of interpretation for the existing crisis within the organizations, while obtaining a shared and tight agreement on the vision and actions to be taken for full commitment (Carrington, Combe and Mumford, 2019).

According to Carrington, Combe and Mumford (2019), the risk is including the bivalency of this process as the senior leadership is a strong pillar and have a key-role to play. Therefore, we are expecting a leadership cultural legacy in terms of new business reality by following the changes that occurred due to the pandemic.

The relationship between digitalization and leadership in times of pandemic

Digitalization is an ardent topic these days as the governments, companies and even citizens have embraced this concept, especially nowadays. In the context of leaders, digitalization is known as a corporate instrument used for value creation or for day-to-day tasks. Executive leaders have noticed the companies do not operate isolated from what is happening around the world in terms of development, change or even pandemics. The opposite is true due to the influence and impact of economic institutions have in the era of digitalization. Therefore, change and orientation toward a new leadership style is necessary for including the benefits and advantages involved in this shift.

Beginning from 2019, digital transformation has been explained and defined as an implementation that can improve business processes and support the profit and loss statement and operational efficiency by using process optimization as the basic pillar (Cenamor, Parida and Wincent, 2019). Digitalization was an incredible worldwide force in 2020 even until the global pandemic completely transformed it. Today, digitalization is not just a source of innovation, as specialists refer to digitalization on a requirement level (Mitsuru, 2020).

The main connection toward digitalization and leadership is the new policy of working from home or telework. Studies have been conducted to investigate and capture to what extent the attitude the managers have toward telework can make it more difficult to adopt it in organizations. The results revealed that personal belief-oriented factors such as self-perception of self-efficacy and facilitation conditions have a strong influence on the perceived ease of telework use. To put it differently, the results confirmed what the literature hypotheses related to management issues have become the barrier for telework programs while also, on the other hand as executives become more familiar with telework and see positive experiences emerging out of it, the adoption of telework tends to increase (Silva, Montoya and Valencia, 2019).

A different approach when assessing telework was focused more on what are the life stage employees are and how does that affect them, examples included gender, marital status, or parenthood; specifically, irrespective of gender and marital status, parents are less likely to telework compared to those without children. Regarding individuals without children, single individuals are more likely to telework than married ones, and males more likely than females. In contrast, for individuals with children, the partnered parents are more likely to telework than single parents, and females more likely than males. Our findings suggest that as the most important feature in family-life stages, children play a vital role in telework behavior (Zhang, et al., 2020).

When it comes to flexible work arrangements, we understand that this means giving the employees the possibility of moving away from regular working hours of traditional office locations. According to studies connecting preferences of leaders toward telework point out that different leadership styles tend to prefer or not teleworking – looking now only from the perspective of output controls, we can see the tendency that managers who focus more on output control will be more willing to favor teleworking empowering employees to have more autonomy, while on the other hand the managers who actively

monitor performance and micromanage employees will be less likely to favor teleworking (Groen, 2018).

However, not all reports share the same insights and a different report from World Economic Forum suggests that 78% of the business leaders interviewed belied that the hybrid and work from home programs will have a negative impact on productivity. This is a result of mental health and well-being difficulties as well as distractions connected to childcare or connectivity. The Future of Jobs report also found that about 60% of works from high-income countries like Switzerland or US cannot work remotely while economies such as Egypt or Bangladesh the percentages increase to 80%-90%. One-third of the leaders have also replied that they are taking steps to create a sense of belonging and community with their employees in the online space (Whiting, 2020).

Different studies have proposed and tested models of leadership which can be applied during telework and they are focusing on the ability of the teleworking employee namely competence or incompetence levels and their social saturation or isolation on one side and the role of the leader, such as to incorporate the teleworker to the team or expect move in the teleworker's social isolation or develop the teleworker's relationship and skill or finally, focus on upgrading the teleworker's skills (Wojcack, 2016).

Regular challenges that affected employees who had to extensively work remotely, and for whom this was not the default work schedule, include the lack of designed home office space that resulted in improvised working setups and the closure of schools that forced parents to supervise their children also during standard work hours. A different study looks into how mindfulness practices can help employees not with the logistical challenges but rather how they internalize more from building a stronger psychological framework. The study demonstrates that mindfulness might help employees in three ways: facilitating psychological detachment from work, improve attention to work related tasks and better help them recover from Zoom and screen fatigue (Toniolo-Barrios and Pitt, 2020). Therefore, studies have been conducted to investigate and capture to what extent the attitude the managers have toward telework can make it more difficult to adopt it in organizations.

Telework - Productivity connection translated within the pandemic business environment

In this part of the article, the authors have investigated how remote working is affecting the level of productivity that employees have consider first that productivity is a key success objective in most of the businesses. Research has been conducted to reflect on insights connected to the rapid adoption changes and the effects on the productivity of the mass remote working policies and emerging behaviors, the IT systems and business procedures that had been changed to better suite remote work, why remote working is better suited for certain industries or specific tasks and impractical for other and what produces different changes in productivity from both leadership and management side as well as logistics and personal conditions of remote workers.

There is no doubt that different changes can have a stressing effect on the employees and during the pandemic they included worries about safety, layoffs or taking care of children who are attending distance learning; according to State of Work survey, 84.5% of business do intend to continue to offer the possibility for workers to continue to work remotely as an option while some like Twitter go even further and have instituted permanent remote working policies; first and foremost we need to agree on what productivity actually symbolizes so that we can assess the impact that working remotely has on it – to put it simply, productivity is how efficient people are at completing tasks, how effective they are to produce a desired result (Nevogt, 2020).

The pandemic has accelerated the number of employees working from home or remotely for example in USA pre-pandemic the number of employees who were not working from office premises were between 5% and 16% however this has increased to 65% according to studies in 2020; Initial finding have shown that productivity has not changed or has even increased at least in the first months following the decisions for mass remote working for employees and surveys have pointed out that it is largely influenced by company culture and its existing leadership (Kazi, 2021).

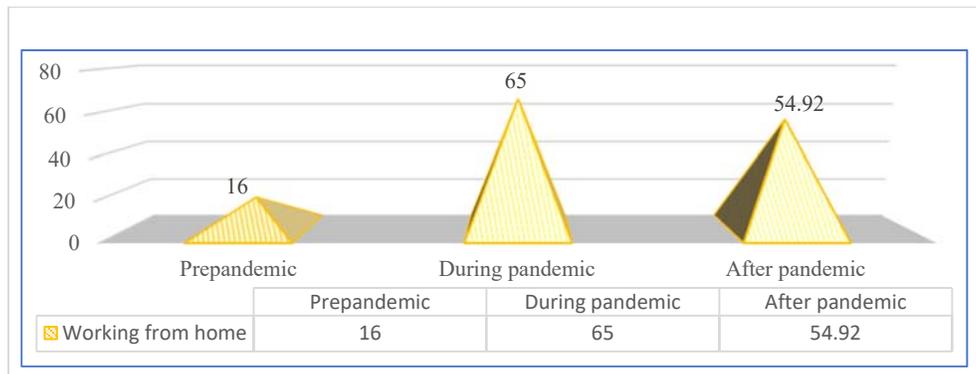


Figure no. 1. The evolution of telework levels in USA during the SARS-CoV-2 crisis

Source: Developed by the authors according to Chandni, 2021

Because remote working was not a common practice in the majority of companies many leaders and employees did not have the necessary data to test and improve working from home policies and methods and had to rapidly adopt it with the learning curve associated with any new competence and behavior (Nemțeanu and Dabija, 2020). A study was done before the pandemic where 42% of the managers answered that the monitoring of the productivity levels of their own employees is the biggest challenge for them and this has outweighed concerns linked with communication or interpersonal connection; The possible distractions or different schedules employees had to adapt to while working from home has created an emerging need of flexibility for them and so a hypothesis can be made that if managers are checking the levels of productivity by monitoring attendance to virtual meetings or on-calls during business hours, then they might use the wrong measuring methods. As a result, one alternative to use the full potential of technology is not to use it as surveillance but rather create trust and use tech for remote collaboration opportunities; Alternatively, while surveillance can be counterproductive research show that employees want to be visible and the need for recognition has increased by levels of 30% during remote working (Alper-Leroux, 2021).

Companies both who offered IT applications for remote collaboration systems and teleworking tools have seen the demand for their products increase exponentially, Zoom for example saw the number of downloads in March 2020 to multiply 14 times in US, and between 20 and 55 times in European countries such as UK, Spain and Italy; not only that the adoption of Zoom has increased exponentially but also other IT companies started putting more effort into such remote collaboration products and innovate the space to ride this trend. Nevertheless, while the adoption of these platforms was critical for employees to continue to work remotely as they have done in the offices and so that their productivity not to be affected, the technology has leveled the fields and knowledge, and know-how remains one of the most important competitive advantage a company has; focus should be kept on that they can exert it at the same level and not be affected using more modern collaboration tools and systems (Kodama, 2020).

There are however aspects we need to deep dive to assess the conditions different surveys are being conducted and how the results could be affected by them. To illustrate such an example, a work remotely experiments followed by a survey at the Trip.com Group Chinese company, which is the biggest online travel company in China, have shown that for the first nine months since testing work from home there was no drop in productivity, but in contrast the productivity went up by 20%. While this has come as a pleasant surprise for the management, we need to state that to benefit from the work remotely policy the participant had to meet several requirements including to not have children, to have an additional room besides the bedroom as well as to have a good quality internet. Unfortunately, we cannot rely only on this data as the pandemic begins and all people were put into lockdown and work from home, these three conditions could not be met by all employees and as such, the results in productivity can be different (Myska, 2020).

Another way to look at research is to run them similarly but in different time periods – as such, another interesting research that studied knowledge workers in particular both in 2013 and again in 2020 found that among other things, the lockdown helped people focus more on the tasks that really matter, helped

employees take more responsibility on their own schedules while doing 50% more activities because of their own choice while half as many for the ones someone else has asked them to do it (Birkinshaw and Stach, 2020).

Studies have shown that productivity can be increased also by working more hours, so attention also needs to be given when comparing productivity changes when employees work from office and work from home. One study has stated that remote workers work an average of 1.4 more days per month, which adds to an additional 3 weeks per year. Also tied or not with more time spent working, the results also showed that 29% of them struggle with work-life balance while 31% answered that they should take a day off to support their mental health; suggestion on how remote workers can stay productive because of Airtasker survey includes taking breaks spread throughout the day and using time-management technique such as Pomodoro, set a fixed interval for work hours and keeping a to-do list; the study also showed that the biggest benefit is not having to commute to work while the biggest challenge relates to connecting with coworkers remotely (Caramela, 2020).

Other surveys seem to back up the results that employees tend to work more hours when they work remotely and as such a survey done with CoSo Cloud employees shows that 23% of them are willing to work longer hours to get the tasks done, 52% are less likely to take time off while 30% believe they accomplish more in less time. Another survey done by FlexJobs on remote workers states that 66% of participants agree that their productivity improves while not in the office while 76% believe there are fewer distractions outside the office, however we must consider the aspect that one thing is measuring how the participants perceive the impact it had on their productivity and quite another for productivity to be measured by proper methods and afterwards compared with the time when work was done in the office; interesting enough we are moving more and more into a generation change in the field of work where more roles are being filled by millennials demographic group, 85% of them prefer working from home all the time while now for examples according to a study in America almost half of the millennial workers are freelancing. Perhaps even more interesting survey done by Stanford University found that employee's turnover or attrition was reduced by half when they were offered remote work options, and this is perhaps one of the most important aspects managers have as priority (Andersen, 2021).

Because different cultures have different behaviors, work patterns and preferences, in a sense cultural difference, when it comes to human interaction and how work gets done, one hypothesis that the authors wanted to research about was if teleworking has different effects on employees and their productivity when we research different countries around the world (Acosta-Prado, et al., 2020).

A different research has also looked at how indoor environmental quality (noise, air quality, natural light) affects productivity when working in the office or from home; findings include that worker's productivity was most affected by the noise levels while the air quality aimed more at the comfort and health and given that homes and apartments are not a professional environment, we can see how the noise levels can be out of the teleworker's ability to influence especially with neighbors and other sources of noise (Rasheed, Khoshbakht and Baird, 2021).

In a research done in Japan, the main findings reveal that appropriate teleworking hours actually increase labor productivity while longer hours have the opposite effect; teleworking seems to increase life satisfaction and this has a positive effect on labor productivity, however it also increases the stress in work-life unbalance; nevertheless the stress does not automatically have a negative effect on labor productivity the finding also mentioned; the study also points out that telework is more efficient to improve labor productivity if employees commute more than one hour or by crowded public transportation during rush hours in Japan; finally extra tasks like trivial duties arise irresponsible of schedules that are given by managers or colleagues are more likely to be avoided during teleworking however, the study also demonstrates the importance of these tasks (Kazekami, 2020).

In Sweden, a study showed that from a transportation perspective, there is more optimism regarding teleworking as it leads to reduced travel demand, the increase usage of active transport modes and the relief of congestion is something that is a positive aspect in the lives of teleworkers (Elldér, 2020).

Another research from Portugal on how productivity is affected by remote electronic access has shown that the possibility of working remotely specifically connected to remote access, is more likely to be harmful for productivity specially for non-exporting, small firms that are not in R&D and harmful for

employees with what is considered a below-average skill level and competence. (Monteiro, Straume and Valente, 2021)

Yet, from another angle and focusing more toward leadership, a research looked into what are the connection between enjoyment (gamification) of work and its effects on productivity and the role of the leader; first and foremost gamification is an internal process in which activities, processes and organizational structures are transformed with the aim to achieve an experience much like playing games – as such the study has determined that using gamification to effect the enjoyment of work is producing positive effects also to productivity but mainly to employees with leadership responsibilities (Gerdenitsch, et al. 2020).

There are surveys which are already looking beyond the current pandemic and what could be the most optimum balance between the amount of time people spend in the office or at home and unilaterally employees want flexibility, which is having the best of both worlds, a hybrid model where the need dictates if the employee will work from home or office and not the other way around; Different points are being made that a solution implemented across industries and without taking note of the specificity of the job or the tasks, is detrimental to productivity: more than half the workforce cannot work remotely or in other words their job or tasks cannot be done remotely from utilizing only a computer and a solid internet connection and examples include the need for collaborating with other people, utilizing specialized machinery, the working location is not an office in the first place or the task is linked with making deliveries; There are additional aspects to be considered such as even though some activities can be done remotely, the levels of productivity and quality has declined considerably, and an example is teaching. The industries that have a tail wind however are finance and insurance, management, business services and IT. Perhaps one of the biggest impediments to productivity that is technical is the connectivity aspect; researchers found that only 65% of Americans surveyed said they have a good enough fast internet service that can help with video conference calls and US is a developed country, we can only imagine the situation is far worse in developing economies and their effects on productivity (Lund, et al., 2020).

Now more toward the future, a study concerning the post-pandemic aftermath, focused on the deployment of smart offices and information communication technology; in this regard, it demonstrates how this makes it possible to meet the needs of the organization and increase the levels of productivity by providing an immediate benefit, creating results from the interrelation between technology and employee and by redefining labor mix and organizational structure (Papagiannidis and Marikyan, 2020).

Research Methodology

The authors proceeded an analysis of a worldwide relevant literature in the field of leadership, digitalization, and productivity and how these three terms are connected. After understanding the existence of few empirical data, the authors decided to focus on a descriptive paper, and both a qualitative and quantitative analysis. Therefore, the main research instruments used in the construction, selection and development of this paper is the descriptive analysis, followed by the critical analysis of the factors involved in and a survey run on a represented number of managers and leaders of organizations in Romania, in order to probe both the existing research and if the literature findings do match, as well as testing a new hypothesis concerning digitalization, telework and the changes in productivity.

In the end, the authors will present their own observations regarding the direct contact with telework, having in mind that all these studies for mass remote working are less than a few years and understanding that there is a lot of room for further research on the effect of remote working connected to productivity when longer periods will be used as reference.

Results and discussions

As we have identified from our literature research this point toward that if leadership in companies favors remote working then their teams will follow in the same direction; we have concluded that focusing our survey on leaders and managers only, will give us a good indication on how digitalization and teleworking cascades within the entire companies.

When it comes to our survey, which was conducted to analyze how managers and leaders have experienced digitalization and teleworking during the pandemic in Romania, the demographics show that 50% were aged 30 to 39, approximately 70% of them were women and almost 90% have been working between 3 to 4 days remotely.

When we look at the results of how productivity has changed for them during the pandemic, it does confirm what we investigated in the majority of the global studies, which is that for the majority of participants, more than 35% of them mentioned that their productivity has increased slightly, followed by 25% who sees no changes in their productivity levels. Interesting enough when asked what the effects on productivity in their own teams were, the leaders have provided almost identical answers and results.

Perhaps one of the most important questions we have asked leaders to probe the studies conducted, was how difficult were for leaders to find a balance between work time and free time while working from home; here as well the results confirmed that one of the most difficult aspect of teleworking is separating and balancing work and personal time – our results show that over 35% of our responders have found this difficult with almost 15% stating that it has been very difficult for them.

Finally, when asked what were the types of activities or programs that had a positive impact on their productivity, the leaders have given examples such as the flexibility of standard working hours, well-being programs, subscriptions to mindfulness apps, home desk furniture and short Friday working hours.

As a conclusion, the authors have enumerated different ways and situations where productivity can be affected and mentioned several studies and their insights; the results of the survey done for Romanian leaders do seem to back up the general existing studies investigated and provide new evidence on novel ideas on how productivity can increase also during telework; nevertheless, given that the pandemic is not over yet and that the timeframe for these studies on mass remote working are less than a few years, there is a lot of room for further research on the effect of remote working connected to productivity when longer periods will be used as reference.

Conclusions

First, the authors have drawn the main characteristics of the leadership digitalization from a sample of 25 related papers. The repetitive characteristics inside the articles were disregarded, resulting in 13 main impacts of the digital leadership concept and its connection with productivity.

Second, the authors identified a conceptual link where they underlined the characteristics match between leadership, digitalization, and productivity. The main antecedents start from economic capabilities to organizational capabilities (employees wellbeing due to social saturation or isolation) and environmental capabilities.

Thirdly, a quantitative analysis was done with the respondents being selected from the leaders and managers of several multinationals from Romania and the results were connected with previous research on the topics of digitalization, telework and how productivity is affected because of that.

In the end, the authors attest that obtaining business sustainability implies a series of characteristics that need to be highlighted in the digitalization of leadership; followed by adopting these characteristics, especially during and inside the tumultuous business environment in the time of the pandemic.

During digitalization, leaders had changed their business model as they had to include a few extra processes for their remote workforce:

- New policies including flexible workhours and clear expectations for communicating remote
- Work computers, home desk furniture and other devices for their teams
- Wellbeing programs including access to mindfulness apps
- Onboarding or offboarding employees
- Access and configuration to business and collaboration applications
- Setting Network/VPN access and secure login capabilities

The authors concluded that the greatest challenge for leaders is to create a sense of belonging and community with their employees and teams in the online space; arguing that digitalization could be *the* sustainable answer to the leadership trends post SARS-CoV-2 crisis.

Acknowledgement

This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.

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Gender Specific Preferences Towards Anthropomorphic AI Devices and Robots

Corina Pelau¹, Miruna Niculescu² and Irina Bojescu³

¹⁾²⁾³⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*
E-mail: corina.pelau@fabiz.ase.ro; E-mail: miruna_niculescu@yahoo.com;
E-mail: irina0927@yahoo.com

Please cite this paper as:

Pelau, C.; Niculescu, M.; Bojescu, I., 2021. Gender Specific Preferences Towards Anthropomorphic AI Devices and Robots. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 784-792
DOI: 10.24818/BASIQ/2021/07/099

Abstract

In recent years, artificial intelligence has changed the way people interact with each other or with technology. The discussion on the spectacular evolution of this phenomenon is more actual and present than ever because of the fact that devices equipped with artificial intelligence are more frequently present in lives of consumers, impacting their daily activities. The objective of this paper is to examine the gender specific perceptions and preferences towards anthropomorphic and empathetic characteristics of AI devices and robots. Anthropomorphic characteristics of an AI device or robot can have a positive influence on consumer's perception towards them and towards the decision of buying these products. This paper presents the way in which AI impacts the emotional perception of consumers and the differences of attitude between men and women towards the interaction with robots and AI devices. The empirical part of this paper includes the results of a research regarding the differences of perception and preference of consumers, towards the anthropomorphic characteristics of AI devices and robots, depending on gender. Using the discriminant analysis in SPSS 20, we have shown that men consider AI devices and robots more entertaining, while women appreciate more their empathetic human-like interaction and behavior. This result is important for the marketing communication when AI devices and robots are marketed. In the marketing communication addressed to men, features like the entertaining role of AI devices should be addressed, while in women specific communication channels the empathetic human-like interaction should be emphasized.

Keywords

Artificial intelligence, robots, consumers, anthropomorphic, empathy, gender, acceptance.

DOI: 10.24818/BASIQ/2021/07/099

Introduction

In the last decade, artificial intelligence has hugely changed the interaction between humans and also the way we interact with technology. Research in the field of information and communication technology has focused on innovation, which allows companies to develop and implement effective consumer-oriented strategies (Sun, 2006). In recent years, the business environment has become more competitive, interconnected and transparent, making companies to focus on offering memorable experiences to their consumers in order to be able to differentiate and to build a solid competitive position (Banacu, et al., 2019; Berry, et al., 2002; Schmitt, 1999; Pine and Gilmore, 1998). This challenge is relevant for all sector and extremely important to the services industry (Markovic, et al., 2018; Dabija and Babut, 2019; Pelau and Acatrinei, 2019) because of the need of interaction between the companies' employees and consumers (Grönroos, 2006). Consumers' satisfaction and their affective commitment to brands can be increased by a favorable brand experience, which strengthens

brand equity and improves the quality of the relationship between brand and customer (Lin, 2015; Yao, et al., 2013; Iglesias, et al., 2011; Brakus, et al., 2009). According to Brakus, et al., (2009), brand experience is composed of four distinct dimensions: sense, affection, intellectual and behavior. Recent researchers suggest that the sense dimension is particularly relevant and important in services settings (Lin, 2015; Goldkuhl and Styvén, 2007).

Recent statistics suggest that around 86% of retail marketing programs have launched plans to invest in artificial intelligence in the next years (Persado, 2017; Mitrut, et al., 2015). Despite that, people may oppose to using robots for delivering services because of different reasons like lacking human touch or ethical concerns with the potential growth of unemployment rate caused by the entering of robots on the labor market (Lu, et al., 2019). According to Business Insider (2015) the demand for service robots has highly increased reaching a global market of 1.5 billion USD by 2019. This will increase even more because of the need for social distancing, determined by the COVID-19 pandemic. In the hospitality industry, the customer experience optimization will continue to involve the infusion of technology melted into various services' facets (Lu, et al., 2019).

Our paper is structured as follows. In the first part of the paper there are presented the theoretical aspects regarding the use of AI devices and robots, especially the way in which anthropomorphic characteristics can change people's perspective about them as well as the constructs „anthropomorphic” and „empathy”. In the empirical part of the paper we will analyze the way in which men and women perceive the anthropomorphic and empathetic AI devices and robots. We will focus on the way in which these characteristics influence their preferences, their choices and opinions. There are presented the results of a comparative research between men and women' perception and preferences related to anthropomorphic characteristics of AI devices and robots and the possibility of buying such products.

Literature review

Anthropomorphic condition of AI devices and robots

The marketing communication strategies, consumer experience and service delivery have been highly influenced in the last decades by the development of the technology. Artificial intelligence and robots have become more present in the market, companies have begun to invest more resources in developing artificial intelligence programs in order to offer unique experiences to consumers. However, among the challenges that arise are the lack of human touch and also the fear that humans will be replaced and that the unemployment rate will grow (Lu et al., 2019). Anthropomorphic characteristics change the perspective of the absence of human interaction, because humanized brands and robots are perceived as similar entities to humans, capable of showing emotions and feelings, expressing concern and trust in a relationship (Golossenko, et al., 2020).

Anthropomorphic characteristics are described as specific attributes that define human beings, which are usually perceived as unique and particular for individuals that have the capacity to have psychological as well as emotional states (Golossenko, et al., 2020). Consumers tend to perceive other entities and products in an anthropomorphic even human like manner (Aggarwal and McGill, 2012; Cantaragiu and Ghinea, 2020; Golossenko, et al., 2020; Stanciu, et al., 2019). This perception is highly influenced by the marketing communication strategies developed to sustain it in order to humanize their brand and strengthen their place in the market. The capacity to speak, have emotions, express wishes or desires, the ability to develop a personality, but also the presence of similarities between the human appearance like body parts and the robot that possesses artificial intelligence may indirectly influence the consumers' perception associated to a company (Kim and McGill, 2011; Puzakova, et al., 2013; Golossenko, et al., 2020). These similar characteristics to those which are specific for humans are being used in such mixture that they consolidate the position of a brand or a product itself, because consumers tend to express a more enthusiastic attitude regarding anthropomorphized brands (Aggarwal and McGill, 2007; Golossenko, et al., 2020) and they easily tend to interact and build relationships with the providing company (Ahn, et al., 2014; Fournier and Alvarez, 2012; Serban, et al., 2019; Golossenko, et al., 2020).

Anthropomorphism plays an important role in observing the relation between humans and technology, mainly represented by robots possessing artificial intelligence (van Doorn, et al., 2017; Lu, et al., 2019).

Products with human features have a positive influence on the consumers' perception and on the buying decision (Kim and McGill, 2011; Landwehr, et al., 2011, Lu, et al., 2019). These kind of products are remembered as familiar and comfortable, because their characteristics are stored in the memory with the help of the similarities to human attributes (Lu, et al., 2019). The effectiveness of anthropomorphism appears mainly when the robots, devices or the sold products reveal human intelligence. But on the other hand, intelligent robots with similar appearance to humans may be considered a threat for individuals' identity, as well as disruptive to the uniqueness of humans. People are afraid of losing their specific attributes and their distinctiveness, and as a result they perceive intolerable this thought (Lu, et al., 2019). Nevertheless anthropomorphism is considered the lead to the interaction between humans and computers, helping at designing the appearance of robots and the interfaces for users. It influences the relations and the social actions. User friendly interfaces and the possibility to personalize the experience with the device could be made by the consumer as well. People tend to personalize their devices in order to gain exclusiveness and to create a bond between them, reflecting that kind of interaction that the user requires with the machine (Wang, 2017).

Empathetic AI devices

Empathy is defined as the awareness of a person and the capacity of understanding and knowing how to react in a favorable manner to others' feelings and thoughts (Iglesias, et al., 2019). It is considered the core of the relationship between a consumer and a representative of a company. For example an employee working in providing services influences the whole interaction between the company and the customers, as he/ she can make them either favorable or not for the company (Aggarwal, et al., 2005; Giacobbe, et al., 2006; Iglesias, et al., 2019). Empathy is a mandatory skill for the employees that are supposed to interact with customers (Ahearne, et al., 2007; Pilling and Eroglu, 1994; Iglesias, et al., 2019), because they are the image of the company and they have the power to influence the perception of the clients.

Perceived empathy refers to a person's impression that the other communication partner shares and understands his or her feelings and that the listener places himself/ herself in their shoes (Lazarus, 1991; Simon, 2013). Customer engagement to a company could be influenced by the perceived empathy and it is defined as a psychological process which involves a continuous interaction between the person and the preferred service or good offered by the company (Bowden, 2009; Brodie, et al., 2011; Kim and Baek, 2018). However nowadays the interaction is no longer limited to human contacts, as the possibility to interconnect with a company through mobile apps with the help of artificial intelligence or robots exists (Kim and Baek, 2018). Mobile apps play an essential role in the digital era because they are used as a communication channel between the company and the customers and they contribute to brand loyalty growth and to developing consistent connections with targeted people (Wang, et al., 2015; Kim and Baek, 2018). In this way, empathy may be perceived not only through face-to-face contacts, but also through online channels by using computer communications. As in the online environment there are no non-verbal signs and communication, such as eye contact or gestures, as users tend to shape their emotions in styles and texts that reflect what they feel. Customers are up to perceive the empathy and the personal interactions that occur through intelligent devices trying to manifest a friendly position (Simon, 2013).

Positive service experiences with a company might arise for customers either through the contact with employees or through devices or robots that should be programmed to reflect an empathic attitude. In both cases the experience may focus on understanding and taking into consideration the client's expectations and may have the possibility to respond quickly and with efficiency to their demands. An empathic position may influence the customers and might lead to an increase of the satisfaction and engagement with the brand. Moreover, empathy has an important role in giving personalized experiences to each customer and this influences their satisfaction. Algorithms that are highly orientated to customer' satisfaction and that present solutions and offers that seem unique and especially dedicated to each customer, have more efficiency in obtaining the customers gratitude. After all, the empathy might lead to customer brand experience, because when customers feel that their needs are understood and fulfilled then their experience with the brand is perceived in a better way (Iglesias, et al., 2019).

The use of artificial intelligence has a growing positive impact on the companies' profits and on the sustainability of businesses (Busu, 2019; Cioaca, et al., 2020), but in the same time people are more

and more afraid of losing their jobs because several tasks performed nowadays by humans, will be replaced by artificial intelligence and robots (Huang and Rust, 2018). The main reason for not accepting AI devices and robots in their lives is caused by this uncertainty. Despite this, according to previous researches, the fears that people have by using AI devices and robots are reduced due to the benefits obtained from their use, the influence of the social circle (Pelau, et al., 2021a) and also because of their contribution to the increasing of the quality of life (Ene and Bojescu, 2020). There are no major differences in the perception of AI for men and women. Women are more willing to accept AI devices and robots in their lives because of a higher efficiency, learning processed and hedonic pleasure, view while for men, the quality of life improvement is the most important argument of accepting AI devices and robots in their lives (Ene and Bojescu, 2020).

Research methodology

The objective of our research is to determine the gender specific perceptions and preferences towards anthropomorphic and empathetic characteristics of AI devices and robots. In comparison to previous researches where few gender specific differences have been found related to the functionality and efficiency of AI, when it comes to emotional components there are differences in perception between men and women. Data collection for this research has been carried out based on an online survey which took place in September 2020. A number of 76 valid responses have been received (43 women and 33 men).

In this research there have been analyzed 21 items for the following constructs: anthropomorphic characteristics of AI devices (5 items adapted after Lu et al. 2019), interaction abilities of AI devices (6 items adapted after Bruner, 2019; Chun, et al. 2017; Kim, et al., 2017), ability of AI to show empathy (10 items adapted after Bruner, 2019; Kim, et al., 2017; Kirmani, et al., 2017; Bagchi and Ince, 2016). The validity of the items is given by a Cronbach-Alpha value of 0.940 ($F=25.32$, $p=0.000$). The results have been analyzed with the help of the discriminant analysis in SPSS 20.0.

Results and discussions

The results of the research show that the main differences between men and women are perceived for the human-AI interaction and for some anthropomorphic features. The results of our discriminant analysis can be observed in table no. 1.

For the anthropomorphic characteristics of AI devices, both genders have an average evaluation of AI devices having a mind of their own ($M_{\text{women}}=4.02$, $M_{\text{men}}=3.81$, $F=0.195$, $p=0.660>0.10$), but none of them believe that AI have consciousness ($M_{\text{women}}=2.86$, $M_{\text{men}}=2.54$, $F=0.537$, $p=0.466>0.10$) or their own free will ($M_{\text{women}}=2.76$, $M_{\text{men}}=2.63$, $F=0.099$, $p=0.754>0.10$). The average values of these 3 items are close to each other and the main idea reflected by the answers is that humanlike characteristics of AI devices do not have the capacity to influence the perception of women or men. Regarding the potential ability of robots of experiencing emotions ($M_{\text{women}}=2.93$, $M_{\text{men}}=2.06$, $F=5.007$, $p=0.028<0.05$) and the existence of similarities between AI and humans ($M_{\text{women}}=2.46$, $M_{\text{men}}=1.75$, $F=4.051$, $p=0.048<0.05$), the average scores of women and men show that both disagree with these statements. However, there is a significant difference related to the fact that women are not as convinced as men, because the women's average scores are higher. A reason could be that women tend to show more empathy and think more based on their emotions.

Regarding the interaction abilities of AI devices, there are significant differences of perspectives in finding it enjoyable ($M_{\text{women}}=4.16$, $M_{\text{men}}=4.90$, $F=4.038$, $p=0.048<0.05$), fun ($M_{\text{women}}=4.34$, $M_{\text{men}}=5.21$, $F=5.383$, $p=0.023<0.05$), good ($M_{\text{women}}=4.32$, $M_{\text{men}}=5.03$, $F=3.458$, $p=0.067<0.10$) and pleasant ($M_{\text{women}}=4.04$, $M_{\text{men}}=4.84$, $F=3.861$, $p=0.053<0.10$), having all scores above the average. The preferences are higher in the case of men, who find more satisfactory the communication with robots and devices. This could be influenced by the fact that men are more pragmatic compared to women and through their everyday life and jobs they could benefit more from the evolution of technology, having the chance to interact more with this kind of devices. Regarding feelings and developing an emotional connection with the robots, both women and men don't agree with the potential proposed scenarios.

There is no significant difference between the average scores. A reason for these results could be the fact that people are not ready for accepting such developments or novelties, as having a relationship based on humanlike characteristics with AI devices.

Table no. 1. Gender specific differences related to AI devices

Var.	Item	Average women	Average men	F	Sig.
A1	AI devices have a mind of their own.	4.02	3.81	.195	.660
A2	AI devices have consciousness.	2.86	2.54	.537	.466
A3	AI devices have their own free will.	2.76	2.63	.099	.754
A4	AI devices will experience emotions.	2.93	2.06	5.007	.028
A5	AI devices are like humans	2.46	1.75	4.051	.048
In1	To what extent is interaction with the robot enjoyable	4.16	4.90	4.038	.048
In2	To what extent is the interaction with the robot fun	4.34	5.21	5.383	.023
In3	To what extent is the interaction with the robot good	4.32	5.03	3.458	.067
In4	To what extent do you like the interaction with robot	4.04	4.84	3.861	.053
In5	I felt emotionally involved with the robot	2.65	2.69	.013	.909
In6	I found the interaction with the robot moving	3.25	3.24	.001	.977
E01	The interaction with the robot affected me emotionally	2.86	2.18	2.586	.112
E02	I was able to connect with the robot emotionally	2.46	2.00	1.601	.210
E03	I feel that the relationship to the robot is honest	3.34	3.51	.119	.731
E04	I feel that the relationship to the robot is sincere	3.44	3.60	.115	.736
E05	I feel that the relationship to robot is not manipulative	3.69	3.54	.121	.729
E06	I feel that the relationship to the robot is trustworthy	3.09	4.12	5.233	.025
E07	To what extent do you believe the robot is caring	2.55	2.57	.002	.967
E08	To what extent do you believe the robot is friendly	3.67	3.90	.252	.617
E09	To what extent do you believe the robot is kind	3.32	2.96	.611	.437
E10	To what extent do you believe the robot is warm	2.53	2.60	.029	.866

For the ability of AI devices and robots to show empathy, there is only one item, which reflects a notable difference. There is a significant higher belief in the case of men concerning the reliability of the relation with a robot. The score of men ($M_{men}=4.12$, $M_{women}=3.09$, $F=5.233$, $p=0.025<0.05$) is higher than the average, which reflects that men trust the robots and their capacity of helping people and therefore men praise the relationship based on the advantages that it involves. The items which concern the emotional effect produced after having an interaction with a robot ($M_{women}=2.86$, $M_{men}=2.18$, $F=2.856$, $p=0.112>0.10$), the ability of emotionally connecting with an AI device ($M_{women}=2.46$, $M_{men}=2.00$, $F=1.601$, $p=0.210>0.10$), the capacity of robots of expressing the feeling of caring ($M_{women}=2.55$, $M_{men}=2.57$, $F=0.002$, $p=0.967>0.10$) and being warm ($M_{women}=2.53$, $M_{men}=2.60$, $F=0.029$, $p=0.866>0.10$) show a low affection or enthusiasm in their behaviour below the average score. There is no remarkable distinction, both categories confirm their position about robots and about the fact that they consider the AI devices incapable of possessing human-like feelings and therefore could not be treated as such. The honesty ($M_{women}=3.34$, $M_{men}=3.51$, $F=0.119$, $p=0.731>0.10$) and sincerity ($M_{women}=3.44$, $M_{men}=3.60$, $F=0.115$, $p=0.736>0.10$) of robots is believed to be moderate by both categories, having scores slightly above average. The manipulation is not considered a habit of robots ($M_{women}=3.69$, $M_{men}=3.54$, $F=0.121$, $p=0.729>0.10$), having average scores. People do not seem to perceive any threat concerning the possibility of being manipulated in the interaction with AI devices. The average scores reflect that kindness ($M_{women}=3.32$, $M_{men}=2.96$, $F=0.611$, $p=0.437>0.10$) is the only quality that might be considered appropriate to be found in robots in comparison to other characteristics, which are specific for human, and hence not attributed to devices. The scores indicate that people might appreciate this type of behaviour also in the case of robots, taking into consideration that they could help people without expecting praise or a reward.

Conclusions

The results of our research show that there are slight differences in the perceptions and preferences of men and women regarding anthropomorphic and empathetic characteristics of AI devices and robots. What is interesting to observe is that even though women tend to be a little more optimistic and open about the potential capacity of robots of experiencing emotions and tend to accept easier the fact that AI devices could be similar to humans, they are not as convinced as men are when it comes to the things that characterize the interaction with such gadgets. Men appreciate more the relationship with robots and consider them pleasant, entertaining and satisfactory. However, the average scores illustrate that the anthropomorphic characteristics of AI devices do not have a significant impact on the perception of persons. Another important aspect is that men have more confidence in AI devices and rely more on this interaction. On the other side, women tend to be more reluctant, having average scores, which could reflect a lack of reliance and indecision. Both categories show hesitation towards the ability of AI gadgets of understanding and sharing feelings with others, neither men, nor women take into consideration the possibility of being involved emotionally in the interaction with such devices and they do not consider that their feelings could be influenced by robots. Moreover, both genders disagree with the fact that AI devices could have independent thinking, spontaneity or awareness. In our future research, we aim to investigate further the relations between the emotional sides of the human-AI interaction as well as the integration of robots in the present society. Until now, our studies on the perception of AI devices did not show significant differences on efficiency, learning processes and acceptance of AI devices and robots, but this research emphasizes that the emotional interactive part is perceived different by genders. As a practical implication, this result will impact the way in which interaction between consumers and AI devices will be designed for the future. As men find interaction with AI better and more enjoyable, it is more likely that they will accept easier the communication and interaction with robots. Based on a general social acceptance of AI devices (Pelau, et al., 2021a; Pelau, et al., 2021b), women will probably follow this behavior, but the process will be slower as in the case of men.

People tend to remain circumspect mostly to scenarios in which robots could possess characteristics that are normally attributed to humans or in which these AI gadgets would become perceived in a similar manner to individuals. All in all, both women and men tend to appreciate the robots' capacity of helping them, but they do not seem to be ready to accept and perceive the AI devices equally as a human being, even though they could either look like one or simulate the behavior of a person. At this point in time, there are some limitations for robots which involve the emotional feelings and abilities such as showing affection.

This topic is of great interest and will remain in the next years, because the technological evolution will continue to impact our lives, both professionally and privately. Many business sectors will be affected and will undergo change through it. From a consumer' perspective, it could be important to raise awareness and willingness to interact and benefit from AI technologies.

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Consumers' Perception on Information Overload in a Digital Society

Ruxandra Badescu¹ and Bogdan Hrib²

¹⁾²⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: ruxbadescu@gmail.com; bohrib@gmail.com

Please cite this paper as:

Bădescu, R. and Hrib, B., 2021. Consumers' Perception on Information Overload in a Digital Society. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 793-800 DOI: 10.24818/BASIQ/2021/07/100

Abstract

Each consumer is confronted daily, 24 hours a day, to a real bombardment of information. They are assaulted by a flow of data and information that are frequently received from unknown sources without documentation, belonging to unknown authors without professional notoriety. The topic of the present information overload is of interest for both private consumers and for public or private organizations. We face information overload from the submission of a document in a public institution of the state to the daily activities, at home or at job. The objective of this article is to determine the differences and similarities in the perception of consumers regarding information overload on social media and in a digitalized society. The results of the discriminant analysis show that people older than 30 years did not find hard to get the information that is relevant to their needs from the excessive amount of information available on social media compared to the people younger than 30 years. The older consumers have also responded that they are not overwhelmed or distracted by the amount of information processed daily on social media compared to the young ones.

Keywords

Information overload, social media, digitalization, consumer, perception.

DOI: 10.24818/BASIQ/2021/07/100

Introduction

In our recent global context, with the permanent pressure of the COVID-19 health crisis it is common sense that all organizations must improve their digital skills. During the last year a long list of studies consider the move to digitalization (also including digital communication and digital innovation) the one-way to survive now and probably in the future. But this is only a one-way trip or there could be another way back or at least we can count on a long detour for some of parts from our global economy. Could the average clients, consumers, go forward like non-human entities or organizations? For sure, this will be the next issue for some years from now on.

The main goal is a better world for everybody - a world of sustainability for people, companies, civil society, environment - digitalization can be seen as one of the enablers of the Circular Economy due to its building visibility and intelligence into products and assets such as knowledge of the location, condition and availability of assets (Antikainen, et al., 2018; Pelau and Acatrinei, 2019).

Digitalization has definitely many advantages regarding the increased efficiency of processes and activities allowing a better and easier communication between people. At the same time, digitalization comes with several disadvantages such as the phenomenon of information overload. With the constant connection to the digital environment, individuals and organization are constantly exposed to several information and social posts, which are difficult to handle on the long run. This paper starts with a literature review about the development of digitalization and its impact on the present society as well

as the analysis of the information overload concept. In the second part of the paper, there are presented the results of a discriminant analysis about the perception of consumers of different ages on information overload. The results are interpreted and discussed, by giving further recommendations regarding this phenomenon.

Literature review

Digital transformation refers to the subscription to the use of digitization methods, digital communication and digital innovation. Annarelli, et al. (2021) define digitalization as the organizational capabilities that allow companies to pervasively combine digital assets and business resources, and leverage digital networks, to innovate products, services and processes for organizational learning and customer value creation and manage innovation for ensuring sustained competitive advantage. In order to handle the digital transformation in an effective manner, employees must work together in a new way, breaking down silos and collaboratively addressing cross-dimensional issues. Organizational members need to learn from each other in order to respond more quickly and consistently to changes in the market and within their own organization. Corporate cultures also need to move toward a digital mindset where innovation and quality is rewarded (Busu, 2019) and additional digital expertise can be brought in to help organizations to embrace the digital world and acquire the necessary skills and knowledge (Holmstrom, 2021).

Digital communication describes any electronic transmission of information that has been encoded digitally and transmitted via digital media (Grewal, et al., 2021). From the perspective of the future of the digital communication, two factors can have a major impact: how to understand the dynamic element of digital communication (the three level dynamics: the content of the message, the communicator and the interaction) and how to understand the multiple modalities of digital communication (Grewal, et al., 2021).

The digital era is radically changing the way companies operate. As Holmstrom (2021) postulates, it must be clear that digitalization cannot occur without digitization. Digitization means the transition from analog data to digital formats. Digitization means the use of digitized information in work. Once the analog information has been digitized, it can be integrated and then used in various software applications with good premises for automation. The results would be seen in reducing costs, working time or processing of different types of activities in companies, in different streams (Holmstrom, 2021).

Companies must adapt their economic policies to this new challenge. The new position of companies among this new digital world and also the self-employment wave are some important but controversial issues for nowadays. Some empirical evidence suggests that the autonomy enabled by digitization is a key element that companies can leverage in their value chain upgrading (Oliviera, et al., 2021). Some authors revealed that digitalization has first a strong, negative effect determined by a significant connection between the process of digitalization in companies and self-employment rates. In the same time, there is no connection between digital adoption in companies and unemployment (Shapiro and Mandelman, 2021). This is not an issue generated and controlled by the local or global market. Public policies must focus on helping companies to understand the ways to convert the potential of the digital power into direct action and the policymakers may have decisive roles in helping organizations in this process of enacting digital power (Oliviera, et al., 2021).

From a managerial point of view, there are three different firm capabilities that have to be investigated in relation to the companies' process of digital innovation: knowledge generations capabilities, knowledge acquisition capabilities and market-sensing capabilities. Besides, the effect of social media relationships clearly suggest that in order to benefit from collaboration, networking agreements and open innovation, and particularly from knowledge inflows externally acquired and shared, innovativeness through digital innovation must be guaranteed in order to allow the exchange and sharing of knowledge and innovation (Tortora, et al., 2021).

A study from the early months of the COVID 19 pandemic analyzed how socio-demographics, living arrangement and internet experiences and skills related to increases or decreases in some digital communication methods. The study reveals inequalities emerging between people who are more and less

privileged in their socio-economic status and depending on their internet skills and experiences (Nguyen, et al., 2021). This situation can be considered as a digital inequality and it can thus contribute to other axes of inequality placing a higher burden on already disadvantaged groups. They are the ones who are more likely to suffer worse consequences of the pandemic and who are likely to avoid them because of the digital communication (Nguyen, et al., 2021). But digital inequalities are not a separate part of the human society, they are not independent from the other sectors of humans - quality of life, poverty, rule of law, human rights, they have roots in the deep structure of the society and 'digital solutions' couldn't solve miraculously other fundamental issues like segregation or hegemony. Zheng and Walsham (2021) considers that technology designers and providers need to see the subjectivity of human beings behind the label of 'users' and consider genre, race, class, and other structural constraints individuals may face which condition their space of opportunities and capabilities, and thus how digital technology may impact their lives. Research has shown that there are several typologies of consumers based on their ability to accept new technologies and AI, the way they relate and trust to the received information and based on the impact of celebrity trend setter (Pelau, et al., 2021).

Besides these social inequalities, digitalization comes also with different access to information. Some may have limited access to information and digital resources, while others receive too much information, that they are not able to process. The term of information overload has been first used in 1964 (Gross, 1964) and it is more actual than ever. It was reset by Toffler (1973), who considered information overload as "the bewildering disorientation brought about by the premature arrival of the future". He considered that information overload might be the most important disease of the future, as any organism which succumbs to the pressure of environmental over-stimulation, the human mind and its decision-making processes will behave irrationally when overloaded Toffler (1973).

An individual can be confused by information overload. This could affect a person's ability to set priorities or could lead to poor decision making and dysfunctional performance. Another issue would be that information overload could cause anxiety or stress (Eppler and Mengis, 2004; Hu and Krishen, 2019). Based on these premises from various studies, information overload seems to cause more problems than would bring benefits to end users, whether they are individuals or entities (corporations, small and medium enterprises, institutions). This is one of the reasons why this research is a step into a bigger and deeper testing, investigation and experimentation on information overload topic.

Some authors associate the phenomenon of information overload with several negative connotations. Some consider it as an inflation of information. From both an economic and legal perspective, the term information inflation would be appropriate, at least from the perspective of its negative connotation (Doomen, 2009). Moreover, our lives today depend so much on new technologies that we have come to feel lost without a computer, internet and smartphone. Every day an invention comes to make our work easier, taking over especially from the mental effort we should make. Another almost similar term - information pollution - was coined by Nielsen (2003) and it applies to digital communications, such as e-mail, instant messaging and social media.

Digital media can also have negative effects on the cognitive capabilities of individuals. Spitzer (2020) investigates the negative influence that digital media can have on memory, concentration and cognitive abilities, especially of young people. He mentioned "the thicket of information" as being the explosion of information that pollutes the mental performance, thinking, critical ability and guidance of people, especially to young people (Spitzer, 2020) and even attention (Pelau, et al., 2020). A highly interactive environment for consumers in order to establish which information they would like to examine is offered by the Internet. A sense of control and empowerment is provided by this autonomy (Hua and Krishen, 2019).

Methodology

This research has the objective to determine the impact of the information overload in social media on consumer's behavior. The online questionnaire contained 10 items about different perceptions on information overload related to the difficulty of handling the amount of information (1 item adapted from Liu, et al., 2021; Swar, et al., 2017), the perception related to the huge quantity of information (4 items adapted from (Guo, et al, 2020; Zhang, et al., 2016), the overwhelming situation of handling the received information (3 items adapted from Lin, et al, 2021; Cao and Sun, 2018) and the feelings related

to information overload (2 items adapted from Bahri, et al., 2020; Stephens, et al., 2017; Schrock, 2015). The items have been measured with the help of a 7-point Likert scale, having 7 for total agreement and 1 for total disagreement. The survey has been carried out in April 2021 and 131 respondents answered to these items. The Cronbach Alpha value of 0.909 determined the validity of the sample.

This paper is focusing on the differences of perception depending on age and on gender. From the total sample 72 were female and 59 were male respondents. Regarding the age, 66 respondents are younger than 30 years, while 65 were older than 30 years. The answers have been split in two groups: the ones which have been offered by persons under 30 years and the second ones which have been provided by persons older than 30 years. The major differences between the groups has been analyzed using SPSS 20.0, with the help of the discriminant analysis. In the following chapter are presented the results of the analysis.

Results

The research results related to the differences between consumers younger and older than 30 years are shown in Table no. 1. The results indicate that there are both similarities and differences between the answers given by those up to 30 years and those over 30 years. The differences are less than the similarities and refer to the greater concentration capacity of people over 30 years, compared to those under 30 years. Out of the 10 items, 3 showed that there were differences between the two selected age segments. The first difference is for IO05 which is related to the perception of the consumers regarding the difficulty with which the consumer obtains the information that is relevant to him/her from an excessive amount of information available on social media ($F=5.962$, $p=0.016$). From here results that the mean of the perception for the people older than 30 years is lower (average>30years=4.10) compared to the younger ones (average<30years=4.87). This can be also observed from the results of item IO06 which shows that the younger people (average<30years=4.74) are getting often more distracted by the excessive amount of information in social media compared with the people over 30 years (average>30years=4.16). The second difference is related to the point IO06 which has the topic the easily distraction of attention when a greater load of information appears on social media ($F=3.636$, $p=0.059$). In this case, according to the responses, the perception regarding distraction due to information overload is higher for persons under 30 (average<30 years=4.74), while for people over 30 is lower (average>30years=4.16). People over the age of 30 do not perceive that they feel just as overwhelmed by the overload of information on social media (average>30years=3.72) compared to people under the age of 30 (average<30years=4.27). This can be observed in the results of the item IO07 ($F=3.112$, $p=0.080$).

Similar perception between the two groups can be observed at the first point of research IO01 regarding the way they can handle all the received information on social media effectively ($F=1.255$, $p=0.265>0.10$, average<30 years=4.43, average>30years=4.10). Both groups consider at IO01 that there is too much information on social media ($F=1.553$, $p=0.215>0.10$, average<30 years=5.50, average>30years=5.83).

Regarding the statement IO03, that the large amount of information on social media is difficult to manage, the two groups had the same perception ($F=0.065$, $p=0.798>0.10$, average<30 years=4.66, average>30years=4.58). More similarities can be observed in the items IO04 and IO08 regarding the extraction of information from a multitude of information ($F=1.855$, $p=0.176>0.10$, average<30 years=4.63, average>30years=4.20) and its synthesis ($F=0.042$, $p=0.837>0.10$, average<30 years=4.89, average>30years=4.95).

Moreover, the statements IO09 and IO10, referring to a condition, namely frustration ($F=1.897$, $p=0.171>0.10$, average<30 years=4.54, average>30years=4.07) and the ability to process information ($F=0.000$, $p=0.990>0.10$, average<30 years=4.27, average>30years=4.27) show that there were no significant differences between the two groups. The last sentence IO10 has the same impact on all the respondents who were answering to this research.

Table no. 1. Results regarding differences based on people's age

		Aver- age < 30 years	Aver- age > 30 years	F	p
IO01	I cannot handle all the received information on social media effectively.	4.43	4.10	1.255	.265
IO02	There is too much information on social media	5.50	5.83	1.553	.215
IO03	I find the big amount of information on social media as burden to handle	4.66	4.58	.065	.798
IO04	I find it hard to extract important information from the excessive amount of information available on social media	4.63	4.20	1.855	.176
IO05	I find it hard to get the information that is relevant to my needs from the excessive amount of information available on social media	4.87	4.10	5.962	.016
IO06	I am often distracted by the excessive amount of information in social media.	4.74	4.16	3.636	.059
IO07	I am overwhelmed by the amount of information that I process on a daily basis from social media.	4.27	3.72	3.112	.080
IO08	I feel some problems with too much information in social media to synthesize instead of not having enough information.	4.89	4.95	.042	.837
IO09	It frustrates me when I encountered overlapping information through various communication channels.	4.54	4.07	1.897	.171
IO10	I received more communication messages and news than what I can process.	4.27	4.27	.000	.990

Source: Own research results

The second part of the research is showing the results obtained based on the analysis of similarities and discrepancies of answers considering the people's gender. These results can be observed in table no. 2.

Table no. 2. Results regarding differences based on people's gender

		Aver- age Fe- male	Aver- age Male	F	p
IO01	I cannot handle all the received information on social media effectively.	4.38	4.13	.721	.397
IO02	There is too much information on social media	5.79	5.50	1.123	.291
IO03	I find the big amount of information on social media as burden to handle	4.94	4.23	4.999	.027
IO04	I find it hard to extract important information from the excessive amount of information available on social media	4.84	3.89	9.171	.003
IO05	I find it hard to get the information that is relevant to my needs from the excessive amount of information available on social media	4.88	4.01	7.643	.007
IO06	I am often distracted by the excessive amount of information in social media.	4.91	3.89	12.088	.001
IO07	I am overwhelmed by the amount of information that I process on a daily basis from social media.	4.45	3.44	11.211	.001

IO08	I feel some problems with too much information in social media to synthesize instead of not having enough information.	5.40	4.33	14.769	.000
IO09	It frustrates me when I encountered overlapping information through various communication channels.	4.76	3.76	9.043	.003
IO10	I received more communication messages and news than what I can process.	4.62	3.84	5.690	.019

Source: Own research results

In the second part of the research, it can be observed that from 10 analyzed statements, 8 items (more than a half) show important differences, having $p < 0.10$ and 2 items are similar for both female and male. The first two items IO01 and IO02 mark the fact that between female and male are no differences regarding the perception on the management of the information received in social media ($F = 0.721$, $p = 0.397 > 0.10$, average female = 4.38, average male = 4.13) or on the fact that in social media there is too much information ($F = 1.123$, $p = 0.291 > 0.10$, average female = 5.79, average male = 5.50). For the following items from IO03 until IO10 can be noted down the differences between answers provided by women and men. In regards to statement IO03, female perception (average female = 4.94) compared with male perception (average male = 4.23) is higher ($F = 4.999$, $p = 0.027$).

Finding hard to extract information from the available information on the social media ($F = 9.171$, $p = 0.003$) and to get the necessary information relevant for their needs ($F = 7.643$, $p = 0.007$) are behaviors that characterized women (average female = 4.84, average male = 4.88). Similar case is given by the answers provided to the items IO06, IO07 and IO09. Women (average female = 4.91, average male = 4.45, average female = 4.76) compared to men (average male = 3.89, average male = 3.44, average male = 3.76) have the perception that they can easily be distracted, overwhelmed and frustrated by the information overload on social media. Having problems with the information overload on social media to synthesize instead of not having enough information ($F = 9.043$, $p = 0.000$) is a perception that defines the women (average female = 5.40) more than men (average male = 4.33). Even more differentiations are observed in IO10 at the perception for receiving more communication messages and news than a person can process ($F = 5.690$, $p = 0.019$, average female = 4.62, average male = 3.84).

Conclusion

The results of our research show both differences and similarities between the ways in which the two groups, people with age under 30 years and people with age over 30 years, women and men, perceive the effect of information overload in social networks and in the digital society. First of all, it can be deduced from the data analysis that young people (under 30) perceive information overload as a problem that distracts them from their daily tasks and makes it difficult for them to find information relevant to their needs. Although, both groups have the same perception that there is too much information online, on social media, those over 30 are not so often distracted and find the necessary information without being impacted by information overload.

Second of all, considering only age, there are no differences in respondents' perceptions of how information overload impacts emotional states. But, taking into consideration the genders, there can be observed a difference between women's perception and men's perception. For women, information overload has a greater impact than for men. They are getting distracted easily and find information on social media as being a burden to handle. Another important point to mention is that women, unlike men, feel frustrated when they encountered overlapping information through various communication channels.

Information overload could be considered an information pollutant for woman giving the fact that it has such a great impact on their behavior, namely that it is too difficult for them to manage it, representing a distraction from the information they actually need in order to perform a daily task or to make a decision. Another point that can be highlighted is that people with age over 30 years seem according to the results not paying so much importance on information overload. This observation can be also found in other researches, where older people have more experience of negative stimuli and this is the reason for they may react in a less negative manner (Ragu-Nathan, et al., 2008).

In conclusion, this study's contribution was the finding that overload on social media leaves its mark on the behavior of women more than men, and this is a starting point for more detailed research about the factors that determines this status.

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Does Corporate Sustainability Generate Loyalty Towards Fast Fashion Retailers? An Empirical Investigation

Edina Katinka Bodor¹, Rebeka Ana Pop², Raluca Băbuț³ and Dan-Cristian Dabija⁴

¹⁾²⁾³⁾⁴⁾ Babeş-Bolyai University, Department of Marketing, Cluj-Napoca, Romania.

E-mail: edina.bodor@ubbcluj.ro; E-mail: rebeka.pop@ubbcluj.ro;

E-mail: raluca.babut@ubbcluj.ro; E-mail: dan.dabija@ubbcluj.ro

Please cite this paper as:

Bodor, E.K., Pop, R.A., Băbuț, R. and Dabija, D.C., 2021. Does Corporate Sustainability Generate Loyalty Towards Fast Fashion Retailers? An Empirical Investigation. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. 7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 801-810 DOI: 10.24818/BASIQ/2021/07/101

Abstract

Context: As in any other markets, in order to build up loyalty, fast fashion retailers have to understand how consumers can be targeted by an attractive structure of the assortment and an informative advertising. Furthermore, as consumers are getting more and more green and sustainable oriented, retailers have to adapt their strategies and consider sustainability measures in order to bind consumers. While research on antecedents of loyalty in fashion and fast fashion is relatively plentiful, the influence on loyalty of customers' perceptions towards fast fashion store corporate sustainability is understudied.

Purpose: The purpose of this research is to evaluate the influence of fast fashion store's assortment and advertising on customer satisfaction, and the impact of satisfaction and corporate sustainability on customer loyalty.

Design/methodology: A conceptual model was developed to analyse the relations between advertising, assortment, satisfaction, and corporate sustainability on loyalty towards fast fashion stores on an emerging market. Data collected from 478 fast fashion customers was analysed by means of partial least squares equation modelling (PLS-SEM) with SmartPLS 3.0.

Findings: Results show that loyalty towards fast fashion stores is determined by both satisfaction and corporate sustainability, advertising and assortment having a significant and strong influence in generating satisfaction.

Originality/value: The added value of the study is because among the prerequisites of store loyalty towards fast fashion stores we consider corporate sustainability, as well as the fact that the relations between the concepts are analysed by structural equations modelling.

Practical implications Fast fashion retailers could implement sustainable business strategies to attract, retain and bind customers.

Keywords

Fast fashion, corporate sustainability, assortment, advertising, customer satisfaction, customer loyalty.

DOI: 10.24818/BASIQ/2021/07/101

Introduction

Over the years, the fashion industry has indubitably invigorated the worldwide economy. Its attractiveness, growth potential and unshakeable capacity to engage with many stakeholders, have uplifted the industry in 2020 to a worth of more than \$1.3 trillion, set in motion by 300 million employees (Gazzola, et al., 2020). The fashion industry is estimated to attain a total of \$2.1-2.25 trillion by 2025 (Greenpeace, 2017; Shahbandeh, 2021), a performance not inconceivable for a constantly

growing sector, expertized in boosting dreams, aspirations, and interests for one of the basic human needs: appearance (Barnes and Lea-Greenwood, 2010). Brands have gone global due to their forward-looking strategies, which are regarded as fuels for consumerism (Gazzola, et al., 2020; Thorisdottir and Johannsdottir, 2020), even if the plain rationale of the fashion industry stays in providing exchange and symbolic value for consumers (Azuma and Fernie, 2004). The multivalent act of apparel shopping has induced rapid changes into the industry, leading to mass-producing, more and more cost-friendly platforms for passionate fashionistas (Yang, et al., 2017).

As consumers change rapidly their styles and purchasing behaviour (Castelli and Brun, 2010), the fashion retail has started to employ a “product-variation” and “mass-diffusion” system (Barnes, 2013), which responds to the up-paced circulation of trends (Azevedo and Carvalho, 2012). The fast fashion market is one of the most rapidly growing segments of the fashion industry, annually accelerating designs, production, delivery and increasing unsteady needs at the lowest possible prices, hence generating short-lived attire waves (Joung, 2014).

Despite admitting that the rise of fast fashion is based on successfully designed consumer-oriented policies (Joung, 2014), this research field is still under investigation when it comes to developing and implementing a sustainability strategy: fast fashion retailers are confronted with fulfilling ever changing and evolving green and sustainable consumer’s needs. Developing a long-term relationship with sustainable oriented and trend-seeking customers is harder to achieve. Consumer loyalty’s antecedents have been previously investigated in fashion (Dabija and Băbuț, 2019) and fast fashion literature (Su and Chang, 2018), previous studies approaching fashion sustainability in supply chain logistics (Yang, et al., 2017), but merely considering corporate sustainability as a driver for customer fast fashion loyalty.

Thus, the present research aims at covering this gap by examining the influence of consumers’ perceptions about fast-fashion retailers’ assortment and communication on satisfaction, as prerequisites for corporate sustainability and store loyalty. The **structure** of the paper is as follows: section 1 contains a review of the fast fashion literature combined with the concept and hypothesis development; section 2 presents the research design, while section 3 continues with the research results and discussions. The paper ends with theoretical and managerial contributions.

Generating loyalty in Fast-Fashion: Conceptual framework and model development

“Fast fashion” designates an evolutive approach in supply chain management theory, consumers demand being a key element: it allows quicker design, delivery and selling solutions to meet consumers’ needs and expectations, while considering societies fast-changing trends (Barnes, 2013). By incorporating fast-paced technological progress, innovations and by operating on a global basis, fast fashion retailers can benefit from cheap labour force and raw materials, but also by fast delivery around the world (Joung, 2014; Tohänean, et al., 2020). This initially “niche concept” was introduced by global players like Zara, H&M, and New Look, the rapid developing competitive advantages, profits, and market share increase attracting rapidly other apparel companies which develop to vertical integrated fast fashion retailers (Barnes, 2013). Leaving behind the manufacturer-owned “push” of the traditional fashion market, fast fashion retailers operate under the pillar of the “pull” orientation, specifically aiming to attract customers with reduced buying cycles and shorter product lifecycles (Swoboda, et al., 2010; Cachon and Swinney, 2011). The core principle behind the fast fashion concept is providing low-priced and up-to-date articles, designed, manufactured, and delivered in the fastest way possible (Doeringer and Crean, 2006). Thus, fast fashion companies achieve shorter “lead times” to make their products available according to consumers’ needs, expectations, and ever-changing desires, allowing them to benefit from rapid delivery, new, stylish, “seasonal” and trendy merchandise, that can easily make their way from the catwalk into the fashion-sensed customers’ wardrobe (Azevedo and Carvalho, 2012; Barnes, 2013).

Fast-fashion retailers’ success is primarily based in developing customers’ interest in owning a desirable lifestyle, as inspired by influencers, celebrities, catwalks, and other fashion “makers”, although such trends might fail providing the highest added value (Euromonitor, 2016) and are indicted for encouraging non-sustainable practices like “disposability” (Joy, et al., 2012). Fashion has determined consumers to purchase impulsively, in extremely large quantities (Joung, 2014), pulling

organizations into environmentally and socially irresponsible behaviours meant to increase marginal profits (Thorisdottir and Johannsdottir, 2020).

Corporate sustainability can be defined as company's ability to satisfy the needs of the direct and indirect stakeholders (customers, employees, shareholder, communities), without compromising its ability to satisfy the needs of future stakeholders (Dyllick and Hockerts, 2002). Corporate sustainability considers that the fulfilment of proper economic conditions is not sufficient for creating a stable business context, this being extended also by the social and environmental dimension (Baumgartner and Ebner, 2010). The impact of sustainability in fast fashion is a hot topic for researchers and practitioners, as this industry represents 10% of the global annual CO₂ emissions, more than 50% of the managers acknowledging the importance of embracing a responsible behaviour even post-COVID (Euromonitor, 2021). This challenge presents a vast potential in addressing customer needs, as consumers tend to declare a positive attitude more vehemently towards ethical organizations (Dabija et al., 2016; BoF and McKinsey, 2020). Despite this, there seems to be an inconsistency in consumers' behaviours because this attitude is not always translated into ethical purchasing activities (Collett, et al., 2013; Dabija, et al., 2018; BoF and McKinsey, 2020), trends still being a priority in fashion acquisitions (Park and Kim, 2016). Although research on fashion market has shown an indirect influence of customers perceptions of corporate sustainability on brand loyalty (Dabija, et al., 2018; Noh and Johnson, 2019), research on other markets highlight a direct impact (Raza, et al., 2020). Therefore, we assume that:

H₁: Customer perceptions of fast fashion store corporate sustainability directly influences customer loyalty towards fast fashion store.

Assortment plays a significant role in the strategic planning of retail merchandise, as it enhances shopping experiences (Berkhout, 2019). Fast fashion retailers' assortment has a high functional performance due to its trendiness and novel designs, as they can rapidly adapt it to ever changing consumer needs (Chotekorakul and Nelson, 2013). Consumers tend to revisit stores offering wide, deep, frequently renewed, innovative, trendy assortments (Kesari and Atulkar, 2016). Fast fashion retailers can confer uniqueness to their clothes, thus supporting consumers individualism or independence (Okonkwo, 2007; Popa and Pelău, 2016). Although the fast fashion industry might not sell the best product quality, this aspect is remedied by the low prices and large assortment varieties at the best possible quality (Su and Chang, 2018). Merchandise quality influences customer satisfaction (Giovanis and Athanasopoulou, 2016), along with assortment variety (Santini et al., 2018). Therefore, we consider that:

H₂: Customer perceptions of fast fashion store assortment (merchandise) directly influences customer satisfaction.

Advertising. In competitive markets, consumers are exposed to an endless number of alternatives while feeling the pressure of making the right decision. To stand out from the noise, companies can present their unique offer in a differentiated manner by tenaciously making use of advertising (Arens et al., 2013). Although the linkage with fast fashion store satisfaction has not been studied yet, research shows that repeated exposure to fashion trends awakes familiarity with the product, which positively impacts fashion brand awareness, store image (Le Bon, 2015) and store patronage (Dabija and Băbuț, 2019). Moreover, advertising significantly shapes retail store and brands preferences (Shimp and Andrews, 2015), having a great contribution in desirable self-image enhancement, risk reduction, and curiosity arousal among consumers (Le Bon, 2015; Vasiliu et al., 2016). Therefore, we infer that:

H₃: Customer perceptions of fast fashion store advertising directly influences consumer satisfaction.

Satisfaction has been defined as a conclusive mental state (Oliver, 1997), which embodies the consequence of the evaluation between expectation and actual performance of a purchasing experience (Bloemer and Ruyter, 1998), involving both affective and cognitive processes of the consumer (Mano and Oliver, 1993). In case of a favourable aftermath, it is known that a consumer is highly likely to feel a strong predisposition for engaging with the same experience in the future (Kotler and Keller, 2012; Vasiliu et al., 2016). Customer satisfaction concept has been confirmed to be an antecedent for customer loyalty in fashion (Santini et al., 2018) and fast fashion literature (Bui, 2019). Hence, we conclude that:

H₄: Customer satisfaction directly influences customer loyalty towards fast fashion store.

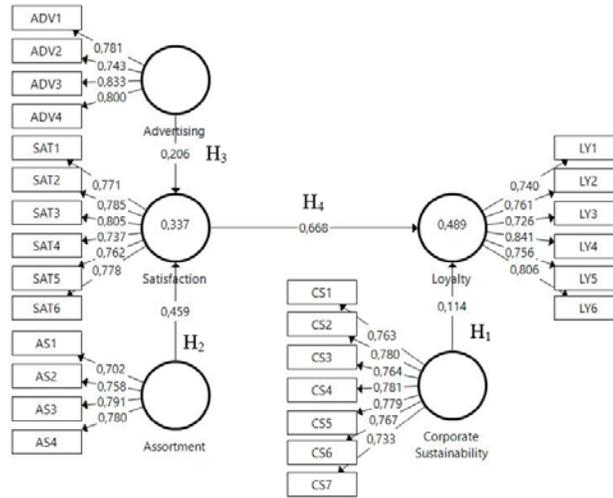


Figure no. 1. Prerequisites of loyalty in fast fashion retail

Research Methodology

This paper outlines the impact of consumers’ perception of fast fashion store corporate sustainability on consumers’ loyalty, by also highlighting the mediating influence of consumers’ satisfaction on store loyalty, as satisfaction is generated by consumers’ perception of fast fashion advertising and assortment (Figure no. 1). Data was collected by the authors via a quantitative survey through face-to-face interviews with the help of qualified volunteers which rigorously selected the respondents by gender (male/female) and birth year. Respondents were asked to think about and name one single fast fashion store which they most often visited and to keep it in mind for all sections of the questionnaire. The total number of respondents was of 478. Most of the respondents are females (60.5%) and graduated with a bachelor's and/or master's degree (42.9%). To achieve data validity, items measurement was developed based on the literature (see table 1), using a five-point Likert scale (total disagreement/total agreement): a four-item scale of assortment (AS) was selected from Chowdhury, et al. (1998); the four-item scale of advertising (ADV) chosen from Yoo, et al. (2000) and Hansen and Deutscher (1977/78); the six-item scale of satisfaction (SAT) adapted from Cronin et al. (2000); six items of store loyalty (LY) selected from Chaudhuri and Holbrook (2001) and Verhoef et al. (2007); a seven-item scale of corporate sustainability (CS) chosen from Brown and Dacin (1997) and Sen and Bhattacharya (2001).

Results and discussions

The research models were tested using Partial least squares equation modelling (PLS-SEM) with SmartPLS 3.0. Table 1 illustrates the validity and internal consistency of the reflective constructs. All factor loadings are ranged between 0.702-0.841, suggesting the convergence validity of the measured items (Hair et al., 2010). The Cronbach’s Alpha coefficients are higher than 0.7, which confirms the internal consistency of the model (Henseler and Sarstedt, 2013). All AVE>0.5 and CR>0.7 values exceed the minimum criteria, indicating the convergent validity and reliability of the constructs (Chin, 1998; Hair et al., 2010).

Table no. 1. Scale reliability

Construct	Item	Measure	Loa- ding	Cronbach's Alpha	AVE	CR
Assortment Adapted from Chowdhury et al., 1998	AS1	... sells merchandise important to me.	0.702	0.754	0.575	0.844
	AS2	... has innovative merchandise.	0.758			
	AS3	... has a good assortment of own brands.	0.791			
	AS4	... has qualitative merchandise.	0.780			
Advertising Adapted from Yoo et al., 2000; Hansen and Deutscher, 1977/78	ADV1	... has appealing advertising.	0.781	0.801	0.624	0.869
	ADV2	... advertising provides information about the store offer and the company.	0.743			
	ADV3	... has credible advertising.	0.833			
	ADV4	... advertising helps me plan my shopping.	0.800			
Satisfaction Adapted from Cronin et al., 2000	SAT1	... has, in my opinion, products that I trust.	0.771	0.865	0.598	0.899
	SAT2	... is a safe decision for me.	0.785			
	SAT3	... keeps, in my opinion, what it promises.	0.805			
	SAT4	... offers products that I am satisfied with.	0.737			
	SAT5	... has always been a right decision for me.	0.762			
	SAT6	... is a good choice for me.	0.778			
Loyalty Adapted from Chaudhuri and Holbrook, 2001; Verhoef et al., 2007	LY1	I find ... very appealing.	0.740	0.864	0.597	0.899
	LY2	I will recommend ... to my relatives/friends.	0.761			
	LY3	I feel attached to ...	0.726			
	LY4	I buy with pleasure from ... every time.	0.841			
	LY5	My next purchase will likely be from ...	0.756			
	LY6	I will often shop at ... in the future.	0.806			
Corporate Sustainability Adapted from Brown and Dacin, 1997; Sen and Bhattacharya, 2001	CS1	... is responsible towards the environment.	0.763	0.884	0.588	0.909
	CS2	... supports worthy causes.	0.780			
	CS3	... is socially responsible.	0.764			
	CS4	... is improving society welfare.	0.781			
	CS5	... keeps up high ethical standards.	0.779			
	CS6	... is concerned with environmental protection.	0.767			
	CS7	... protects employees.	0.733			

Source: own development.

The square roots of the corresponding AVEs (Table 2) are higher than the correlation coefficient between pairs of constructs. According to the HTMT criteria, all construct values are below 0.9 (Henseler et al., 2014), indicating the discriminant validity of the constructs. The VIF values of all constructs were ranged between 1.370-2.282, indicating that there is no collinearity issue (Sarstedt et al., 2017). The bootstrap technique was used to test the relationships between the latent variables and the results indicate that all four hypotheses were accepted.

Table no. 2. Discriminant validity

Construct	Fornell-Larcker					Heterotrait-Monotrait (HTMT)				
	ADV	AS	CS	LY	SAT	ADV	AS	CS	LY	SAT
ADV	0.790									
AS	0.445	0.758				0.563				
CS	0.383	0.223	0.767			0.453	0.275			
LY	0.462	0.529	0.249	0.773		0.548	0.652	0.283		
SAT	0.410	0.551	0.203	0.691	0.773	0.479	0.676	0.226	0.795	

Source: own development.

Table 3 indicates that customer perceptions of fast fashion store corporate sustainability directly influence customer loyalty towards fast fashion store ($\beta=0.114$; T-value=3.616; $p<0.05$). Therefore, corporate sustainability issues such as supporting worthy causes, being socially responsible and

keeping up high ethical standards can positively influence consumers' loyalty, thus H₁ can be accepted. Our findings confirm previous research from other markets (Pérez and Rodríguez del Bosque, 2015; Moisescu, 2018). This study disclosed that customer perceptions of fast fashion store assortment (merchandise) directly and positively influence customer satisfaction ($\beta=0.459$; T-value=11.177; $p<0.05$). Therefore, retailers with innovative and qualitative merchandise can increase consumers' satisfaction, thus H₂ can be accepted. This is consistent with Selnes (1993) and Giovanis and Athanasopoulou (2016). The results ($\beta= 0.206$; T-value=4.846; $p<0.05$) confirm that customer perceptions of fast fashion store advertising directly impact consumer satisfaction. Therefore, the more credible and informative is the advertising the more satisfied are the consumers with the store, thus H₃ is supported. Conform to the analysis ($\beta=0.668$; T-value=22.339; $p<0.05$), customer satisfaction directly influences customer loyalty towards fast fashion store, therefore H₄ is supported. This result is consistent with the findings of Chang et al. (2015) and Kim et al. (2018).

Table no. 3. The path coefficients of the structural equation model

Paths	Path Coefficients	Standard Deviation	T-Value	P-Value	Hypotheses
CS →LY	0.114	0.031	3.616	0.000***	H1— Supported
AS → SAT	0.459	0.041	11.177	0.000***	H2— Supported
ADV → SAT	0.206	0.042	4.846	0.000***	H3— Supported
SAT →LY	0.668	0.030	22.339	0.000***	H4— Supported

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; ASV=advertising; AS=assortment; SAT=satisfaction; CS=corporate sustainability; LY=loyalty

Source: own development.

The goodness of fit for the model was satisfactory with a square root mean residual (SRMR) value of SRMR=0.060, which is below of 0.08 criteria. Advertising and assortment explain 33.7% of the variance of store satisfaction ($R^2=0.337$), and satisfaction and corporate sustainability explain 48.9% of the variance of loyalty ($R^2=0.489$), indicating a moderate predicting power of the structural model (Hair et al., 2011).

Conclusions

From a theoretical perspective, the paper shows that corporate sustainability represents as satisfaction a major prerequisite for developing customers' loyalty towards fast-fashion stores. As modern consumers tend to buy more clothes, implementing a sustainability strategy aimed at diminishing the consume and/or use of resources, protecting the environment, supporting good causes, being socially responsible, keeping high ethical standards represent major important developments for modern companies. As fast fashion retailers have to adapt and evolve with their clientele, they have also to rely on and adapt to consumers changing lifestyles, needs and consumption habits. As consumers tend also to be more socially responsible, green and/or sustainable oriented, fast fashion retailers have to change their business strategies accordingly.

From a managerial perspective, the results show that by developing and implementing an informative and focussed advertising based also on sustainable measures, combined with a depth, innovative, new, sustainable, and attractive assortment, fast fashion retailers can generate and develop satisfaction and loyalty towards their stores. Together with a proper corporate sustainability strategy, fast fashion retailers can more easily bind customers towards their stores.

The study has several limitations. To develop loyalty towards their stores, fast fashion retailers also rely on other antecedents, like in-store management, store prices, store location or personnel. As this study has not taken into consideration such prerequisites, further research could consider such vectors as possible more antecedents of store loyalty. Future research could also consider comparative analysis on gender, consumer generations or among different regions. As the COVID-19 impact on fast fashion store purchase has not been considered, future research should also analyse to what extend the fear for pandemic as well as teleworking and the reduced social distances has led to a decrease of consumers

preferences and purchases of fast fashion products. Future studies could also consider the impact and significance of artificial intelligence in retailing.

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Information Security Management System and Cyber Security Strategy Implementation in the Context of SCRUM

Georg Sven Lampe¹, Marieta Olaru², Mihaela Maftai³ and Cristian Ilie⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: georg.sven.lampe@gmail.com; E-mail: olaru.marieta@gmail.com;

E-mail: mihaela.maftai@ase.ro; E-mail: dgaeur@gmail.com

Please cite this paper as:

Lampe, G.S., Olaru, M., Maftai, M. and Ilie, C., 2021. Information Security Management System and Cyber Security Strategy Implementation in the Context of SCRUM. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 811-819
DOI: 10.24818/BASIQ/2021/07/102

Abstract

A cyber security strategy based on information security is the key to a trusted and sustainable digitization. To meet different regulatory requirements, the cyber security strategy must map a wide variety of frameworks. To manage specific cyber security threats, many organizations present different approaches to protecting critical data, software, and systems as part of an integrated cybersecurity strategy. However, the strategic potential of the scrum methodology for the sustainable management of global risks such as cyber-attacks within the Information Security Management System is largely unexplored. The paper aims to present how the implementation of ISMS and a cybersecurity strategy could be achieved by using the scrum framework. The authors of the paper would like to examine the current model of information processing by the Information Security Management System for cyber situations and to reconcile it with extended measures through an integrated cybersecurity strategy. Thus, a literature review on IT, Cybersecurity and Agile is conducting to identify the application of scrum in ISMS and cybersecurity strategy implementation. The findings show that the scrum framework supports ISMS and Cybersecurity strategy implementation, being used by many IT professionals and organizations.

Keywords

Information security management, cyber security strategy, scrum, risk management, risk processes, digitization.

DOI: 10.24818/BASIQ/2021/07/102

Introduction

The research carried out by the authors propose to investigate the extension of the existing risk management process (RMP) within the Information Security Management System (ISMS) and its effects on the measures due to the threat of cybercrime. According to previous research (Ande, et al., 2020; Bhamare, et al., 2020; Ganin, et al., 2020; Pandey, et al., 2020), the RMP approaches to information security are indispensable for the application and management of cybersecurity (Fuentes, et al., 2017). However, the RMP is mostly limited to statistical threat catalogs and one-off risk assessments. In addition, the use of technical and organizational measures only reduces risks to an economically appropriate level.

The distribution of the measures to operational teams is necessary, but a different understanding may lead to insufficient prioritization of security tasks and a limited perspective. Relevant risks are outside the focus and due to the different understanding of information security, the reporting in the annual management review is excessively positive. The ISMS must not only be operated to satisfy auditors (Todorovic, Todorovic and Tomas, 2020), but the basic ISMS security measures must be expanded. The corresponding measures are to be described in more organizational and technical details for the different areas of the organizations (Järvasoo, et al., 2018; Niemimaa and Niemimaa, 2017). In addition, the prioritization of business processes enables implementation in the correct order. Strategically, the ISMS must be supplemented by the "Cyber Security Operation" (CSO) category and operated more agile (Gomero-Fanny, Bengy and Andrade-Arenas, 2021; Kammergruber and Durner, 2018).

The paper aims to present how the implementation of an ISMS and a cybersecurity strategy could be achieved by using the scrum methodology. The first part of the paper presents the literature, standards and legal framework review on IT and cyber security fields at EU and Germany level. Results and discussion section describes the application of Agile approach, specifically scrum methodology, in IT and cybersecurity strategy implementation in ISMS.

Literature Review

The analysis of the specific literature shows that various standards have been issued for the regulation of cybersecurity, which the cybersecurity strategy shall fulfill. Below is a short overview of the most important uniform standards for cybersecurity, information security management systems and security frameworks.

Cyber Security Strategy (CSS)

The increasing digital networking simplifies joint communication, coordination, and cooperation (3C) and increases the competitiveness of companies (Lampe, et al., 2020). At the same time, malicious actions and cyber-attacks are increasing due to digital change and technological developments in ICTs and are opening new areas of attack in the fields of processing, hosting, transmitting, and using data in all domains (Senol and Karacuha, 2020; World Economic Forum, 2021). The areas of threat are constantly changing and expanding, while most resources and financial means of defense are stagnating, especially for SMEs (Teufel, et al., 2020), due to low financial investments in the field of cyber security (Zec and Kajtazi, 2015). Larger companies have the resources to solve cybersecurity problems, while small businesses often do not have the appropriate resources (Berry and Berry, 2018). This implies that common assumptions such as the availability of qualified workers, documented processes, or the planning of the IT budget must be changed in the security discussion. According to the Cyber Security Workforce Study 2019 (International Information System Security Certification Consortium, 2019), it is estimated that around 4.07 million cyber security experts are missing. Additionally, organizational IT security research has largely neglected the SME context (Heidt, Gerlach and Buxmann, 2019). The background to this is that cybersecurity is a young and immature area that is constantly evolving and whose skill requirements are changing rapidly (HM Government, 2018). SMEs should improve the ICT capabilities and digital technologies to acquire knowledge about standards, standardization, and management systems, since those are missing the chance to benefit from the implementation of management systems (Mijatović, Tošić and Jovanović, 2019).

Cyber - attacks are not specific only to companies, but to the entire national, regional, and international security system at the level of critical defense, nuclear, energy, water supply, medical, cybercrime, and scientific research infrastructures (Štivilis, Pakutinskas and Malinauskaite, 2017). In this context, cyber security has become an important issue on the national and EU level, being perceived as a part of national and EU security. Thus, it is necessary to create and implement national and EU cybersecurity strategies to properly handle cybersecurity issues due to the fast growing of attacks and vulnerabilities (Štivilis et al., 2020). Implementing an adequate cybersecurity strategy in a changing cyber-physical operating environment requires an anticipatory attitude toward strategic decision-making and a toolset to support agility in strategy implementation (Kuusisto and Kuusisto, 2018). Legal and regulatory requirements present operators of critical and noncritical infrastructures with the challenge of protecting the existing IT structure and organization, where cyber-attacks could inject false measurement data that cause real overloads (Li and Hedman, 2020), affect industrial vital digital assets (Kim et al., 2019), and industrial control systems (Choi et al., 2016). To fulfil different regulatory requirements, the cyber security strategy must be able to map a wide variety of legal frameworks. Information security management systems and security frameworks form the basis for designing a CSS, because this ensures comprehensive protection of business processes and information objects across all supporting assets in the SoA. Cybersecurity must ensure existing and evolving IT systems and infrastructures in all business areas. The dynamic development of the business areas and organizational structures of organizations require agile ISMS teams that organize themselves and can adapt to agile Security Operations (SecOps). An adapted Development Operation (DevOps) approach is recommended for the operation and continuous development of IT systems because this describes the agile cooperation between development and IT operations (Kim et al., 2016). A "one-size-fits-all" principle is only partially effective as there are different security requirements for the various business areas in the organization. A cross-functional CSS is necessary that identifies and evaluates weak points, defines organization-wide aims, and how these can best be implemented in the organization. For the analysis and implementation of the risk management process (RMP) within cybersecurity, practical principles are presented drawing attention to key values and improved value retention. Particular attention is paid to the fact that the specific complexity of these frameworks listed above can be translated into a practical, user-friendly environment.

Strategic framework at EU level: Network and Information Security (NIS), Cybersecurity Act (CSA), General Data Protection Regulation (GDPR)

The first EU-wide cybersecurity law, the NIS Directive, came into force in 2016 to achieve a high EU-wide security level for networks and information systems (Directive (EU) 2016/1148 of The European Parliament and Of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union). The NIS guideline is currently being revised and will have measures for a high common level of cybersecurity in the future. NIS2 is a response to increasing threats through digitization as well as its connectivity and will affect medium-sized and large enterprises (SMEs) across the EU. Increased security requirements are being placed on supply chains and the relationships between providers, providing for simplified reporting requirements as well as stricter supervisory measures and enforcement requirements. The expansion of the SoA (e.g., public management, district heating, etc.) as well as the determination of the requirements for cybersecurity risk management including notification obligations of companies is planned. More uniform sanctions regulations are planned in the member states to achieve mandatory cooperation and a greater exchange of information in the management of cyber crises at the national and EU level. The EU Cybersecurity Act (CSA), which came into force in 2019, provided Europe with a framework for the cybersecurity certification of products, services, and processes (Štítilis et al., 2020). The current regulation is intended to help ensure that IT products, services, and processes, consider and implement cybersecurity requirements as early as the conception and development phase (Regulation (EU) 2019/881 of the European Parliament and of the Council). The EU-wide GDPR regulates the handling of personal data in organizations, with the requirements for the protection of personal data being specified in ISO/IEC 27701:2019. However, there is currently no independent ISO/IEC 27701 certification. An ISMS certification according to ISO/IEC 27001:2013 and 27002:2013 in connection with ISO/IEC 27701 is not GDPR-compliant according to Article 42 GDPR (Regulation (EU) 2016/679 of the European Parliament and of the Council).

Strategic framework in Germany: IT Security Act (IT-SA) IT-Grundschutz catalogues

The IT-SA came into force on July 25, 2015, with the aim of significantly improving the security of information technology systems in Germany (IT Security Act - Gesetz zur Erhöhung der Sicherheit informationstechnischer Systeme IT-Sicherheitsgesetz). It is directly linked to other laws, such as the Federal Office for Information Security Act (BSIG), the Telecommunications Act (TKG), and the Telemedia Act (TMG) and should be amended accordingly NIS Directive from 2016 (Foulks, 2018). Currently, there is a legislative procedure for a second law IT-SA that contains expanded powers for cyber security authorities and expanded requirements for critical infrastructures (IT Security Act 2.0 Draft - Entwurf eines Zweiten Gesetzes zur Erhöhung der Sicherheit informationstechnischer Systeme). Federal Office for Information Security (BSI) standards contain technical and organizational measures (Federal Office for Information Security - BSI, 2021). The effort and costs for certification according to ISO 27001:2013 based on IT-Grundschutz catalogue are significantly higher than for certification according to ISO 27001 (Ionescu, Olaru and Sargut, 2019). The BSI standard is also cited as a reference model in EU guidelines but is only recognized to a limited extent internationally. Specific standards and guidelines have been issued that define the requirements for ISMS in accordance with ISO 27001:2013 for operators of business processes within telecommunications and energy services as well as for the operators of critical infrastructures. In Germany, the legislation (§ 11, Paragraphs 1a, 1b of the Energy Industry Act, 2005) stipulates an "appropriate security" against threats to the network control connection (German Bundestag, 2005). In the IT security catalog (SICAT) of the Federal Network Agency (BNetzA), the security requirements for "adequate security" are specified (German Federal Network Agency - Bundesnetzagentur, 2015). A functioning and certified ISMS in combination with ISO 27002:2013 and ISO 27019:2017 has been implemented since 2018. Thus, the critical infrastructures' operators are legally obliged to report IT security incidents to the BSI (Federal Office for Information Security, BSI, 2016). There is no obligation to report outside the critical infrastructure.

Information security and cybersecurity standards

Many standards and norms regulate security management, such as ISO/IEC 27001:2013 and ISO/IEC 27100:2020. ISO/IEC 27001 is the internationally recognized standard for ISMS and contains specifications and requirements. The ISMS begins with a Business Impact Analysis and Risk Impact Analysis (BIA-RIA) that identifies the events which could disrupt business operations and processes. Once the threat has been identified by the treatment of incidents, a risk assessment must be carried out. The business impact, the likelihood of occurrence, and the recovery time must be determined, being required for critical business processes and applications. This evaluation considers only the business processes related to the information technology in the SoA and includes preventive and reactive measures. ISO/IEC 27100:2020 describes in general cybersecurity and relevant concepts, including its relationship to

information security and how it differs from ISO/IEC 27001:2013. However, the international standards for ISMS and cybersecurity do not describe which strategy should be implemented in combination.

Research Methodology

To achieve the research objectives, it is necessary to analyse the current state of knowledge of research on cybersecurity and existing threats as well as information security, into the context of legal frameworks and international standards. In addition, the theoretical aspect also focuses on studies on management systems and best practice approaches in order not only to confirm the empirical theoretical part, but also to illustrate the practical implications of this study. For this purpose, quantitative descriptive approaches have been used to strategically identify organizational approaches for the organizations that can explain the success or failure of technical and organizational implementation efforts. Business success requires controllable and resilient digitally supported business processes. Therefore, the existing model of information processing is to be extended to include the strategic elements to be implemented. As a result, the strategic organizational requirements of the ISMS are examined in the second part. The development of a conceptual approach is necessary to show that the ISMS plays a central role for critical and non-critical infrastructures. As part of the analysis of the organizational measures used, supplemented by a specific literature search, the authors want to examine how the ISMS could be expanded through the integration of a Cyber Security Operation (CSO) and information security management processes could be combined and improved, which ultimately affect the level of maturity.

Results and Discussion

Agility through an adapted DevOps approach from Scrum

Agility is an approach of developing solutions based on software applications and use that is focused on projects with changing requirements and provides the cooperation and interaction in the foreground. The main purpose is to deliver high-quality software, providing its users with features that include usability, utility, accessibility and others (Morandini et al., 2021). The agile software development is evolving in an emerging Software Engineering approach being currently practiced by many software companies (Marques and Da Cunha, 2019).

The use of valuable resources and time for documentation is limited to what is necessary and not to carefulness. An agile method divides projects into short development cycles (sprints), which normally last up to a maximum of four weeks. This enables agile ISMS teams to develop individual processes and test their functionality while taking changing requirements into account at the same time (Reyes et al., 2019). Agility defines the core values and principles for the project team, while Scrum defines and further develops the development process. Almost 75% of the software teams depend on Scrum or Scrum-Hybrid (digital.ai, 2020). The Scrum Sprint consists of several events (Brechtner, 2015; Project Management Institute and Agile Alliance, 2017):

- *Planning:* The activities that will be carried out in each sprint.
- *Daily meet:* The team discusses which activities have been carried out, which activities they want to carry out and which activities exist that could prevent the continuation of the work.
- *Review:* Results against the requirements that are completed during each sprint. If necessary, acceptance or back to the product backlog.
- *Retrospective:* The aim is to improve the way people work when using the Scrum method (process improvement, not the product). The improvements are documented.

Product owners establish the aims of the requirements and are responsible for quality assurance. The development teams are responsible for implementing the requirements and independently organizing the processing through so-called sprints. A Scrum master plays a central role in the coordinated flow of sprints (Morandini et al., 2021). Table 1 shows the practical approaches as scrum elements in the context of the ISMS:

Table no. 1. Specific security elements associated with the processes of ISMS

<i>Product-Backlog</i>	<i>Sprint-Backlog</i>	<i>Sprint-Review</i>
<ul style="list-style-type: none"> - Risk treatment measures; - Results of the effectiveness test; - Continuous improvement process through reviews (adapted security concepts, security quality gates, vulnerability scans, pen tests, etc.). 	<ul style="list-style-type: none"> - Refinement of the risk assessment; - Detailing and implementation of the measures, - Maintenance of the current implementation status. 	<ul style="list-style-type: none"> - Examination of effectiveness, achievement of objectives and results; - Security approvals; - Security acceptance.

The central principle of Scrum is the timing procedure of sprints, which are determined by the team as a sprint plan in terms of the process and duration. Planning and control of the sprint is then done with the help of the backlog, in which the elements are defined as tasks and implemented in a subordinate manner. Due to the responsible position, the product owner and scrum master determine the functions of the tasks and the successive sprints. After completion of the sprint planning, an overview of the completed and still open tasks from the sprint is created, on the one hand to recognize the progress of the task planning and on the other hand to be able to carry out continuous evaluation (Stellman and Greene, 2014). In addition to the sprint planning, there is a short daily meeting in which the team reports which tasks are being worked on the previous day and currently. In addition, problem areas that prevent progress are discussed. The Scrum Master supports team in solving these obstacles. Each sprint is followed by a detailed sprint test and a sprint retrospective. The productive teamwork in terms of time, work content, results, and effort in fixed processes ensures that function-oriented and deliverable work results are created. The team checks the effectiveness for weaknesses and successes during the retrospective. At the same time, the aim-oriented control with the help of the backlog enables integrated, efficient, and qualitative process management (Wysocki, 2019). This procedure can be mapped to the interaction between the ISMS and cybersecurity, as shown in Figure 1 below.

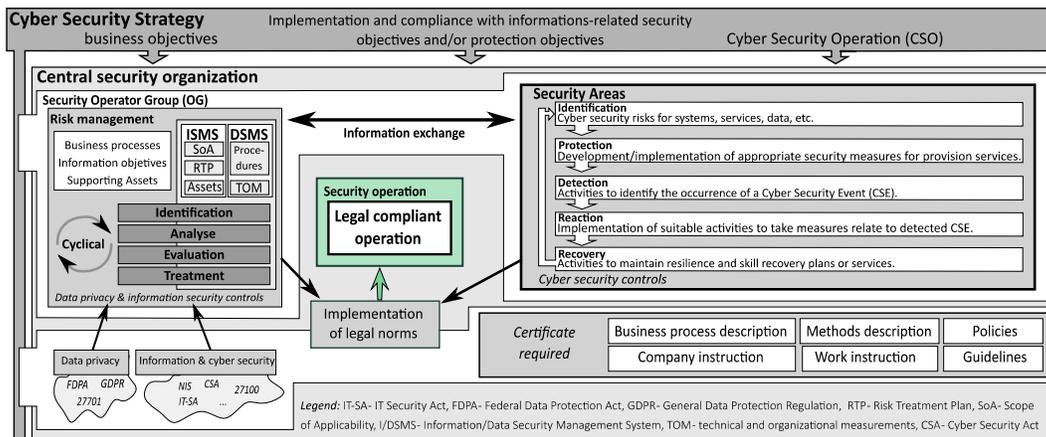


Fig. no. 1. Cyber Security Strategy related to ISMS

Agile cyber security

An established ISMS is evolving through the continuous PDCA cycle (Plan-Do-Check-Act). Similarly, the creation and implementation of a cybersecurity strategy could be approached through a PDCA cycle model (Senol and Karacuha, 2020). A continuous improvement of the security of the ISMS is similar to the results of agile methods. The iterations as short sequences of successive cycles of activity ensure that the results are checked immediately and that the actions are corrected in good time. The ISMS is certified according to the ISO 27000 standard published rules and safety catalog. The accreditation requirements apply to the audit process. For sole proprietorships with one or more locations, certification is carried out using a random sampling procedure with a specified time expenditure and interval. In addition, the organization processes and security measures are checked for conformity for the scope and not for the specific industry. Uniform information security for a legally secure operation is only possible if all cooperating operator groups (OGs) of the respective organization locations align their activities to achieve comparable security. As part of the ISMS, the existing processes shall be renewed, and new aims shall create as wells as implemented (operationalized) and centralized. It is therefore recommended to appoint a central ISMS and data protection officer from the top management for both OGs. Furthermore, those involved and cooperating operator groups can maintain a common IT security organization (roles, reporting channels, reporting).

Cyber security must deal with the connected systems and infrastructures of the customer (CIT) and process IT (PIT) as well as the newly emerging IoT (Internet of Things) systems of the entire organization. CIT and PIT each form security areas. It is therefore recommended to use appropriate security in complex IT systems and structures by agile ISMS teams in various areas of organizations. In comparing the IS policies of the OG, the ISMS teams in the area define generally applicable rules and processes for compliance with Information Security (IS) governance, the realization of synergies, and their cooperation. This establishes a decentralized responsibility and an agile security structure for the area. The implementation and further development of the area-oriented ISMS requirements are subject to binding and target-oriented and agile. All risk decisions using the RMP can be standardized for the security measures and then standardized. The escalation process does not end with the respective operator group, but with the security organization of the ISMS team (Marquardt, et al., 2018; Olaru, et al., 2017).

Conclusions

In this paper, first, we analyze the cyber security and ISMS scientific literature, standards and regulations and then we discussed the major research from industry and academia towards the implementation and development of a Cyber Security Strategy related to ISMS by using an innovative agile tool, respectively scrum methodology, which is a novelty in the information security research field. The implementation and operation of an ISMS in a diverse and complex business and IT environment within an organization ensures information security. An integrated cybersecurity strategy can be well represented based on ISMS information processing. Although the daily management activities derived from the Plan-Do-Check-Act are assigned to the ISMS management framework, combinations with more advanced tools such as Scrum, which promote innovation and digital transformation are possible. This extension shows the direction of agile information and cybersecurity organizations, adding value for the organizations, because essential business procedures have been tried and tested. For this, only the Scrum-specific elements must be added, which leads to a secure operation for information and cybersecurity. The ISMS carried out the RMP methodology in critical infrastructures to guarantee information security. On the one hand, this is due to the fact that the IT Security Act (IT-SA) (IT Security Act) in relation with the BSI-Critis Regulation (BSI-Critis Regulation) provides certification in accordance with ISO/IEC 27001:2013 mandatory for operators of critical infrastructures. On the other hand, the ISMS are only operated to create an appropriate level of security for the Scope of Applicability (SoA).

Cyber-attacks are on the rise and can become the greatest threat to the entire organization. The RMP is no longer based on static threat catalogs and one-time event, but the organizational and technical processes adapt to the security requirements and are continuously developing. The effects can vary depending on the sector, industry, and individual context in terms of the SoA of the business processes, the range, and importance of the information to be protected. A consistent structure in which the technologies optimally meet the security requirements and complement each other is necessary. Applications, business processes, technology structures and protective measures against cybersecurity must be based on the organizational and technical ISMS approach, in which the protection of critical information resources has priority. Therefore, organization-wide efforts must be made to protect critical data, software, and systems as part of the integrated CSS. If this is used sustainably as a CSO in companies, it enables the effects of threats to be worked out continuously, the uncertainties to be recorded, and the complexity to be reduced.

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Henry Ford: Engineer and Entrepreneur

Sorin-George Toma¹, Andreea Simona Săseanu² and
Carmen Cristina Runceanu-Albu³

¹University of Bucharest, Bucharest, Romania.

²The Bucharest University of Economic Studies, Bucharest, Romania.

³Transilvania University, Braşov, Romania

E-mail: tomagsorin62@yahoo.com; E-mail: saseanu@yahoo.com;

E-mail: carmen.albu@unitbv.ro

Please cite this paper as:

Toma, S.G., Săseanu, A.S. and Runceanu-Albu, C.C., 2021. Henry Ford: Engineer, Entrepreneur, or Both? In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleşea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 820-825 DOI: 10.24818/BASIQ/2021/07/103

Abstract

Since its emergence, the automobile has captured the attention of the entire world and, consequently, led to the birth of a very dynamic industry, the automotive industry. In the beginning, the price was not affordable for many people and, therefore, the automobile was the appanage of the upper class. The cost of the cars significantly decreased over time and mass selling grew rapidly due to mass production. The Fordist production system stimulated consumption and eventually created a mass market for cars both in America and in the whole world. The paper aims to define the concepts of engineer and entrepreneur, to identify their common features and to illustrate them in the case of an iconic personality of America. The authors achieved the objectives of the paper through a quantitative research method and a case study. The results of the paper provide a better understanding of the two concepts by highlighting their common characteristics. Also, they punctuate these common features in the case of Henry Ford.

Keywords

Henry Ford, entrepreneur, engineer, automobile, automobile industry

DOI: 10.24818/BASIQ/2021/07/103

Introduction

Few inventions contributed to the transformation of the life of human beings than the motor vehicle. Since its emergence, the automobile has captured the attention of the entire world and, consequently, led to the birth of a very dynamic industry, the automotive industry. In the mid-1880s, Karl Friedrich Michael Benz, a German mechanical engineer, designed and built the first true automobile in human history (Roser, 2017). The manufacturing techniques and methods of early automobiles were similar to craft traditions. This is why, in the beginning, the price was not affordable for many people and, therefore, the automobile was the appanage of the upper class.

The cost of the cars significantly decreased over time and mass selling grew rapidly due to mass production. This was the result of a mixture of advancements in theory and practice. On the one hand, F. W Taylor, the father of scientific management, published its time and motion studies in the United States of America (USA) and designed an efficiency model that deeply influenced businesses in the long term (Mayo and Nohria, 2005; Toma, et al., 2014; Toma, 2015). On the other hand, Henry Ford, the father of mass production, launched its famous gasoline-powered low-priced Model T of the last century (Brown, 2002; Votolato, 2015). The Fordist production system stimulated consumption and eventually created a mass market for cars first in America, and after, in the whole world (Flink, 1990; Toma, 2005). Thus, motor vehicles became the most used means of transportation. The US automotive

industry highly contributed to the mass production system that replaced the old craft system not only through the design and implementation of efficient methods of production and work but also through the appearance and development of three corporations (Ford Motor, General Motors, and Chrysler) that maintained strict control over the whole production process.

The last decades of the twentieth century witnessed the emergence and spread of the Japanese lean production system epitomized by Toyota Motor (Rubenstein, 2001; Naruo and Toma, 2007; Marinescu and Toma, 2008; Toma and Naruo, 2017). As technology has rapidly evolved, cars started to be increasingly controlled by electronics and artificial intelligence rather than by human beings.

For more than a century, the car has represented not only a prevailing powerful catalyst for change in other industries but also a tool of measuring national prestige in a highly competitive world (Design Museum, 2011). Despite its rather short history, the automotive industry has become a global industry as the manufacturing, selling, and servicing of motor vehicles and automobiles developed into numerous businesses around the world and a plethora of automakers has appeared and, especially from America, Asia, and Europe, are competing fiercely worldwide (Erjavec, 2010). Moreover, many other businesses depend on the automobile and motor vehicle industry to obtain their inputs or to provide their product and/or services (Rubenstein, 2014).

The paper aims to define the concepts of engineer and entrepreneur, to identify their common features and to illustrate them in the case of Henry Ford, one of the iconic personalities of America. The remainder of the paper is structured as follows: the second part of the paper presents the literature review. The third part of the paper exposes the research methodology. The results of the research are shown in the fourth part of the paper. The paper ends with conclusions.

Literature review

There are a huge number of articles and books regarding the concepts of engineer and entrepreneur. Consequently, a plethora of definitions linked to these concepts can be found in the literature.

An engineer is a person who is “a member of the engineering profession, that is, a member both of an occupation that is engineering by “birth,” “adoption,” or “marriage” and of the profession committed to engineering’s code of ethics” (Davis, 1996, p.97), is committed “to change, to modify or convert the world represented by a different one” (Koen, 1985, p.11), integrates “different types of skills and knowledge in an effort to solve ill-structured problems that meet people’s needs” (Capobianco, et al., 2011, p.306) and “designs devices, components, subsystems, and systems and, to create a successful design, in the sense that it leads directly or indirectly to an improvement in our quality of life, must work within the constraints provided by technical, economic, business, political, social, and ethical issue” (National Academy of Engineering, 2004, p.7).

Often considered as the founder of a new business (Barton Cunningham and Lischeron, 1991) and an agent of change, an entrepreneur is an individual who recognizes „opportunities where others see chaos, contradiction and confusion” (Frederick, et al., 2019, p.3) and a „practical and efficient person” (Dollinger, 2008, p.34) who „assumes the risk associated with uncertainty...and supplies financial capital” (Hébert and Link, 2006, p.264). In other words, an entrepreneur is „the founder or owner-manager of a small or medium-sized enterprise (SME) with growth potential” (Casson, et al., 2010, p.6) who „perceives an opportunity and creates an organization to pursue it” (Bygrave and Hofer, 1991, p.13).

Based on the above considerations, there are some common characteristics of the two concepts. Firstly, both concepts are related to change. Entrepreneurs and engineers are important agents of change. Secondly, engineers and entrepreneurs are doers and creators. Thirdly, engineering and entrepreneurship are nowadays global professions (Bourn, 2018; Frederick, et al., 2019). Fourthly, entrepreneurs and engineers are adding value to society in their attempt to solve its multiple problems (National Society of Professional Engineers, 2013; Filion, 2021).

Most of these common characteristics of the two above concepts are personified by Henry Ford. Born in 1863, he grew up in a rural and wild environment on his parents’ farm located in Springwells Township, Michigan. His parents, William and Mary Litogot Ford worked hard on the farm’s land

(Nevins, 1954). It is said that “it was the potential of machines to ease the lives of farmers that first drew Ford to engineering, and that would continue to inspire his work and focus his business endeavors all his life” (Brinkley, 2003, p.4). Henry spent his childhood showing a passion for tinkering- his toys were tools and pieces of machinery. Two big events marked his life when he turned twelve years old: the acquisition of a watch and the encounter with a Nichols and Shepard road engine (Brands, 1999). Thus, he decided to build a reliable and affordable car for the many (Bailey, 2016).

His early interest in mechanics made Henry arrange a small machine workshop. Later, he was employed as a machinist’s apprentice and eventually became an engineer at the Edison Illuminating Company of Detroit (Ford, 1925). Henry worked, read, and got close acquainted with engines.

After he got married in 1885 to Clara Jane Bryant, a true wheel of the balance of his conjugal life (Sorensen, 2006), Henry started to think about building his first cars. His obsessive and profound interest in engines and motor vehicles made him feel that he was “on to something new, different, and better than others who were experimenting with the horseless carriage” (Tedlow, 2003, p.148). During the day Henry was employed as a mechanic, and he used to experiment with his ideas especially during the night. In 1893, Henry manufactured by himself a small one-cylinder gasoline engine (Ford, 2012) and by mid-1896, he succeeded in building a quadricycle, a self-propelled car. Thus, he demonstrated he was a brilliant inventor who created, in essence, the complete car out of nothing (Winicott, 2015). A partisan of hard-working and continuous improvement (Sinclair, 1938), he built his second car in 1898, being strongly encouraged by Thomas Alva Edison.

After quitting Edison Illuminating Company, Henry established Detroit Automobile Company in 1899, together with William H. Murphy without gaining business success (Bersinger, 2018). In 1901, he designed, constructed, and drove an automobile, winning a race against the champion Alexander Winton. With the help of several investors, Henry opened a new business, Henry Ford Company, in the same year. Appointed chief engineer, he left the company one year later.

After forming a partnership with Alexander Y. Malcomson, Henry and a group of investors finally established Ford Motor Company in Detroit, in 1903. He was in charge of car design, engineering and production, and James Couzens of business matters. In this respect, “on the factory floor Ford was supreme; in the offices Couzens oversaw the bookkeeping, wrote letters, paid bills, collected money due, and after mid-November supervised sales” (Nevins, 1954, p.243). As the demand for automobiles increased, the company succeeded in obtaining profits and, therefore, in financing itself by its revenues. Henry also continued to construct new racing cars and set a land speed record of around 91 miles per hour.

In his long battle for building a cheap automobile, Henry proved his extraordinary mechanical engineering talent and, eventually, launched the famous Model T. It had an engine of four-cylinder and 20-horse-power, and soon became the archetype of the stable and low-cost American car. By providing the first inexpensive car for millions of American people (Snow, 2013), Henry saw his dream came true. In other words, Model T represented “the culmination of Henry Ford’s long-standing determination to produce a light, sturdy, inexpensive car for the American people” (Watts, 2006, p.142) and “its gutturals and verbs and lamentations and chortling—were the overtones of the American way of life” (Garrett, 1952, p.32).

The mid-1920s witnessed the world domination of Ford Motor Company when approximately half of all cars were produced there (Mayo and Nohria, 2005). Henry Ford became one of the wealthiest businessmen in the world. He died in 1947.

Research methodology

The authors achieved the objectives of the paper through a quantitative research method and a case study. The needed information was gathered through desk research. In the beginning, a plethora of secondary data was collected from various sources. Then, these data were classified and analysed by the use of a literature review. The main sources were journals (e.g., *Journal of Small Business Management*, *Entrepreneurship Theory and Practice*) and books from well-known publishing houses (e.g., Harvard Business School, Edward Elgar Publishing), from the fields of entrepreneurship, economics, history. These were found mostly in electronic databases (e.g., SAGE, Springer) and

libraries (e.g., the Central University Library Carol I of Bucharest). Finally, the data were synthesized in order to conclude the paper.

Results and discussion

Starting from the literature review, the authors analysed and synthesized the collected data and reached several results. Firstly, the concepts of engineer and entrepreneur share some common characteristics, such as their emphasis on creativity and provoking change. Secondly, Henry Ford was a gifted, ingenious, hard-working and exceptional mechanical engineer. This assertion is based on the following facts:

- Since his childhood, Ford used to play with pieces of machinery, showing a deep passion for tinkering and an ardent curiosity towards mechanics.
- Fascinated by watches, he dismembered them and easily put all their pieces together again. As an authentic self-made man, he learned by himself to repair watches when he was only 15-years old.
- Fate played its role in his prodigious life when Ford encountered a motor vehicle as a boy. He proved to be so excited that he decided to build himself a car.
- He got a lot of mechanical experience during his employment period. Initially, he was employed as an apprentice machinist, later as a mechanic and, finally, as a chief engineer.
- The many and long hours Ford spent in his workshop in making automobile experimentation highly contributed to designing and constructing his future cars.
- He always tried to improve the cars he built during the time.
- Ford adapted the assembly line for mass production in the automotive industry and invented the tools he needed to reach the mechanical advances he bore in mind.
- His searing passion for mechanics drove him to expand his work in the whole motor vehicle industry. His major personal endeavours include besides automobiles tractors, ambulances and aircraft engines.

Thirdly, Henry Ford was also a successful entrepreneur. The basis of this statement is sustained by the following elements:

- In his youth, Ford had the chance to meet and learn from several prosperous entrepreneurs and businessmen, such as Thomas Alva Edison.
- He was a man of vision because he understood that the future of America will be ‘on the wheels’.
- As a true entrepreneur, Ford fully believed in putting into practice his ideas.
- He had great confidence in his working capacity.
- Ford showed a huge desire to succeed in his business ventures in spite of his failures.
- He strongly believed that his products- the cars- will change the world.
- Ford was a change agent within the American business world when he launched his famous Model T.
- His pursuit of operational efficiency led him to mass selling and allowed him to stimulate mass consumption of automobiles.

All in all, Henry Ford was a brilliant engineer and a very wealthy entrepreneur.

Conclusions

Since its relatively short appearance, the automobile has led to the birth of a complex industry and revolutionized the world economy. The automotive industry has transformed into a global multi-billion dollars business. Therefore, the automobile has been a topic of interest for an impressive number of studies and researches worldwide from both the economic and engineering side.

The paper conduces through its theoretical contributions to the enrichment of the scientific literature. First, it offers a better understanding of the concepts of engineer and entrepreneur by emphasizing their common characteristics. Second, the paper illustrates these common features in the case of a famous American engineer and entrepreneur, Henry Ford.

The limits of the paper are given by the fact that only some of the facets of the two concepts were analysed. Also, the complex relationship between them might be illustrated by taking into account the case of other iconic entrepreneurs and engineers. Further researches might identify and take into account other issues related to the relationship between the two above concepts and exemplify them in the case of other representative personalities.

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Romania's Rural Environment from Shadow Economy to Sustainable Tourism Development

Adeline Cristina Cozma¹ and Monica Maria Coroș²

¹⁾²⁾ Babeș-Bolyai University, Cluj-Napoca, Romania.

E-mail: adeline.cozma@econ.ubbcluj.ro; E-mail: monica.coros@ubbcluj.ro

Please cite this paper as:

Cozma, A.C. and Coroș, M.M., 2021. Romania's Rural Environment from Shadow Economy to Sustainable Tourism Development. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 826-834
DOI: 10.24818/BASIQ/2021/07/104

Abstract

Romania is known all over the globe for its high crime in illegal deforestation. From cold-blood killing of the ones who try to protect the forests, to shell companies involved in exporting the wood that has been illegally cut down, the wooden-mafia is present not only in Romania, but also in Brazil, Indonesia Cambodia, Philippines, Cameroon etc. But this natural resource can also be exploited in another manner. Tourism is presented as an alternative, but sustainable solution to exploiting the forestlands. By comparing Romania to Austria, tourism proves to be an effective, long-term, durable activity for counties that are not engaged in illegal affairs, but which are interested in the well-being of their nation. This study aims to demonstrate the influence of economic and financial crime on deforestation and to identify more durable alternatives to excessive logging, using a mix of literature review and desk analysis, enriched by a quantitative research based on secondary data. It may help stakeholders at all levels involved in rural development or in preventing and combating illegal deforestation to better understand this phenomenon and to consider a new perspective: sustain tourism development in order to reduce deforestation. The parallel between Romania and Austria emphasizes its effectiveness and great benefits, and also represents a novel approach of the fight against the underground economy in the rural environment, respectively it provides sustainable solutions for the integration of endangered forestlands in tourism activities.

Keywords

Shadow economy; Wooden mafia; Rural mountainous destinations; Romania; Illegal logging; Sustainable tourism development, Austria.

DOI: 10.24818/BASIQ/2021/07/104

Introduction

Shadow economy, informal economy, hidden and underground economy, respectively crime economic activities have been a fact of life for a long time, today they are an increasing part of the economic reality in most parts of the world, having a smaller economic impact in the case of advanced economies and affecting more severely emerging economies (Kelmanson, et al., 2019). Due to their spread at international level, governments and international organizations are making efforts to control their extension and impacts in most societies (Schneider and Enste, 2002). Many researchers and academics have become interested in approaching the various levels of shadow economy from both theoretical and practical perspectives. As the same International Monetary Fund (IMF) specialists (Schneider and Enste, 2002; Kelmanson, et al., 2019) explain, there are many potentially serious consequences that can derive from such practices. One negative effect is linked to the fact that a flourishing shadow economy leads to unreliable statistics related to unemployment, labor force, income, and consumption, which eventually determine the development and implementation of economic policies and programs that rely on unrealistic data and, thus, fail responding to real societal needs. Another threat is the destructive cycle that can be generated by the growth of the shadow economy, namely that by tax

evasion, transactions in the shadow economy keep the states' tax revenues below what would be considered the normal level of tax-collection, thus determining authorities to increase tax rates which eventually leads to more tax-evasion, putting on the long run a higher pressure on public budgets but also on private enterprises, as well. Moreover, public budgets that face shortages, consequently, provide fewer and poorer public services, such as education and training programs, social and welfare services, medical services, and are often associated with societal poverty. Further, another negative impact is the fact that an increasing shadow economy can be associated to an increasing attractiveness for both domestic and foreign workers to move away from officially registered jobs to shadow employment opportunities. On short term such jobs seem to be more attractive from the point of view of the provided wages but on the long run expose employees to more insecurity and make them more vulnerable. Furthermore, not only public institutions and services are affected by shadow economic activities, enterprises also face challenges, particularly in terms of innovation and productivity. Moreover, the labor market is also significantly impacted by such practices, as on one hand societies confront high unemployment rates, in economic environments that are unable to provide training services and reconversion opportunities, where states prove to be incapable of developing appropriate and effective labor policies, while on the other hand employees face low motivation levels and little engagement, due to the perceived insecurity. At the same time, businesses confront limited access to financial resources, thus, investments, expansion, and innovation are severely threatened.

Aiming at diminishing its spread, international organizations and state governments struggle to uncover and measure the economic activities that take place in the parallel economy but this remains a very difficult task to achieve. IFM evaluations show that the underground economy as percentage of official GDP is relatively stable. Thus, for the 1988-2000 timeframe it was estimated at 35% to 44% in the case of developing economies, at 21% to 30% in that of transition economies, and between 14% and 16% for OECD countries (Schneider and Enste, 2002). By 2016, the shadow economy was considered significant in many European states, accounting for less than 10% to more than 40% of the GDP, with the lowest levels in the case of advanced economies (10% to 20%), followed by emerging economies (30% to 35%), and with the highest quota (above 40%) in the case of the Community of Independent States (CIS), countries of the former Soviet Union (Kelmanson, et al., 2019, pp. 6-7).

Corruption is closely linked to underground economic activities and, obviously, emerging economies are more affected by corruption than advanced ones. The World Bank defines corruption as the misuse or abuse of public office (by civil servants or elected officials) for private gain. The same institution's specialists identified the following tools of corruption: bribery, theft, political and bureaucratic corruption, isolated and systematic corruption, respectively corruption in the private sector (The World Bank Group, 2017, p. 12). It is considered that during the past years, Romania has managed to improve its CPI position, seeming to have managed to adopt and implement some successful measures regarding the anti-corruption fight but, despite all of these measures, it still performs poorly (The World Bank Group, 2017). Corruption reaches all levels of the Romanian society, starting from the top central public institutions and spreading to the level of local public authorities, health institutions, educational organizations, contaminating all fields of activity both in the public and private sectors, including small and medium-sized enterprises (SMEs).

According to Transparency International (2021a) Romania remains one of the most corrupt country from among the European Union (EU) states. The score of 44 points on a scale totaling 100 points (where 100 signifies "clean", while 0 means "very corrupt") places Romania on the 69th worldwide position out of 180 countries and territories considered in the most recent ranking, of 2020. The same score has also been registered by Bulgaria and Hungary, while the European Union registered an average score of 66 points out of 100, being the most performing region in terms of Corruption Perceptions Index (CPI). Croatia scored also very low (47/100 points). Furthermore, Western and Northern European states proved to be top performers, with Denmark scoring best (88/100 points), followed by: Finland, Sweden, and Switzerland, each scoring 85/100 points. Romania does not only perform low on the CPI but is also remarked for its healthcare expenditures which are below the EU average; furthermore, the underfunding of the medical system has led to another reality of the country, namely brain drain, translated into severe shortages of medical personnel (Transparency International, 2021b).

In Romania's case, the urban and rural spaces are affected by both corruption and shadow economic activities. This is perhaps one of the main reasons why disparities still persist both among the country's counties organized under the eight regions of development and also between the urban and small towns and rural areas. Some destinations seem to be doomed to remain poor and underdeveloped, while certain urban concentrations have managed to advance significantly. Of special interest for the present paper are Romania's rural destinations from mountainous areas, which on one hand are among the country's most attractive tourist destinations, and on the other hand are host to some of the worst economic criminal activities, illegal wood exploitation, which are not limited to economic crimes but extend to other criminal deeds, including homicide. Another reality of the Romanian rural space is subsistence agriculture. Furthermore, hospitality services provided in rural and mountain areas seem to also be subject to underground business activities. Moreover, in many destinations, first line politicians are either directly involved in illegal and illicit business activities or tolerate such practices of peer politicians or of interest groups. The paper further develops with a section dedicated to the review of specialized literature, with a presentation of the research methodology, followed by a section dedicated to the main findings and their discussion, and a series of final conclusions.

Review of the Scientific Literature

Shadow economy is also known as informal, underground, or parallel economy and is an evolving phenomenon that adjusts to the development of new regulations and taxation policies. It is not limited to illegal activities, but it also refers to business practices that rely on not reporting their (entire) revenues from the provision of services, the production of goods or from the exploitation of certain resources; it may also involve monetary or barter transactions. Overall, it is related to business activities that normally are subject to a certain level of taxation, as legally established by state of local authorities (Schneider and Enste, 2002). Jaliu and Răvar (2019) focus on informal economy, pointing towards the fact that it spreads between the modern formal economy and the underground economy, encompassing a large variety organizations and behaviors, reaching many products and services. Based on H.G. Grubel quoted by Mirus and Smith (1997, p.5), the IMF describes four types of shadow economic activities, split into illegal and legal monetary and nonmonetary transactions, which further imply tax evasion and tax avoidance. The first category consists of illegal activities involving monetary transactions and includes: the trade of stolen goods, the production and dealing of drugs, prostitution, gambling, smuggling, and fraud. The second category refers to illegal activities that rely on nonmonetary transactions, such as: the barter of drugs or of stolen and smuggled goods; the production and cultivation of drugs for personal use, respectively theft for one's own use. The third category is that of legal activities that involve monetary transactions, which are further dealt with in terms of tax evasion and tax avoidance. The first sub-type, legal activities that involve tax evasion, refers to unreported revenues generated by self-employment, such as: wages, salaries, and assets resulted from carrying out legal activities such as the production and sale of goods, respectively the provision of certain services. Unemployment is both an effect and also a cause of parallel business activities (Davidescu, 2014), contributing to the vicious circle that catches many players and affects various fields of activity and areas. The second subtype, legal activities involving monetary transactions, that rely on tax avoidance, includes various discounts offered to the organizations' employees and fringe benefits. Finally, the last category, that of legal activities that imply nonmonetary transactions are also split into the same two subtypes: activities implying tax evasion (such as the barter of legal services and goods) and activities that involve tax avoidance (which include all sorts of do-it-yourself work and granting help – mainly under the form of service provision – to family members, neighbors or community members) (Schneider and Enste, 2002).

From among the very many and varied topics related to corruption and parallel economy, the authors' focus falls in the case of the current paper on those aspects that are closely related to the Romanian rural mountainous destinations.

It is well known that the level of corruption and shadow-economy is higher in poor areas. The reasons are many and diversified. According to the International Labor Organization (ILO), informal agricultural employment is linked to the widespread ownership of small agricultural plots (Popa, et al., 2016). At global level, tourism is recognized as a major contributor to poverty diminishment, to disparities' reduction among emerging and advanced economies, but at the same time it is also one of

the largest sectors with business activities run in the shadow economy (Mitchell, 2010; Rogerson, 2014); tourism is associated to important positive impacts upon the increase of wealth, the improvement of living standards, the creation of business opportunities and workplaces (Din, et al., 2016; Jaliu and Răvar, 2019).

Due to a lack of other options, rural residents often work the land for their own use. But informal work is at least as high in the tourism industry, especially when it comes to rural tourism. It is very rare to arrive at an agro-touristic boarding house where all the workers are legally employed, retributed at the real salary, where all the revenues are registered and taxed, where all authorizations are compliant and valid, etc. This is possible also because most actors are either registered as small, limited liability enterprises or function as sole-entrepreneurs or small family businesses, registered as individual enterprises or authorized persons, respectively as family enterprises or associations. The rural population is even more vulnerable, as they lack access to high-paying jobs and are unable to fully use public and social services (including health services and unemployment benefits). It seems that low incomes and few opportunities are the motives that drive people towards an immoral and illegal behavior when it comes to economic and financial regulations. Bearing all of these aspects in mind, it becomes obvious that orienting towards the development of tourism activity under the umbrella of the “pro-poor concept” is a viable solution. According to Jaliu and Răvar (2019), the concept of “pro-poor tourism” has developed as an approach supporting “tourism development in which the private and public sectors, including development agencies and NGOs, collaborate to ensure that tourism generates significant tangible benefits for the poor (Rogerson, 2014); these benefits may be of economic, but also of social, cultural and environmental nature (Dao, 2017).” Furthermore, building on the findings of Smith (2011), Jaliu and Răvar (2019) explain that the predominance of tourism activities operated in the underground economy can prevent the development and determine, in fact the stagnation of this sector. Such a situation occurs due to several mechanisms such as those identified by Din et al. (2016): *distorted competition*, as operators taking advantage of lower costs compete against player that comply with rules, regulations and taxation policies, eventually eliminating them from the tourism market; *decreases of tax revenues* caused by tax evasion and avoidance, which consequently present national and local administrations from making public investments in the development and maintenance of general and tourism-specific infrastructure (public utilities, transport services, tourism information services, etc.); *avoidance of labor and health regulations*, which drives enterprises towards employing unskilled and untrained personnel, expected to work under improper conditions and exposed to social insecurity both on the short and long term. It becomes clear that informal tourism activities eventually affect all the sectors’ stakeholders in a negative way (Kesar and Čuić, 2017). Furthermore, tourism destinations end-up suffering, due to the qualitative decrease of their provided services and to the consequent loss of their attractiveness and image deterioration (Jaliu and Răvar, 2019).

However, many Romanian rural mountain areas have become notorious because they exploit wood, lodging being the primary source of income for villages. The state of the world's justice system and the extent of corruption decide the long-term viability of exploitation of this essential resource: wood. Although there is no official ranking of the power and size of the timber mafia in each region, the news about these organized criminal networks from Brazil, Congo, India, Indonesia, and Romania is constantly broadcast in the media. Romanian timber is illegally exploited in half of the country. Trees are illegally cut even in protected areas and in national and natural parks. Those who cross the timber mafia or try to enforce Romania's forest laws will be punished. Most research on this topic aimed at determining the causes of massive deforestation and scarcely mention the problem of corruption in relation to illegal deforestation. This is a significant contributor to climate change, but it is barely mentioned in the media, which continues to air disturbing reports about the timber mafia and the dire repercussions for those who dared to speak out.

Therefore, tourism and lodging in rural areas are important determinants in the level of shadow-economy, and, implicitly, in the level of corruption. Among the reasons, the softer implementation of the law by public authorities, the negligible impact of one small firm in the collection of taxes, lower incomes and few opportunities, the poor living conditions, and the lack of proper financial education may cause the visible and observable differences between the level of economic and financial crime in the rural areas versus urban areas.

Research Methodology

The methodology used relies on a mix of literature review and desk analysis, enriched by a quantitative research based on secondary data. The study comprises the results of multiple researches and applies them in relation with economic and financial crime in the tourism industry. Variables like Corruption Perception Index, calculated by Transparency International – *Corruption Perception Index* (2021b), and the shadow economy percentage from GDP, found in the database created by Medina and Schneider (2019), are used to compare two very similar, yet very different countries: Romania and Austria.

Tourism is an alternative for exploiting forests, but it needs the trees alive. With all its shortcomings, tourism can be a sustainable way for exploiting natural resources, with smaller negative impact and bigger revenues in the long run. Attempting to explain the enormous differences between Romania and Austria, especially when it comes to forestland management and development of tourism, other two indicators are used: *The Environmental Protection Index (EPI)* developed by Yale University and *Question 111* (Protecting environment vs Economic growth) from the World Value Survey (WVS) – 7th Wave. On one hand, data-driven overview of the state of sustainability around the world is presented by EPI (Yale Center for Environmental Law and Policy and The Center for International Earth Science Information Network (CIESIN) at Columbia University’s Earth Institute., n.d.). The EPI ranks 180 nations on environmental sustainability and ecosystem vitality using 32 performance indicators across 11 issue categories. Moving from 0 to 100 on the score scale, the sustainability level increases. On the other hand, the WVS-6 questionnaire is a quantitative research tool which covers 290 questions and measures cultural values, attitudes and beliefs towards gender, family and religion, attitudes and experience towards poverty, education, health and safety, social tolerance and trust, attitudes towards multilateral institutions, cultural differences and similarities between regions and societies (World Values Survey Association (WVSA), 2020). Question 111 is formulated as it follows: “Here are two statements people sometimes make when discussing the environment and economic growth. Which of them comes closer to your own point of view? A. Protecting the environment should be given priority, even if it causes slower economic growth and some loss of jobs B. Economic growth and creating jobs should be the top priority, even if the environment suffers to some extent”. The respondents should choose one of the given answers, and the results of applying the questionnaire represent the percentage of people that chose an answer over the other. For these two indicators, the most recent data is used: values for year 2020.

Findings and Discussion

Mr Ionuț Dumitru, chief economist of Raiffeisen Bank and former president of the Fiscal Council, points out that the among the main reasons why the underground economy functions, one may firstly identify that of avoiding the payment of taxes, followed by not complying with rules and regulations, namely of not requesting and/or receiving certain types of authorizations. This is particularly the case of hospitality services, where a huge number of players provide food and lodging services without having applied for official ranking certificates. For example, by 2012 only around half of the small and medium-sized lodging facilities (villas, boarding houses, agritourist guest houses, cabins, huts and chalets) were officially ranked, while their total lodging capacity equalized if not outran that of the officially ranked hotels (Coroș, 2015; HoReCa, 2012). Another analysis revealed that towards the end of 2013 in Romania were functioning (and promoting themselves online) at least 1,751 hotels, exceeding by 366 the officially registered number of classified hotels (Cojocea and Coroș, 2013). Furthermore, after having verified whether travel agencies and tour-operators comply with the national regulations, the National Authority for Tourism cancelled until the end of 2016 a number of 1,081 tourism licenses, thus eliminating a third of the intermediaries of travel services from the market due to the fact that they had not presented a valid insurance policy, their coverage against the insolvency risk. By the end of 2016 only 2,602 agencies were legally registered in Romania (Economica.net, 2016). This was the most significant measure adopted by the Romanian officials against the businesses that function illegally in the Romanian tourism industry. Still, in Romania’s case several other activities connected to leisure and tourism services are affected by shadow economy, respectively by individuals and businesses that operate illegal and illicit activities. Among these one may notice tourism guides, mountain guides and ski instructors, as well. In 2017, during several rounds of discussions regarding

the much needed Law of Tourism (finally elaborated in 2018), Mr Marius Florea, national guide, Mr Mihai Jurca, manager of the Association of Tourism Promotion in Oradea and in the Surrounding Areas, and Ms Alina Giurgiu, the manager of the Tourism Guides' School from Oradea, emphasized the need for establishing a Tourism Police to protect local and national tourism guides against the illegal practices. Basically, the Tourism Police would first of all protect the national heritage and would ensure that the European legal framework is implemented in Romania, too, thus, like in other EU states, only qualified guides should be allowed to practice this profession and to provide guided tours to international groups of tourists and visitors. In spite of all the requests and explanations of the Romanian tourism professionals, Mr Titus Dobre, the minister of tourism at that time, did not consider that the establishment of a Tourism Police would be needed. He mentioned that a better cooperation among the institutions of the state would lead to the diminishment of such issues (Florea, et al., 2017). Occupations such as those of mountain guides and ski instructors involve not only the provision of verified information but, above all, the safety of the client. These professions are also affected by the significant presence of unauthorized practitioners. A previous research revealed that although tourist inns have ceased to be officially ranked in Romania by 2005, they continue to be popular types of facilities among local entrepreneurs, who operate both lodging and foodservices under this concept. Nearly a third of the identified inns operate without any official classification certificate (Coroş, et al., 2015). Overall, when it comes to foodservice units the number of owners and managers who do not comply with official rules is even higher and tax evasion situations are even more commonly encountered. Another unethical and illegal practice is that of using personnel that is not legally employed or of paying the workers only the legal minimum wage on the books and then of paying undeclared wages and of imposing extra labor hours.

Potentially, due to the high level of underground economic activities in rural areas, many Romanian rural destinations comprise valuable and highly valuable tourist resources but face significant general and specific infrastructure problems (Coroş and Negruşa, 2014). Another source of such challenges are corrupt local and national public authorities. Examples such as the cases of a former mayor of Lupeni, town, which encompasses Straja ski resort, or that of the former mayor of Constanţa, the municipality that comprises Mamaia resort, or the scandals related to corruption deeds of former ministers of tourism have become notorious at national and even international levels.

Many of the situations highlighted in the case of Romania are in fact present in several other European destinations. One of the main causes of this situation is due to the fact the European hospitality sector lacks a unique classification system, respectively that some countries do not implement one at all. Consequently, the lack of a common classification and ranking system has led to the development of a great variety of accommodation facilities and of food service units operating throughout the entire European space. Furthermore, this situation has generated an increasing quota of the shadow hospitality, generated by a too loose and much too flexible legal framework of this sector, which has eventually facilitated the development of the shared economy hospitality players (United Nations & World Tourism Organization, 1994; European Parliament. Directorate General Internal Policies of the Union, 2007; Coroş, et al., 2015). But the European Union also provides excellent examples of successful destinations that have managed to truly develop in a sustainable way. Such an example is Austria which is a top destination for mountain tourism that relies on excellent and highly diversified and specialized services provided by providers from rural destinations. Moreover, the Austrian tourism industry depends on family businesses (Coroş, 2018).

Tourism – a possible alternative?

Forests can be exploited in different ways: by cutting down trees or by keeping them alive. Many tourists all over the globe demonstrate a special interest for beautiful green landscapes. Sports and nature-based activities, hiking, birdwatching, or relaxing in a remote area are just a few examples of activities preferred by a large number of tourists. However, sawmills and stumps would ruin the local tourism industry. Romania has a unique and exquisite mix of natural resources, with breathtaking landscapes, protected natural areas, and rare biodiversity. The resources are as good as the infrastructure is disastrous. Romania seems to lack most of the artificial tourism resources, while abounds in natural resources. Of course, the problem is the way in which the country was ran and the difficult and still actual process from communism to democracy, which caused a high level of corruption. For Romania, Austria has been a top destination, especially during the winter. Not because the Carpathian Mountains

are not beautiful enough to be skiable, but because there is no proper infrastructure. At least not like in Austria. It is not only the infrastructure that is different, but also the fact that “nature protection and sustainable tourism are two issues taken seriously by the authorities, with more than a third of the country’s surface being under nature protection. Moreover, Austria is full of national parks and protected areas. Some of the most famous are: Lavanttal area; Nockberge and Millstätter Alpe National Reserve; the largest national reservation, Hohe Tauern National Park, is dominated by Großglockner; Kalkalpen National Park (accessible from Pyhrn-Eisenwurzen); and not only these” (Coroş, 2018).

Romania has the largest area of virgin forests and is in the top-most corrupt countries in the whole European Union. That is certainly a threat to sustainability of natural resources. The forestland in Romania is about 7 million hectares, comprising approximately 30% of the land area of Romania. With only 4 million hectares of forestland, Austria’s forest account for almost half of the total land area. In terms of corruption, Romania scores only 44 points in 2020 in the Corruption Perception Index, while Austria scores 76. Therefore, Romania is 72% more corrupt than Austria. The shadow economy in 2017 for Romania was estimated to 23% of GDP, while Austria has only 7%. The reason for this comparison is because the timber Romania exports to Austria, damaging its natural resources, while Austria creates high added-value from manufacturing the imported timber, protects its natural resources, and exploits them in a sustainable way: through responsible tourism. The largest wood processor in Romania is HS Timber Group, former Holzindustrie Schweighofer. With 5 out of 6 production sites in Romania and one in Germany, and with its headquarters in Vienna, HS Timber Group emphasize on their own website: “we have had strong roots in Romania in particular for many years”. DIGI24, a Romanian national news trust, reports that if HS Timber Group were to operate in Austria as it does in Romania, it would have major legal problems. Austrian MEP Thomas Waitz says this after visiting one of the company’s factories the other day. He says that HS Timber Group cannot guarantee 100% that the wood purchased does not come from illegal deforestation. And that’s because some of the wood purchased comes from places that can’t be checked. Over the years, the company has been constantly accused of illegal activities and the worst is this: an Environmental Investigation Agency investigation in 2018 found that the company was procuring timber from third-party vendors originating from the national parks of Romania. HS Timber Group symbolizes and emphasizes the forest management differences between Romania and Austria.

Two of the most known and used indicators when comes to sustainability and relationship with nature are EPI and Question 111 from World Value Survey. By comparing Romania to Austria, the differences continue to appear, while Romania scores only 64.7 on a scale from 0 to 100 representing the sustainability of the activities in a country, Austria scores 79.6. This means that Austria is 23% manages to achieve a 23% higher sustainability level than Romania. Question’s 111 from World Value Survey results come with no surprise: Austria opts for protecting the environment, with 59.6% of the total number of responses, while Romania opts for economic growth and creating jobs, with 49.7% of the total number of responses, and only 48.7% for protecting the environment. One possible reason for Romania not noticing that respecting nature is the sustainably way to create economic growth in the long-term is the remnants of communism, that can be found in almost all the aspects of Romania’s actual life, even after more than 30 years of democracy. However, Austria is a great example for how tourism can be a sustainable and healthy way for exploiting natural resources, especially wood. Skiing in the Alps would definitely not be the same with sawmills around or, even worse, without trees all around the skiing slopes.

Conclusions

Worldwide, for many, many years, the total forestland is shrinking and shrinking. This means that the deforestation volume is higher than the afforestation volume. That is not sustainable at all. It contributes significantly to the dangerous evolution of the climate change. The reasons behind it are obvious: money. However, an important part of this money is dirty, simply because the timber mafia is as real as it can be. Corrupt senior officials, politicians, police officers, foresters, private companies, on one hand, and bribery, blood, murders, chopped protected areas, angry locals and activists, barren land fields, on the other hand: this is the picture of “wooden mafia”. In order to take proper action, to select the correct and suitable tools for reducing these criminal activities, the whole phenomenon needs to be properly analyzed in a fact-based manner. For a proper image, it is not enough to look for numbers, as

it is not enough to look around us. It is enough only when looking at both: the numbers and the real life. The importance of the study is to provide a solid quantitative basis to any decision-makers that come across this problem of illegal logging.

The purpose of the study is to demonstrate the influence of economic and financial crime on deforestation. Because illegal deforestation depends a lot on what is legal in a country or not, as presented in the study case comparison between Romania and Austria, and because there is no database with worldwide illegal logging volume, the best way to measure the deforestation activities in a country is through the net forestland conversion rate, meaning the forestland converted in a year divided by the total forestland in that period of time. Corruption and shadow economy are types of economic and financial crimes and are used as indicators for it. Fortunately, in this case, there are accurate and well-known databases with up-to-date information. However, the study comprises 134 countries from all over the globe, with huge demographic, cultural, economic, technological, political, sociological differences. Therefore, control variables had to be used. As expected, countries that have more forestland tend to be more corrupt, while the level of shadow economy seems to not be influenced by this. Nevertheless, the amount of cut trees (in both absolute and relative terms) is influenced by the level of economic and financial crime in a country (in both levels of corruption and shadow economy), but not by the total forestland a country possesses.

Tourism is presented as an alternative, but sustainable solution to exploiting the forestlands. By comparing Romania to Austria, tourism proves to be an effective, long-term, durable activity for counties that are not engaged in illegal affairs, but which are interested in the well-being of their nation. Tourism is not a compromise, but quite the contrary. Tourism can be durable, profitable in the short-term, middle term and long-term for all stakeholders, and friendly with the environment. The only downside is that the bribery for senior civil servants will decrease – and that is where the shift in the paradigm must come from. National tourism branding plays a huge role in the touristic development of a country and the political stage has a big say in this.

The availability of data, the changes in methodology for measuring the indicators, the slow update of the databases, and the differences in constructing datasets are limitations of the study, resulting in small number of observation when taking into consideration more variables. Further research might focus on improving the models by introducing new significant variables and raising the adjusted R-squared, in order to explain a higher percentage of the dependent's variability. Therefore, the phenomenon can be better explained, understood and proven.

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The Importance of SCADA Systems Educational Programs in Higher Education from a Cybersecurity Perspective

Tiberiu Ion¹

¹⁾ *National Defense University "Carol I", Bucharest, Romania.*

E-mail: ion.tiberiu@unap.ro

Please cite this paper as:

Ion, T., 2021. The Importance of SCADA Systems Educational Programs in Higher Education from a Cybersecurity Perspective. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 835-843
DOI: 10.24818/BASIQ/2021/07/105

Abstract

Nowadays manufacturing organizations are rapidly transforming to smart factories, in the context of a new stage of industry development known as Industry 4.0. While this new phase in the production and manufacturing sector is booming, associated technologies promise multiple benefits and opportunities across all major market sectors. From the Internet of Things to cloud-based design systems, implementing virtual technologies in the manufacturing area, not to mention critical industries, represents a great challenge in terms of cybersecurity and data privacy issues.

In order to avoid major roadblocks in adopting Industry 4.0 technologies, SCADA systems had been developed and represent a hybrid system that focuses on traditional cybersecurity issues, plus Industry 4.0 own unique security and privacy challenges in terms of a more digitalized industrial sector. Taking into consideration the success that SCADA technologies have in digitalizing manufacturing industries as well as critical sectors like energetic production, transportation or healthcare, implementing and monitoring such a system, especially when interfaced with internet communication technologies, calls for special trained human resources.

In this regard, the present paper provides an overview on the importance of SCADA systems within Industry 4.0, while highlighting different university specialization approaches. Modern cybersecurity curricula must be updated in order to sustain a deeper specialization that is required for understanding and developing SCADA systems, mainly by creating laboratories where students as future specialist can make test, develop new solutions and understand different technologies linked to different manufacturing sectors. Thus, the current paper provides a comparative presentation of different approaches that universities can apply in order to develop SCADA research laboratories, by incorporating efficient virtual techniques and technologies and build a more realistic and attractive learning platform, in terms of cost efficiency for student and engineering education.

Keywords

SCADA, cyber security, critical infrastructures, university programs

DOI: 10.24818/BASIQ/2021/07/105

Introduction

Cybersecurity represents today one of the most debated subjects within multiple domains or sectors, mostly because of its multidisciplinary approach and digitalization, that brings together manifold resources like "tools, policies, security concepts, security safeguards, guidelines, risk management approaches, actions, training, best practices, assurance and technologies that can be used to protect the cyber environment and organization and user's assets" (ENISA, 2015).

Taking into consideration that cybersecurity resides in the core of each sector, being influenced by the specific resources, input and output of the sector and being driven by specialized cybersecurity professionals, different stakeholders ask: What should they do to better enhance cybersecurity in relation to their industry's needs, taking into consideration that most sectors are hybrid sectors – using both cyber systems and physical systems?

This question represents a challenge from the perspective of cybersecurity in assuring the three general security objectives of (i) confidentiality, (ii) integrity, and (iii) availability (also known as the CIA triad in the information security industry) (Weber and Studer, 2016) in the context of a shortage of about three million cybersecurity professionals globally (Kam et al, 2020).

In this context, the present paper presents the concept of SCADA (Supervisory Control And Data Acquisition) technology and its importance in automating some of the most important industries for any country. Currently, SCADA technologies are used to manage specific data belonging to the energy sector, hydrological sector or other fields that define critical resources for a nation. The need to implement this technology as a stand-alone discipline in university educational programs is determined by the growing demand to digitize critical industries, in the context of ensuring high and permanent cyber protection.

These main issues are addressed in the two sections of the current article, highlighting the main aspects that have influenced the evolution of SCADA technology, as well as the importance for future specialists to enhance the knowledge on how to use and apply SCADA systems in a correct, practical and safe way.

In the context of technological evolution, the digitization and robotization of industries towards the fourth industrial revolution (Industry 4.0) will lead to a rapid increase in the use of SCADA systems (monitoring, control and data acquisition systems) (Research and Markets, 2021). In addition, the increasing use of information technology specific solutions that characterize Industry 4.0, such as IoT (Internet of Things) devices, cloud computing and artificial intelligence, is evidence of the use of SCADA systems in an adapted and rethought way, so they can be efficient and in scope to technological progress.

Lack of expertise in the information security field, as well as insufficient awareness of the complexity and imminent impact of cyber threats, most common met in the government environment or different specialists, represents a major barrier in adopting specific security measures for Industry 4.0. Usually, the specialists involved in the implementation of new solutions at a government level have only security knowledge in the field of IT (Information Technology) or only in the field of OT (Operational Technology), while Industry 4.0 and the concept of Smart Manufacturing requires extensive expertise, with applicability in multiple fields. For example, a specialist in this field must additionally have knowledge on network security and embedded systems, which operate in a converged system. The solution of this problem can be achieved only by promoting cyber education in the university environment in order to train specialists in the field and promoting joint exercises and partnerships between academia and companies that manage/use such systems.

The efficiency of SCADA technologies in the fourth industrial revolution

A transformative event known as the Fourth Industrial Revolution/Industry 4.0 is taking place in multiple major market sectors, which use industrial systems connected to Internet communication technologies. Its origins lie at the core of Germany's efforts to sustain its leadership in innovation and manufacturing (UNIDO, 2018). The progress made has led to the creation of intelligent factories and production organizations that operate more efficiently and with a more efficient control and management of production processes, data and machines.

Until this point, the global industry has experienced three evolutionary revolutions, modern society being now witness for the beginning of the fourth one. From an evolutionary point of view, all four revolutions had a major contribution to modern progress, from industrial engineering and electricity to automatization and information technology. A schematic progressive presentation of the four revolutions can be found in Figure no. 1.

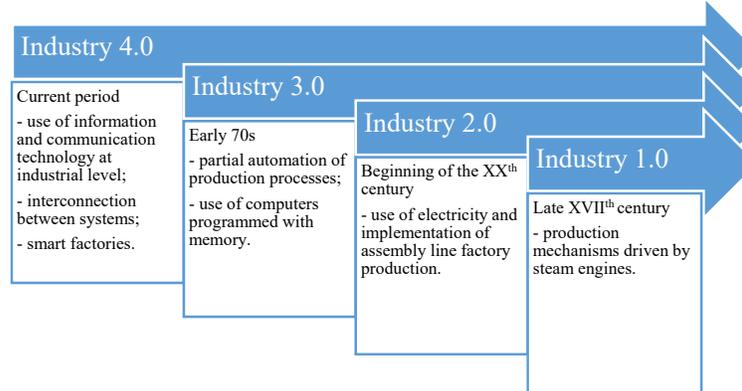


Figure no. 1. The four industrial revolutions

Source: own research

Automatization and data collection began to emerge by the third Industrial Revolution. Back then, classic technologies from Industry 3.0 propagated the collected data through several devices arranged hierarchically on multiple levels (layers), starting from different industrial sensors to Programmable Logic Controllers (PLC), Distributed Control Systems (DCS), Human-Machine Interface (HMI) and finally evolving to SCADA systems.

Industries have long relied on proprietary technologies, using communication protocols and master computers from the same vendor (Ujvarosi, 2016), to monitor equipment and production, in a closed system, but with their migration to Industry 4.0 they become interconnected, and even more, the use of advanced machine learning algorithms for the automation of industrial processes is becoming more common. In addition, the use of cloud computing technology is becoming more and more attractive, because of the efficiency that a whole system can manage data, by reducing the layers between gathering information from field devices (actuators, sensors), to the top where information is processed (Application Layer). Implementing SCADA solutions that learn, adapt, and potentially act autonomously rather than simply execute predefined instructions is the new way enterprises are heading to (Rajeswar, 2019).

The IoT technology is a key element in Industry 4.0, conceived under the German federal government's High-Tech Strategy focusing on information and communication technology to improve manufacturing (Lydon, 2018). It represents a convergence of industrial equipment with advanced computing and ubiquitous communication technologies, for example the use of IP (Internet Protocol).

Multiple researches on the advantages of IoT allowed the introduction of these technologies in industrial applications and business processes, leading to the new concept of IIoT or Industrial IoT. With the emergence of Industrial IoT, SCADA systems will be enhanced by the use of IoT technologies. Thus, IoT will extend SCADA and its value chain to make industrial business more predictable, cost reduced and more profitable (Rajeswar, 2019). OT's or traditional hardware and software systems usually used in industrial environments were not designed to work within the Internet network, but now with the development of IIoT, the need of emergent requirements for industrial applications has risen. In this sense, Industrial Control Systems (ICS) as PLC's, DCS's and HMI's have evolved to extend IIoT systems.

With the growing complexity of connected devices used in industrial companies, the need for data aggregation, data exchanging and the need of system interoperability has substantially increased. SCADA systems have been great for monitoring and controlling manufacturing processes, but with the help of IoT devices more data from any industrial process can be gathered and, by applying predictive analytics, a more manageable data system can be established. IoT equipment can provide quality information at capacities that never been achieved before and therefore, by analysing and using this kind of information, enterprises can improve the ability to predict future events.

The increasing use of big data and predictive analytics will mean a new challenge to many enterprises and many have understood this, according to a research done by Oracle and Intel, 60% of businesses see an integrated Cloud Platform as the route to unlocking the potential of disruptive technologies at the heart of Industry 4.0, such as robotics or artificial intelligence (Oracle, 2016). In this context, cloud technologies provide companies the computing power they need, that results in shorter innovation cycles and increased operational efficiency.

Usually, cloud computing provides three types of services: Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). But when it comes to Industry 4.0, a new type of cloud service emerges. Cloud manufacturing is a new manufacturing model developed from the concept of Manufacturing as a Service (MaaS) (Wei, et al, 2020). Thus, many manufacturing companies adopt Cloud Manufacturing as a business model to enable production resources virtualization. This modern production concept uses technologies such as IIoT, Cyber-Physical Systems (CPS), Manufacturing Data Management, Cloud computing and makes them all available over Internet.

However, existing Internet connected technologies are affected by cybersecurity and data privacy issues, which pose major challenges and barriers to the widespread adoption of Industry 4.0 technologies (Thames and Schaefer, 2017). Therefore, as SCADA systems adopt IT solutions by being designed using network protocols and operating systems (OS), they start to resemble IT systems. This integration provides less isolation for IIoT devices or ICS from the outside world.

While cybersecurity solutions have been implemented to deal with security challenges in typical IT systems, special solutions must be designed for SCADA environment and, most important, for IIoT devices that operate critical cloud applications. In this regard, a well-known cybersecurity strategy to avoid cloud computing vulnerabilities is represented by edge computing. By applying this computing topology, data storage is closer to the devices where it's being gathered, rather than relying on the Internet to transfer them on the servers where the cloud is operating, creating advantages that, besides security reasons, contribute to achieving low latency by reducing the physical distance that data must travel for processing and analysis.

Research in cybersecurity for SCADA systems is challenging. These systems have critical requirements of high availability, use specialized computing devices, software and protocols and, by applying Industry 4.0 technologies, it gets more difficult to operate these systems in a secure manner. Thus, the need of specialized training programs, to perform effective applied research with real world equipment is imperial for SCADA specialists to train.

Research methods

Based on the importance of SCADA technologies in both economic and social development of certain markets and sectors, the purpose of the study is to explore the main resources that future SCADA and cybersecurity specialists can access in order to gain knowledge and develop certain skills that are essential for the digitalization of critical sectors. Having higher education as the starting point of the specialised learning process and taking into consideration the physical and financial means that universities must own in order to make the learning process more productive, different types of SCADA laboratories from different universities and companies (for example University Politehnica of Bucharest) were subjected to field research (both physically and virtually) in order to identify an efficient cost-resource solution.

The used method is considered appropriate, as the researched field does not always behave like a homogeneous community, as different universities or companies have access to different resources and design different laboratories (small vs medium vs large; physical vs virtual; modular vs static etc.).

For a better approach, starting June 2020, these aspects were addressed within the project "Center of Excellence for CyberSecurity and Critical Infrastructure Resilience (SafePIC)". The project's main outcome, that is estimated to be delivered by July 2023, will be the establishment, development and operationalization of a center of excellence in cybersecurity of critical infrastructures for preventing, analysing, monitoring and responding to cybersecurity incidents.

Cybersecurity and SCADA in higher education programs: analysis and proposals

Taking into consideration the multiple benefits that SCADA systems can bring to any organization, business, industry or governmental sector (like 24/7 maintenance, proactive monitorization of any network, remote interaction from any place and more) there is a growing need of specialized human resources that can activate in this domain. The most important segment of the SCADA technology is the software development phase, as specialists involved in this phase must relate on multiple knowledge domains, both from the industry sector and cybersecurity sector.

In this regard, the traditional cybersecurity specialization that multiple universities tend to introduce in the IT curricula, must be analysed from the perspective of its final destination. More exactly, the industry or business and government environments need more specialists in cybersecurity, but each sector’s particularities will have a big influence on how cybersecurity should be perceived and must be implemented in order to be more efficient to the sector in scope.

This represents the main difference between a cybersecurity specialist that works for a car producing line in a big company, like Ford or Volkswagen and another cyber-specialist having same position but within a hydroelectric company. Both specialists will have the same perception on cybersecurity and its main outcome, but the technology used in this scope or the way in which various IT solutions will be implemented will be diametrically opposed.

Having these differences in mind, cybersecurity academic curricula should be designed in order to help future specialists train in specific domains and acquire certain expertise specific to that domain. This performance can be achieved by providing students and universities access to the latest SCADA software and technologies (Schneider Electric, 2012). Taking into consideration that big tech companies invest a big percent of their budget in developing SCADA technologies that result in intellectual property or company secrets, accessing this kind of information involves costs for universities that lead to higher nominal fees that future specialists must assume. On the other hand, some universities are implementing low-cost SCADA systems, equipping experimental laboratories with the necessary hardware and using an innovative approach which combines low-cost NI data acquisition PCI cards and inexpensive analog and digital sensors and output devices (Otieno, 2007).

Despite the chosen approach, universities that promote cybersecurity programs must have a clear list of sectors that refer to critical infrastructures. This list can vary from a country to another, but there are some main sectors that are common from a nation to another. These generally include agriculture, healthcare, nuclear reactor, transportation, energy sector, civil and chemical engineering, water plants and research (Geeta and Kolin, 2021). All these domains are illustrated in the figure below:

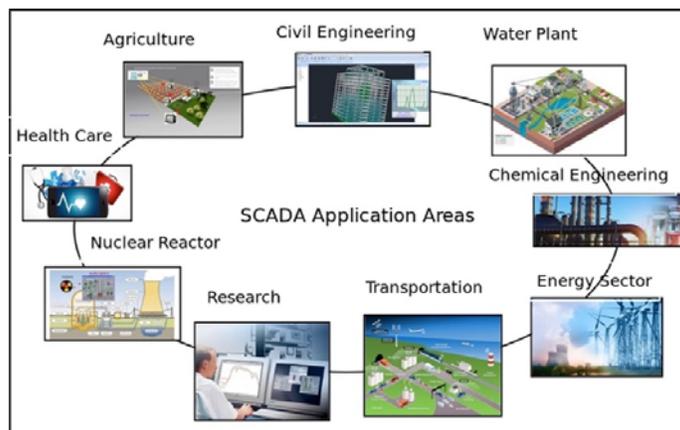


Figure no. 2. SCADA critical infrastructures appliance
 Source: Geeta and Kolin, 2021

Suitable academic programs on cybersecurity for these types of complex systems are essential. In order to fulfil this purpose, physical, remote or virtual laboratories are excellent support tools that help

students as future specialists to consolidate their theoretical knowledge through experiments with real industrial equipment used in these sectors. These dedicated research and development SCADA cybersecurity laboratories must be capable of providing students real hands-on experience by operating latest SCADA software and hardware equipment, tailored to the specific situations and requirements of organizations. In order for the research to be carried out, the attack scenarios need to be reproduced in a controlled environment, so that the student can understand the behaviour of the threat and also be able to experiment different solutions on how to stop it. A model based on cybersecurity techniques needs to be applied in a university SCADA system laboratory that must include:

- vulnerability analysis;
- National Institute of Standards and Technology-Risk Management Framework (NIST-RMF) standardization and best practices;
- using teams as a cybersecurity assessment technique;
- ICS vendor equipment analysis and system monitoring;
- SIEM testing and implementations;
- configuration and deployment of tools for situational awareness such as event monitoring, intrusion detection system, intrusion prevention system, system logs etc;
- insider threat mitigation program;
- detect and prevent man-in-the-middle, ransomware and other well known and documented cyber attacks.

In order to help the academic and research sector, different European governmental authorities have increased their involvement in the cybersecurity of ICS by establishing a global framework for developing protection activities for these systems (DelCanto et al., 2015). Moreover, European organizations such as Information Sharing and Analysis Center (ISACs), Industrial Control Systems Cyber Emergency Response Team (ICS-CERT), and National Institute of Standards and Technology (NIST) are continuously introducing security guidelines, rules and regulations, and standards for the security of ICS (ECISO, 2018). In this sense, universities can easily adopt a standardized approach of their curricula in this domain.

To facilitate active learning, a real SCADA laboratory with physical hardware sensors, actuators, dedicated communications linked to servers (physical and virtual) and fully equipped for research, is one possible way to achieve well trained students in cybersecurity. However, each ICS used in production has different hardware sets and configuration for its SCADA system: some SCADA architectures are fully centralized, while others are distributed with a hierarchical structure. Modern SCADA systems tend to move towards fully automatic closed loop systems, while traditional systems usually need human intervention to operate. Big data analytics and merging IIoT devices also play an important part in SCADA systems: as data is gathered from sensors, the system's state is estimated, and various analytics are displayed for operators to take actions. The obvious reasons where physical labs have an advantage over remote and virtual labs is represented by the interaction between students and real equipment that can also involve collaborative work. This ideal learning solution comes with high costs for the university in acquiring all the devices needed to make more test scenarios available and the disadvantages of scheduling effort and location restrictions.

A modern efficient time scheduling effort solution to solve physical boundaries is to remotely share controlled access to SCADA laboratories. Remote laboratories are best alternatives to working in a real laboratory because, if properly designed, they can offer the same advantages as a real laboratory and also the flexibility in choosing the time and place for performing test scenarios. In this case, one important aspect must be taken into consideration, respectively the access throughout internet. To manage in a secure manner users' access from the Internet to the SCADA laboratory, a web server and a proxy server are used. These servers operate in a demilitarized zone (DMZ), which restricts the incoming connections to provide additional security (DelCanto, et al., 2015).

In this case, the web server will provide a friendly web interface for the users and allow them to perform specific tasks within the cybersecurity SCADA laboratory and, depending on the privileges the students have, they can perform practical tasks using physical equipment available in this environment. So, students can interact from anywhere with a physical laboratory through a computer with Internet connection. The proxy server will be used for network address translation (NAT), net filtering,

connection tracking logs and other specific security measures. This server will bridge the web application that user interact with the local network that the SCADA laboratory servers will operate.

The most cost-efficient solution for a cybersecurity SCADA laboratory is to use specialize software to fully virtualize SCADA equipment. Virtual laboratories can be quickly reconfigured to model and simulate different SCADA systems relevant to a specific production industry or critical infrastructure system and simulated. This virtual laboratory simulates learning environments that allow students to explore concepts and theories online without using expensive physical SCADA equipment. By using this software for virtualization, creates an alternative access to SCADA technologies, but the lack of real data from physical devices and that the student will use only idealized data for analysis represents the main disadvantage of this type of laboratory. The issue of implementing virtual laboratories is usually determined by the informatics tools that are available in each institution or simply limited to some technology or technique in order to show its efficacy (Rodriguez, et al., 2016).

But the ideal solution for building a cybersecurity SCADA laboratory that provides all the necessary learning resources is to combine all three types of laboratories: physical, remote and virtual. In this case, the main resource will be the physical laboratory, equipped with all the necessary hardware and upgraded with specialized software, in order for teachers and students to be able to virtualize more complex scenarios that are used in the production industry. The final facility of this hybrid laboratory would be to make all of these resources available remotely. But in this scenario, the hardware and software architecture make it the most difficult to realize, from a cost and a complexity perspective.

So, virtual and remote SCADA laboratories have a significant advantage over physical laboratories because they can provide flexible access to their users at a lower cost, which is very important for universities and future students. In this context, teachers must adapt and understand the importance of a well-designed virtual laboratory that can offer the pedagogical advantage of a more complex presentation of the concepts in the study field of concern.

Conclusions

One of the main objectives of Industry 4.0 is represented by the digitalization of industries and multiple sectors, while the Internet of Things is increasingly used to facilitate communications and data transfer. Whereas some service sectors can easily adapt to this new approach, the manufacturing sector and the critical industries like energetic, transportation, healthcare or different research facilities (like nuclear research) are sensitive to such changes which can raise a number of issues and threats.

In this context, SCADA technologies were developed in order to efficient digitalize such industries and create centralize system that can monitor and manage important systems as a whole. Thus, adopting new security approaches is not easy as cyber-physical security risk in manufacturing processes has risen and without specialists that cand monitor a SCADA system, its implementation can represent a cybersecurity threat for the organization. Therefore, in order to excel in SCADA technologies, specialists must have multiple areas of competence, starting with IT and cybersecurity knowledge and deepening the specialization with a series of knowledge specific to the field of activity (energy, medicine, various types of production etc.).

Universities must take into consideration that the process of training students in this field is a difficult one, especially in terms of the resources needed to put theoretical elements into practice and to be able to test different threats specific to different fields and sectors, mainly equipped laboratories. Thus, for the academic sector this objective represents a difficult challenge taking into consideration the costs that it involves. Therefore, different approaches regarding the resources that universities can use in this scope highlighted different solutions:

- learning efficient solutions that involve complex testing laboratories (with physical and virtual elements);
- cost efficient solutions that involve virtual laboratories.

Despite the chosen solution, teachers must opt for a multidisciplinary approach that combines cross-industry presentations and offers a more complex description of the concepts in the study field. Nevertheless, cybersecurity will continue to represent a growing discipline within multiple universities'

curricula, but without a specific direction in studying this concept, a permanent gap will exist between the learn techniques and applying security knowledge in manufacturing specific fields (e.g. oil extraction process, car production lines) or critical industries or services (e.g. hospital monitoring, nuclear research).

Acknowledgement

This paper was elaborated within the project "Center of Excellence for Cyber Security and Critical Infrastructure Resilience (SafePIC)" contract no. 270/23.06.2020, ID 120436, funded through the Competitiveness Operational Program 2014-2020, priority axis 1, Action 1.2.1: Stimulating the demand of enterprises for innovation through RDI projects carried out by enterprises individually or in partnership with R&D institutes and universities, in order to innovate processes and products in economic sectors with growth potential.

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COVID-19 Crisis Transformative Impact on Job Execution and E-commerce

Cristian Bogdan Onete¹, Sandra Diana Chița², Doru Alexandru Pleșea³ and Irina Albăstroiu⁴

^{1) 2) 3) 4)} *The Bucharest University of Economic Studies, Bucharest, Romania*

E-mail: cristian.onete@com.ase.ro; E-mail: sandra.chita@yahoo.com;

E-mail: pleseadoru@gmail.com; E-mail : irina.albastroiu@com.ase.ro

Please cite this paper as:

Onete, C.B., Chița, S.D., Pleșea, D.A. and Albăstroiu, I., 2021. COVID-19 Crisis Transformative Impact on Job Execution and E-commerce. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 844-852
DOI: 10.24818/BASIQ/2021/07/106

Abstract

The shock created by the pandemic of COVID -19 forced people to question the way they work, how they spend their free time and what are their priorities. People have turned to digital more than ever, sometimes being the only way to communicate during lockdown or to do a certain activity. Perceptions of the population are changed. The supply and demand are in a continuous transformation. Even though people are generally forced to stay at home because of restrictions, they are more connected than they were before. The present study is highlighting the correlations between transformations that took place on a professional level for people and changes in the usage of social media and electronic commerce. This paper uses a qualitative study based on structured interviews. The key informants are people who suffered modifications in the way they work compared to how it was before the pandemic (they were forced to take a leave, they switched to work from home or to a hybrid format). The purpose of our research is to see how our interviewees' professional life has changed during pandemic and what is the impact on the way they now use social media and e-commerce. The findings of our research show that people developed a tendency to use social media differently depending on their new needs during this period. Also, the average time spent on social media is decreasing. An original point addressed in our paper is the usage of electronic commerce as a hobby, without buying. Recommendations were subsequently made for e-businesses and for professionals.

Keywords

COVID-19 pandemic, social media, electronic commerce, work from home, layoff

DOI: 10.24818/BASIQ/2021/07/106

Introduction

The purpose of this research paper is to see how the habits of people have changed depending on what is happening in the country where they work, depending on what has happened with their job and how this impacted the way they use social media and e-commerce. We have interviewed people from Romania, France and Spain, therefore it is important to understand the context of each of these countries.

The emergence of the pandemic caused by COVID-19 caused a disturbance, both at the level of the European Union and globally, having very important consequences at the economic but also social level. It is estimated that in Romania production will not return to the levels it had before the crisis before the end of 2022. The loss of workplaces and the growth of unemployment have put a lot of pressure on European people and their means of subsistence. However, the economic impact has not been the same at the level of all the countries of the European Union and this variability is also present

regarding the recovery policies. This lack of uniformity reflects the way in which the virus has been spread, how strict public health measures have been, but also the sectoral composition of each economy and the way in which responses were organized by political institutions (Turcu, 2020).

Since the end of March 2021, in Romania additional measures were adopted by the authorities to prevent the virus from spreading. In some localities where the infection rate is high in the last 14 days, the free movement of people is restricted, until 8 p.m. on Friday, Saturday and Sunday. In some areas, people can go out only until 20 pm even during week (Stirioficial.ro, 2021).

When it comes to Catalonia, even though the rate of infected people has stabilized, mobility restrictions are maintained. People cannot get out of their house between 10 pm and 6 am, shops and malls are open only at 30% of their capacity, parks and gardens are closed after 8 pm and other facilities as gyms do not function at their maximum capacity. Remote work is advised by the authorities if the companies are able to implement it (Doherty, 2021).

In France, people have a curfew and they need to be home between 19pm and 6 am and also there is a lockdown, going out is not allowed for long distances, bigger than 10 km away from the house and some businesses are closed, especially the ones considered to be as non-essential (La Redaction, 2021).

The crisis has generated a huge digital transformation, never seen before and we have witnessed the increase in e-commerce sectors. Even though we are going through a downturn in the economy, COVID-19 has caused a shock in online shopping (UNCTAD, 2021). According to Deloitte, the new habits of people generated by the health crisis could be sustainable and we could adhere to them after the pandemic. Trading conditions between companies but also between companies and consumers have undergone strong changes. All the things that have to do with the way we are currently working or how we run our errands are changing and the purpose of technology is being revolutionized. The changes in the e-commerce could be explained by the fact that shopping in the streets is no longer possible in some areas while in others it is restricted, shops do not work at full capacity. Also, preferences of people are changing, part of this being the desire to keep safe.

Social media as a key role in our society, especially in times of crisis. According to Research by Global WebIndex, as presented by Smart Insights, “53.6% of the world’s population uses social media. The average daily usage is 2 hours and 25 minutes” (Chaffey, 2021). People have been using social media to stay in contact with each other and a lot of their activities went to online since they couldn’t go out as much as they did before, so they had to find new ways of entertainment: “close to half a billion new social users (...) social media, ecommerce, streaming content, and video games all seeing significant growth in the past 12 months” (Kemp, 2021). According to Statista, 25% of the respondents to a study have purchased clothing online because of the COVID-19 pandemic (Statista, 2021).

Review of the scientific literature

The changes in the economy will have a major impact on the way organizations plan and organize work, on the type of occupations we will encounter in our professional lives as well as how people will perceive the new “normal”. For example, the hospitality industry was one of the most affected ones since the beginning of the pandemic and has suffered many transformations. And while the layoff was necessary for the companies, it has a negative impact on employees, already stressed by the virus. Employers should be taking into consideration a supporting system for their teams (Tu, 2021). For certain categories of people as the ones having routine intensive occupations, the consequence of layoff is harder and it is more difficult to find a new job (Acosta-Prado, et al., 2020; Blien, et al., 2021). Other categories of people have positive perceptions on the transformations of the world, for example students in the field of economic studies, in Romania are open to the recent technological progress in IoT and they are willing to integrate them in their careers (Nemțeanu and Dabija, 2020; Albăstroiu, 2021).

The demand as well as the supply of occupations will be affected according to the transformations of each sector, it is what a study calls “macro changes”, while the changes linked with perceptions of occupations are “micro changes” (Kramer and Kramer, 2020). Another topic discussed in the same study is linked to work from home, a very important topic during pandemic. As mentioned by Kramer and Kramer, many people were forced to start working from home, even those who had no experience with this, the teachers for example. The new generations of students have grown up in a digital

environment and they were ready for online studies (Onete, et al., 2020). At the same time, work from home or learning from home were not arrangements desired by everybody. Of course, there were also people already used to work from home, having different working arrangements: one day per week or per month from home or each time it was needed.

As already mentioned, the COVID-19 crisis has induced multiple disruptions about the way we work, meaning for example when or where. Also, working from home has made it mandatory to use digital technologies to be connected with coworkers. But this has some limitations for some industries. For example, a study shows that for the hospitality industries there is a need to put in place specific policies so that people working for the enterprise will know the rules when it comes to connectivity for example as well as availability. Another issue would be that there is no explicit boundary anymore between work and nonwork, a consequence of the pandemic that puts pressure on employees (Chadee, et al., 2021).

Businesses that allowed it shifted to work from home. Even though some activities couldn't switch to online, they became more prosperous of those which could not because of the type of activity, have known an increase. More and more people needed them and they transformed from something special to something usual, essential for safety. This is the case for home deliveries, even though, as showed by a research, the people who were being part of populations with less access to deliveries did not know a major change in their situation and inequalities increased (Figliozzi and Unnikrishnan, 2021). Sheth (2020) has concluded that three managerial implications could be remembered from this crisis when it comes to the behavior of customers. They had to adapt, therefore, to improvise but this was also the case for companies. Management teams were not able to implement change very fast because of their formal systems. Unfortunately for them, because of their formal systems cannot implement change very fast. Another implication is the balance that should exist between demand and supply. In the beginning of the COVID-19 crisis, people were buying certain categories of products making stocks because they couldn't make forecasts about what was coming next. In the future, we need to encourage online orders and prepare them after the customers expressed their wishes to be delivered. The third consequence is that consumers might continue using digital tools post pandemic depending on the influence they had on their life. In the same time, research shows that the pandemic represents a turning point in people's life. Sustainable consumption as well as increased interest for environmental subjects are part of the change (Severo, et al., 2021).

When it comes to social media, studies show that it has positive and negative aspects during this period. A negative thing would be that some people took measures that do not have a scientific proof, for example eating specific things during pandemic (Cato, et al., 2021). Also, the behaviors of different social media users are similar during the COVID-19 crisis because they are all in survival mode. Before this crisis, shares on social media were associated more with negative feelings in others while the lockdown made people share the same feelings (Kaya, 2020). Social media used for big periods of time has negative consequences as well as implications. It is difficult to say if the excessive usage of social media during pandemic will be considered as a habit and it will go or if it will become addictive and there will be consequences on the mental health of people as well (Singh, et al., 2020).

Research methodology

Our research paper analyzes how the occupational status of people has changed because of COVID-19. We also examine what are the tendencies when it comes to the professional framework (changes in the activity to suit the new needs of the economy, work from home, remote work etc.). Another axis of this paper is linked to how people are using social media during pandemic as well as electronic commerce. The purpose is to observe the situations that people had to face in their professional life and how this impacted the way they usage social media and e-commerce. We constructed our research using a qualitative method and summarizing findings from one-to-one interviews with 11 people working and living in three countries of the European Union, with a different evolution when it comes to pandemic: Romania, Spain and France. All the people are currently working, activating in different fields and performing their job in different ways in this current situation. We used a structured interview which has first been distributed via e-mail to all participants and we have also scheduled either face to face interviews when the restrictions allowed it or calls via WhatsApp. People were willing to share their experiences even though some of them had to face challenging times because of the unexpected

crisis. The virus is not only affecting people’s safety and the health system, but also is provoking a financial and social crisis.

The hypotheses of our research are the following:

- regardless of the field in which they work, people have undergone major transformations in their professional life
- considering their current needs, which can be classified into two categories: financial (need to find a new occupation) and for mental health and well-being, people have turned more to social networks and changed the way they use them
- e-commerce is more like a hobby than a need

This paper is bringing to light a less explored subject, the one of e-commerce without actually buying and also there is a process of deepening what are the new trends of social media, a field in a continuous transformation. Recommendations are made based on what has been observed during the interviews.

Results and discussion

A total of 11 interviews were conducted in April 2021. Key information about the interviewed people is summarized by category in the Table no.1.

Table no.1: Key information about the interviewed people

No.	City where currently living/ city where the job is normally based	Occupation	Domain of the company	The main tasks	Situation of the job during pandemic
1	Paris	Business Analyst	Insurance	Managing and implementing health projects	Work can be done from everywhere during pandemic Promotion might be possible in the future
2	Paris	Consultant	Consulting	Managing project, decision making guidance, recommendations, interviews, change management	Change of project during pandemic Started working remote (100%)
3	Paris	Consultant	Management and organizational consulting	Monitoring KPI Designing security strategy through digital applications Writing administrative notes Change management	Work from home 2-3 days/week because the client requires physical presence for some meetings During pandemic: the same activity, without getting a promotion.

4	Bucharest	Project Manager	Consulting and project management for installations in building sector	Supervision and coordination of installations for real estate buildings	Changes during pandemic: Activity has been remote during lockdown with some visits on the customer's site (now most of the activity is happening there)
5	Bucharest	Quotation engineer	Sale of air conditioning equipment, heating systems and related services	Taking over requests, doing quotations, customer support, selling air conditioning products	A change of job was supposed to happen in the beginning of the pandemic, but it was canceled. After 3 months of being unemployed, the person accepted a job in a different field. Work from the office.
6	Bucharest	SEO and Google Ads specialist	SEO Agency	SEO, Google Ads, content marketing	The person changed the job during pandemic (it was easy to obtain it because the online environment is developing at a fast pace. Work from home 3 days per week (can be done from everywhere in Romania).
7	Bucharest	Training process coordinator	Shared service center delivering high added value services in various fields of activity for worldwide entities of the Group	Excellent knowledge of process and work procedures, ensure the team knows and respect work procedures, follows up the quality indicators established with the client, weekly/monthly reports, project involvement, etc.	Work from home since March 2020. Promotion within the same company during pandemic and an online process transfer activity of one month. No specific issues encountered.

8	Barcelona	Window dresser	Retail	Preparing the image of the store, showcases, mannequins and products by season and collections.	Temporary layoff called ERTE (Expediente de Regulación de Empleo) because the store was closed for 2 months in the beginning of the pandemic. This happened 2 more times during this year. No changes, physical presence at work is mandatory when the store is open and there were restrictions, only 30% of the store was open.
9	Barcelona	Retail	Retail	Customer service, stock management, cashier, etc.	After the first lockdown the company realized they needed an online store. The store was reopened and then closed again, but meanwhile the online one was ready. When the store was closed, they were working to prepare the online orders.
10	Barcelona	Visual Merchandiser	Retail	Presentation and commercialization	Layoff (ERTE) for 5 months (in different periods of time). Physical presence mandatory when the store is open.
11	Barcelona	Visual Merchandiser	Retail	Presentation and commercialization	Just moved to Barcelona from Bucharest in February, before

					the lockdown. Only 3 months later the contract could be signed (even though everything was initially arranged before departure). No income during that period and once employed there were many layoffs (ERTE).
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We can see in Table no. 1 that people went through very different situations based on the type of work they have. For those having jobs that can easily be done from home or remote, they could easily change their job or get a promotion in their current company during pandemic. When it comes to jobs that cannot be done remotely, the situation was different. We have interviewed engineers as well as people working in retail. For them, pandemic came when they were between jobs and this had a negative impact, being translated in a period of being unemployed. Also, people stopped working during certain periods of time because of rules imposed by the authorities. An important aspect to be underlined here is that some of the businesses which were not prepared for the online environment during pandemic took actions and they were able to help their employees by changing their activities to be more suitable for the online environment when the activity in the headquarters was stopped.

When it comes to social media, the first lockdown made people use them more because they needed to keep in contact with their families and friends. New apps were installed as Housparty for this purpose but meanwhile Twitter and LinkedIn were used to stay informed, keep in touch with professional connections and to keep an open eye on the job market. Their usage was increased even though the majority of the people we interviewed are not using them for their current job. However, when the first shock has passed, people realized they spend too much time in front of screens and have reduced it. At the same time, social media was less used by those who were sharing and following for trips, concerts and other type of events. Some of the disadvantages of social media perceived by the interviewed people are: more dependent on devices, cannot tell what is the truth, data protection, usurpation of identity, loss of self-esteem, mass manipulation.

All the interviewed people have reduced the usage of their social media as well as the way in which they are using them, having a precise purpose for each platform. At the same time, they have increased the usage of online stores as a hobby in order to keep updated with new tendencies, to check for sales or stocks. Most of our respondents are doing so as a way of spending free time or as a hobby. Some are doing it because it is helpful for their professional life and the other because it is a passion. The duration of this activity goes from 15-30 minutes daily to 10 hours per week, without buying. At the same time, this habit helps them take better decisions when they actually decide to place an order. For some people, most of their life went digital: professional life, shopping, courses, sports, communication, social events, meditation.

Conclusions

It has been more than a year since the COVID-19 crisis has completely disrupted the way we were living and working. A lot of measures are put in place to keep people safe. These measures impact the way we conduct our activities. We can see many transformations take place, especially in the way of working. Our research shows that jobs that can be done remotely are more likely to survive to a crisis like this one. People having digital occupations are less stressed, they can easily find new jobs and they have hopes for promotions. People who depend on a physical activity or direct contact with their customers in their daily jobs are more at risk of pressure and stress. They might be asked to stop their professional activity every time the sanitary situation gets worse. Also, the transformations in the

professional life impact the usage of social media. The necessity to be correctly informed is increasing. People need to communicate and some of them to seek employment. At the same time they realize excessive usage of social media is not good and they start preferring human interaction and invest more time in themselves and in online stores, the new “social media”. Our hypotheses are therefore true even though we have to mention the purposes, type of transformations and their time frame are different for each individual. There are also some limitations of this study. We would like to mention the limited number of respondents as well as the particularity of each country. An additional quantitative research by country is to be taken into consideration in the future. We recommend online stores to implement some bonus points used as vouchers for their customers depending on how much time they have spent on their website. For professionals we recommend they take advantages of less fortunate situations to learn and obtain new skills. In the future companies as well as people should be ready to go digital whenever a situation will demand it.

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How does Innovation Contribute to a Sustainable Agri-Food Chain? A European Overview

Cristiana-Ioana Șerbănel¹

¹⁾ The Bucharest University of Economic Studies, Bucharest, Romania.

E-mail: cristiana.serbanel@rei.ase.ro

Please cite this paper as:

Șerbănel, C.I., 2021. How does Innovation Contribute to a Sustainable Agri-Food Chain? A European Overview. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. 7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 853-861 DOI: 10.24818/BASIQ/2021/07/107

Abstract

The sustainability concept gained currency in all the economic sectors, especially in the agriculture industry, admitting its vital role in providing essential food, feed, and fuels to human beings. Due to resource scarcity, sustainability is progressively present among governmental, researchers, and international organizations' agendas. This paper evaluates innovation's role in building a sustainable agriculture industry by considering how committed European governments are to the present concept. The investigation adopted a two-fold methodology: (1) a quantitative study using data extracted from the Eurostat database to analyze governmental support to agricultural research and development from 2010 to 2019 and (2) a qualitative approach which consisted of examining 73 projects funded by the European Investment Bank in the Agriculture, Fisheries and Forestry sector during 2010-2021. The scope of the latter approach was to identify the frequency of the initiatives related to innovation and research and development activities. According to the results, Germany, United Kingdom, Spain, and France are the countries that obtained the most significant support from national governments for RandD activities. Even though Croatia, Malta, and Latvia recorded the most considerable growth in terms of percentual evolution, these nations listed the lowest budget in terms of value. As for the European Investment Bank funded projects in the agriculture sector, only 13 out of 73 projects were directly related to innovation. The value of the present study comes as a signal for the European nations to review their priorities and redesign the funding schemes where possible to support a sector that has a direct role in human perpetuation.

Keywords

Sustainability, agriculture, innovation, research and development, Europe, agri-food supply chain, European Investment Bank

DOI: 10.24818/BASIQ/2021/07/107

Introduction

Sustainability is an omnipresent concept directly linked to all the economic realms, which implies “*the development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*” (United Nations, 1987)

From a general perspective, each sector contributes to the well-functioning of the economy and human well-being. Still, agriculture has a primordial role by providing the essential feed, food, and fuels from ancient times to the present. In such circumstances, a global embracement of sustainable agriculture is mandatory. The theory of sustainability is relatively a brand-new idea; the phrase “*sustainable agriculture*” was coined by the Australian Economist Gordon McClymont, and it started to gain popularity in the late 1980s. A reinvention of the agriculture sector will make it possible to generate food for the entire population without compromising its sustainability. (El Bilali, 2019), (Vermunt, et

al., 2020). The world population is rapidly growing, and it is expected to reach 8.5 billion in 2030, increase further to 9.7 billion in 2050, and 10.9 billion in 2100. (United Nations, 2019) Under these conditions, business-as-usual in global agri-food systems is no longer viable.

Defining agricultural sustainability is a challenging assignment. (Lampridi, et al., 2019). In line with this, there is a general agreement that agricultural sustainability should at a minimum include three fundamental pillars of sustainable development by assessing concurrently environmental, economic, and social challenges related to agricultural practices. (Van Pham and Smith, 2014).

Innovation plays a crucial function in creating a sustainable agri-food sector. At the European level, the industry's annual private investment in Research and Development (RandD) is EUR 3 billion, an amount knowingly lower than the health sector (EUR 41 billion) or the information technology sector (EUR 34.3 billion). Less than 50% of all the European Union (EU) agri-food companies initiated innovation activities over the 2017-2019 period, while only 9% transformed in core areas such as products, processes, and technology. (European Investment Bank, 2019). In a press release in June 2018, a budget of EUR 10 billion was provisioned for the 2021-2027 period set for RandD projects in food, agriculture, bioeconomy, and rural development. (European Commission, 2018a) The European Commission's Research and Innovation Program "Horizon 2020" and the United Nations' set of sustainable goals asserted the organizations' commitment towards innovation, food security, and sustainable agriculture. (European Commission, 2011); (United Nations, 2015).

This paper proposes to appraise the European orientation towards innovation and RandD activities in agriculture using a two-approach perspective: (1) by analyzing the evolution of governmental budget orientated towards RandD activities and (2) by screening the European Investment Bank's funded projects related to innovation and RandD operations.

Literature review

There is continuously mounting concern about sustainability concepts applied in the agricultural field. The author conducted a wide-ranging analysis of "agriculture" and "sustainability" terms for the 1975-2021 period and 2000-2021 via the Web of Science database. The results indicated that the number of scientific papers raised exponentially, starting with 2000. From 2000 to 2021, there were a total of 11.497 published papers. Additionally, the role of innovation for sustainable agriculture started to become present in 2010. Only 75 scientific reports, including in their topic "agriculture" and "sustainability" and "innovation", were published before 2010, while after 2010, the number rocketed to 754. These articles examined the sustainability concept in agriculture considering various layers: a general view, regional or country-level; considering the crop field; analyzing various factors such as technology, business model, farmers behavior, green logistics, and others.

A general perspective of sustainable agri-food chains was brought into discussion by (Barth, et al., 2017), (Mangla, et al., 2018), (Naik and Suresh, 2018), (Bertoni, et al., 2018). More in-depth, researchers analyzed the role of various factors contributing to sustainability in agriculture such as: (Sharpe & Barling, 2019) the role of ethics and responsibility; (Lara, et al., 2019) the role of social-ecological innovations and traditional ecological knowledge; (Blanc, et al., 2019) the use of bio-based plastics; (Nastis, et al., 2019) the impact of farmers' behavior towards sustainable practices; (Elisante, et al., 2019) introduced the impact of pollinators for sustainable food security, while (Trivellas, et al., 2020) green logistics management.

Moreover, the role of innovation in supporting a sustainable agricultural sector was discussed under distinct perceptions. For instance, (Jones-Garcia and Krishna, 2021) analyzed the impact of sustainable intensification technologies in the maize systems. (Yadav, et al., 2021) discussed the internet of things, while (Ashraf, et al., 2021) pointed out the influences of innovations and nanoscience in agriculture. (Rana, et al., 2021) reminded of the blockchain technology, (Fischer, et al., 2012) introduced the transformative system innovation, and (Ulvenblad, et al., 2019) analyzed the role of innovation in Swedish agricultural production.

Other papers offered comparative studies between countries or regions (Ilieva & Hernandez, 2018); (Vasa, et al., 2018), while some authors depicted the subject of sustainability in agriculture at country

or group of countries level (Perez-Mesa, et al., 2019); (Patidar, et al., 2018); (Adhikari and Prapaspongsa, 2019); (Salazar, et al., 2020); (Zollet and Maharjan, 2021).

Furthermore, sustainable agri-food systems were investigated at the crop level as follows: honey (Pippinato, et al., 2020); cocoa (Moreno-Miranda, et al., 2019); (Lerner, et al., 2021); Parmigiano Reggiano (Arfini, et al., 2019); legume-based food (Balazs, et al., 2021); wine industry (Pullman, et al., 2010); (Martucci, et al., 2019).

Research methodology

The study was motivated by the following research questions: Is innovation vital for a sustainable agri-food chain? How present are the governments of EU's member states to the role of innovation for a sustainable agri-sector? Which was the evolution of governmental RandD budgets for the agricultural sector from 2010 to 2019? How many projects supported by the European Investment Bank (EIB) bank in the Agriculture, Fisheries, Forestry field involved RandD activities?

The present paper addressed the research using a two-fold approach. On the one hand, a quantitative analysis was conducted using data extracted from Eurostat Database. The study selected the government support to agricultural research and development Index (GBAORD) for the 2010-2019 period. All the 28 European Union (EU) member states were selected, even if the research United Kingdom (UK) is not anymore an EU member state. On the other hand, the qualitative research was approached to identify the Agriculture, Fisheries, Forestry sector projects funded by the European Investment Bank. The selection of the period time was between 2010 to 2021, while the coverage area included Eastern Europe, Southern Caucasus. A total of 73 projects were found and each of the projects' summaries sheets were analyzed. Only the projects that included "innovation," "Research and Development," "technology," "technical" (only if related to technology in context) were selected.

Even if RandD leads to innovation and the activities can exist independently and mixed, the concepts were considered alternates.

Results and discussion

The agricultural sector has an essential contribution to the European economy. Agriculture generates EUR 1.45 trillion revenue, which corresponds to 9% of the EU's gross domestic product and encompasses more than 15% of the European manufacturing industry. On the global trading map, the EU is the most significant agri-food exporter. (European Investment Bank, 2019) The global food chain is currently disrupted by several challenges: a growing population world, climate change, and resource scarcity. In addition, the COVID-19 pandemic caused additional pressure on the entire agricultural value-chain sector.

Innovation lead by Research and Development activities represents the key for agricultural rapid and high-impact solutions, which are meant to address fragmentation, align programs to adopt a food system that satisfies multiply objectives simultaneously, slow implementation of new technologies ensures policy coherence. (European Commission, 2018) In January 2016, the EU published the long-term strategy for agricultural research and innovation. The leading program is Horizon 2020, covering the 2018-2020 period and further than 2020. In line with this, the European innovation partnership operational groups for agriculture (EIP-AGRI) was launched to contribute to the EU's strategy 'Europe 2020' for smart, sustainable, and inclusive growth.

Figure 1 indicates the top 10 EU member states that received the most considerable governmental support in terms of value for agricultural RandD in the 2010-2019 period. Germany ranks first, receiving the most significant contribution of EUR 7.983 million in total, with a percentual increase of 16% in 2019 compared to 2010. The second ranking is the UK, with a total budget of EUR 4.352 million and an 11.5% increase in funding. UK was closely followed by Spain (EUR 4.348 million) and France (EUR 3.462 million). Notably, Spain registered a 23.4% drop in the total RandD budget directed to the agri-sector, France, a 0.1% increase, Italy an 8.1% decrease, while Norway registered a remarkable increase of 36.7%.

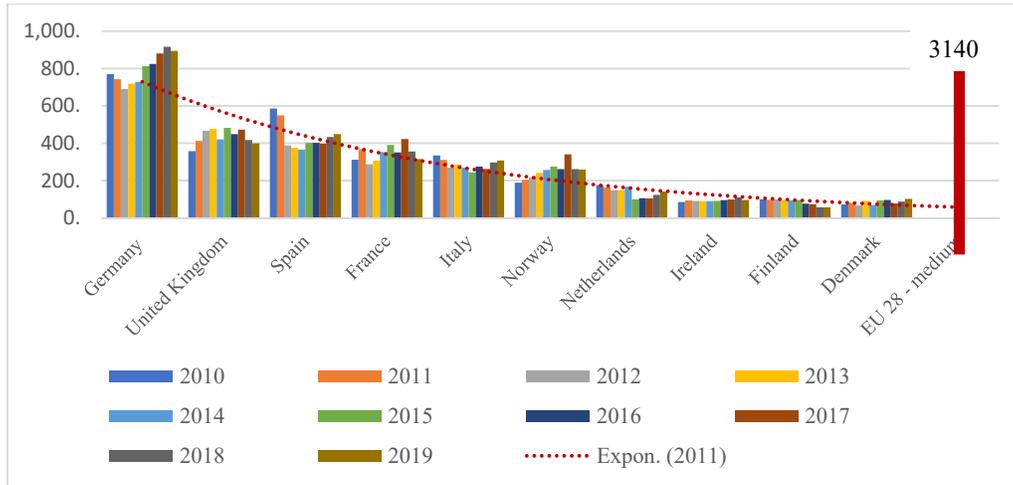


Figure no. 1. Government support to agricultural research and development (million euro) top 10 countries

Source: Author's calculations based on data extracted from EUROSTAT (2021)

At the opposite pole, the top 10 European member states that collected the smallest amount in value from government directed to agricultural RandD were identified. Conversely, although the states are the least among the European countries in terms of the total value, these states registered the most significant percentual increase in funding. These slight-value budgets may also be different because of differences in arable surfaces. Noteworthy, in terms of percentual increases, Croatia registered a 353.2% upsurge in the government budget for RandD in agriculture, Malta a +247.5%, Latvia a +159.14%, and Bulgaria a +78.8%. (Figure 2) Also, among the countries which do not belong to any of these rankings, there can be mentioned: Poland (+46.2%), Belgium (+77%), Greece (+96%), Hungary (+106.6%), and Romania (-63.3%).

Overall, as the final figures indicate, governments directed expanding attention towards RandD in agriculture. There was a significant average increase of 37.4% in 2019 compared to 2010 for the examined EU member states.

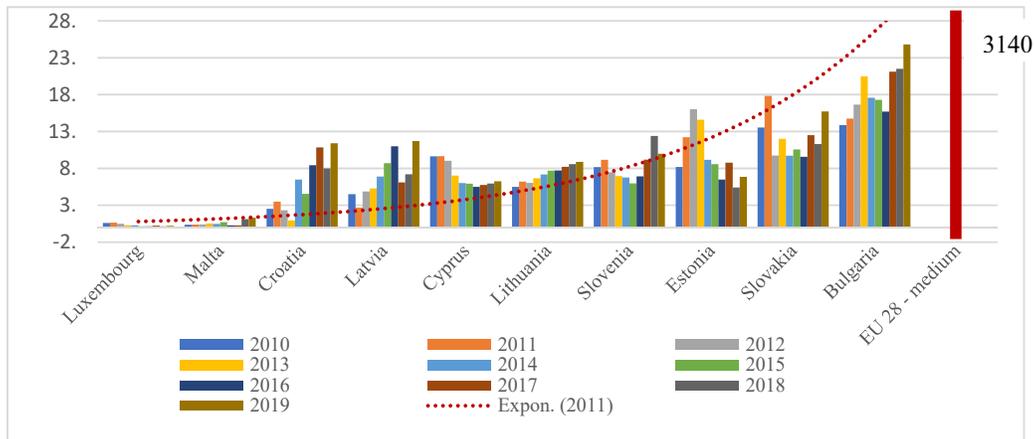


Figure no. 2. Government support to agricultural research and development (million euro) top 10 least countries

Source: Author's calculations based on data extracted from EUROSTAT (2021)

The European Investment Bank represents one of the EU's primary lending sources and one of the largest climate finance providers, committed to sustainable growth within the EU and abroad. From a

general perspective, according to the latest available data, the structure of the European Fund for Strategic Investments (EFSI), an initiative launched jointly by the EIB, had the following structure: 33% - smaller companies; RDI – 26%; Energy – 26%; Digital – 9%; Transport – 6%; Social Infrastructure – 5%; Environment and resource efficiency – 4%; Bioeconomy – 1%. (European Investment Bank, 2021)

Table 1: European projects financed by the EIB in the Agriculture, Fisheries, Forestry sector related to innovation and RandD (2010-2021)

Project	Primary Objective and Other Relevant Information	Country
AVRIL RDI PROGRAMME 22/12/2021	The project will support the Promoter's research, development and innovation (RDI) industries targeting the development and production of protein for food and feed purposes from oilseed yield and bio-based materials replacing fossil sources for chemical use. EIB finance: EUR 50 million; Total Cost: EUR 134 million	France
EUROPEAN CIRCULAR BIOECONOMY FUND 21/08/2020	The project comprises equity participation in a fund investing into innovative and circular bioeconomy businesses and projects covering the EU Member States and Horizon 2020 Associated Countries. EIB finance: EUR 100 million; Total Cost: EUR 250 million	EU Member States
KWS SAAT RDI 26/06/2020	The project aims to fund research, development, and innovation (RDI) activities related to the creation, registration, development, and commercialization of novel field crop and vegetable seed diversity. EIB finance: EUR 200 million; Total Cost: EUR 583 million	France, Germany, Italy, The Netherlands
FRENCH SEEDS RandD 18/12/2019	The project objective is to support the promoter's Research, Development, and Innovation (RDI) activities related to the creation, registration, development, and commercialization of novel field crop and vegetable seed diversity for their use in agriculture. EIB finance: EUR 170 million; Total Cost: EUR 428 million	France
AGRICULTURAL MODERNISATION AND INNOVATION 23/11/2017	The project consists of several investments to enlarge grain and sugar storage capability. The EIB loans were also expected to finance an information technology solution to enhance a range of agricultural procedures as part of the InnovFin scheme. EIB finance: EUR 36 million; Total Cost: EUR 72 million	Ukraine
SCA OSTRAND MILL EXPANSION AND FORESTRY 15/11/2017	Through higher energy efficiency and innovative process optimization, the project involves: (i) the finance of selected renewable energy, energy efficiency, and environmental safeguard measures within an investment action in Sweden by upgrading a pulp mill (ii) the replanting and restoration of roughly 68,000 ha of forest, the building of 4,250 km of forest roads and an improvement of five forest terminals. EIB finance: EUR 150 million; Total Cost: EUR 684 million	Sweden
TOMATO PRODUCTION AND PROCESSING 31/03/2017	The project is supporting a new line of tomato production and processing. The investment strengthens the Promoter's strategy to enhance the competitiveness of its business through the enlargement of capacity and resource efficiency. Budget: Not disclosed.	Ukraine
COILLTE SUSTAINABLE FORESTRY 22/12/2016	Financing of Coillte Teoranta's forest plantation establishment and management program for the period 2016-2020. According to best technical and environmental practice, over 35,500 ha of forest were expected to be planted, the remainder being new plantations on company-owned land. It also included building 373 km of new forest roads and an additional 1,288 km of forest roads to be renewed. EIB finance: EUR 98 million; Total Cost: EUR 195 million	Ireland

<p>EU FUNDS CO-FINANCING 2014-2020 (EST) 2/12/2016</p>	<p>The plan sustained the Estonian 2014-2020 Partnership Agreement and selected investments of its two implementation Programmes: (i) OP for Cohesion Policy Funds (ESF, CF, ERDF); and (ii) Rural Development Programme (EAFRD). The actions will focus on technological development and innovations, environment, transport, research, health, improvement of training and access to employment, water and environmental protection, education, health, improvement of training and access to employment, small infrastructure in rural areas. EIB finance: EUR 720 million; Total Cost: EUR 5700 million</p>	<p>Estonia</p>
<p>ROMANIA EU CO-FINANCING FOR GROWTH 2014-20 15/07/2016</p>	<p>The project attempts to foster competitiveness through sub-projects that involve RandD, innovation and human development investment in crucial sectors, ICT and e-government, support for small and medium-sized enterprises, employment promotion, education/training, and social inclusion. EIB finance: EUR 400 million; Total Cost: EUR 7228 million</p>	<p>Romania</p>
<p>EU FUNDS CO-FINANCING 2014-2020 (EST) 17/12/2014</p>	<p>The project, structured as a Structural Programme Loan, will support the following sectors: technological development and innovations, environment, health, water and environmental protection, transport, research, education, enhancement of training and access to employment, and small infrastructure rural regions. EIB finance: EUR 720 million; Total Cost: EUR 5700 million</p>	<p>Estonia</p>
<p>EXTREMADUR A GROWTH and INNOVATION FL 28/11/2013</p>	<p>Framework Loan to support the public sector in the human capital, basic infrastructure and RDI sectors. The scope is to contribute to employment creation, fostering cohesion and social equality, and improving the knowledge economy. The plan's main objectives are the further sustainable development of public service delivery. EIB finance: EUR 125 million; Total Cost: EUR 437 million</p>	<p>Spain</p>
<p>EU FUNDS CO-FINANCING CANTABRIA 22/07/2013</p>	<p>The project involved investment projects supported by the Regional Operational Programme, precisely Research and Development, Information and Communications Technology, and Information Society projects. The plan was centered on enhancing natural resources (also forestry and agricultural land) and rural economy diversification. EIB finance: EUR 75 million; Total Cost: EUR 293 million</p>	<p>Spain</p>

Table 1 recommends a review of the projects supported by the European Investment Bank in the Agriculture, Fisheries, Forestry sector, covering the European area and the 2010-2021 period. As the results demonstrate, only 13 out of 73 projects funded by the EIB were explicitly related to innovation and RandD activities. Noteworthy, France has three projects funded mainly associated with the production of protein for food and feed uses from oilseed yield, bio-based materials, and the set-up of novel field crop and vegetable seed diversity. Ukraine accessed two funded projects related to grains and sugar storage capacity and tomato production and processing efficiency. Sweden and Ireland's projects were mainly related to forest management, while Estonia, Romania, and Spain initiated projects from water and environmental protection to education and training access to employment.

Conclusions

Unquestionably, the agriculture sector is required to become sustainable and resilient to generate larger quantities and higher quality of food at affordable prices while protecting the environment to face the current global challenges. RandD and innovation's role in expanding a sustainable agricultural sector have been acknowledged by organizations such as United Nations- Food and Agriculture Organization and the European Commission.

As the paper's results suggest, governments around the EU's member states recognize the value of RandD activities in the agriculture sector. Overall, in the 2010-2019 period, an average increase of +37.4% in the allocated budget was recorded at the EU level. Among the countries with the most significant contributions in budgets as a total of 2010-2019 are Germany (EUR 7.983 million), the UK (EUR 4.352 million), Spain (EUR 4.348 million), and France (EUR 3.462 million). In terms of budgets' percentual increase the following countries' evolution worth to be remarked Croatia (+353.2%), Malta

(+247.5%); Latvia (+159.14%), Hungary (+106.6%) and Greece (+96%). Regarding the projects funded by the European Investment Bank in the Agriculture, Fisheries and Forestry industry, covering the European area for the 2010-2021 period, only 13 out of 73 projects included in their description terms such as "research and development", "innovation" and "technology". Limits of the current research are recognized. For the quantitative approach, part of the analyzed data was based on estimations and interpreted data. Also, the collection definitions differed among the member states. Concerning the qualitative research, terms such as "incubator", "modernization", "upgrade" were excluded.

All in all, as the current findings indicate, the EU acknowledges the role of RandD in constructing a sustainable agriculture chain. However, even though there is an upward trend in sustaining innovation activities in the agri-food sector, a more in-depth analysis at the EU's member state level is needed to formulate a clear set of recommendations. The present results act as a signal for the EU and member states' governments to review priorities and redesign the funding schemes to strengthen the agricultural sector.

Acknowledgment

The present study is part of the post-doctoral project "Analysis of the competitive sectorial position in the global business network. Romania and the agricultural sector" coordinated by the Post-Doctoral School of Economics and International Affairs.

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Perception of Farmers on EC Recommendations for Romania's CAP Strategic Plan

Ionuț Adrian Chesnoiu¹

¹⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: adrianchesnoiu@gmail.com

Please cite this paper as:

Chesnoiu, I.A., 2021. Perception of Farmers on EC Recommendations for Romania's CAP Strategic Plan. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 862-870 DOI: 10.24818/BASIQ/2021/07/108

Abstract

This article analyses the EC recommendations on Romania's agriculture through the perspective of the perception of farmers. The analysis is based on a qualitative study based on the response to 12 key statements that we have structured from the Commission Report on Romania's Common Agricultural Policy Strategic Plan. These statements, contained in a questionnaire, were administered to two samples by respondents. Independent farmers and farmer's entrepreneurs enrolled in associations (producer organizations or producer groups) with farms between 15-30 ha and independent farmers and farmers entrepreneurs enrolled in associations (producer organizations or producer groups) with farms between 100-300 ha.

It has been chosen as an indicator of structuring, the area cultivated, taking into account the fact that the land is divided into many properties. During the study it was analyzed the correspondence between the Commission's recommendations and their perceived opportunity by respondents. In other words, it aimed to see to what extent the perception of farmers' recommendations of certain recommendations is positive and considered necessary by them. It has been also researched, through comparative analysis, the perceptions of the two categories of respondents to see what the common perceptions of recommendations are and what are the perceptions different from them. The results show that there are different perceptions in the groups of respondents that we sampled in the research. Respondents with farms between 15-30 ha consider in a greater proportion the vast majority of claims submitted to the research. Moreover, the overall average score in this category was 8.77, a score that clearly shows that respondents consider the relevant recommendations. On the other hand, respondents of large farm entrepreneurs had an overall average score of 5.88, which shows that these respondents consider to a lesser extent that these recommendations are relevant. They are moving towards issues that bring a greater profit for business in the future, while the first category is moving towards issues that secure and protect the business in the future.

Keywords: farmers, agriculture, Common Agricultural Policy Strategic Plan, producer groups, short supply chain.

DOI: [10.24818/BASIQ/2021/07/108](https://doi.org/10.24818/BASIQ/2021/07/108)

Introduction

The foundation of the European agri-food strategy – from farm to consumer through the short supply chain

A macro statistical diagnosis of Romanian agriculture and Romanian countryside at the level of 2021 highlights important aspects that allow us to understand the logic and specificity of our country's agriculture in relation to the Member States of the Union. As Wegener (2011) said in "Administering the Common Agricultural Policy in Bulgaria and Romania: obstacles to accountability and administrative capacity" that to improve the delivery of services in new member states such as Bulgaria and Romania, the CAP should pay greater attention to the specific conditions of transition

countries, such as their high share of smallholders. It should be determined whether some responsibilities could be devolved to lower administration levels, e.g. by decentralizing decision-making authorities. Moreover, integrated agricultural offices should be established to house front office agencies in the same buildings, a more comprehensive and tailored system of human resource management should be developed, and the outreach of farmers' associations should be further advanced and facilitated.

The European Union's philosophy on agriculture is to generate a common agricultural policy beyond the diversity of the existing rural organizational culture at EU level. The current common agricultural policy that will guide the actions of the European Commission and the European Parliament is the 'Farm to Fork' strategy in translation, from farm to consumer. Launched in April 2020, the strategy is an ambitious move capable of ensuring the Union's food security by improving agricultural practices and by drawing up a new agri-food policy based on the short supply chain or the full supply chain. The Commission's 'Farm-to-Consumer' strategy advocates more plant-based nutrition and a higher degree of animal welfare. The EC in its recommendations shows that our country can play an active role in the new European strategy: "Farmers in Romania can further expand fruit and vegetable production, focus on quality, including livestock production, with a lower environmental and climate footprint and a much higher degree of animal welfare than the EU average.

As Berti (2016) said in „Competitiveness of Small Farms and Innovative Food Supply Chains: The Role of Food Hubs in Creating Sustainable Regional and Local Food Systems” the response to the multiple—economic, environmental and social—crises of the conventional agri-food system in the last two decades, rural development practices that embody alternatives to the industrial mode of food production and distribution have emerged, namely “re-territorialisation” or “re-localization” of the food supply chains or networks, into “short circuits” often referred as short food supply chains or alternative agri-food networks

Short supply chains of various products mean the sale from a producer to a consumer through as few intermediate levels as possible. Although it has a relatively short and strategic history, it is a successful one in most EU countries. This success can also be argued by the fact that the current European strategy in the field of agriculture is based on the short supply chain. In 2011, the Committee of the Regions promoted the idea of these local schemes as an opportunity to harness local potential and a way to improve the image of lesser-known regions or communities.

Subsequently, the European Commission through its policies focused on the promotion of agricultural products, with the Union having a culinary heritage of great diversity to be harnessed.

The short chain mechanism offers a multitude of facilities that will be analyzed including in relation to the Romanian specifics of these local food systems, characterized by the fact that both production and processing and marketing and consumption take place in a small geographical area.

The purpose of short supply chains shall focus, inter alia, on:

- facilitating interaction between producers and consumers by making them face-to-face, the consumer being able to verify the provenance of the products;
- promoting trust between partners; diversify or increase production; may enter other markets, with consumers guaranteeing producers;
- rapid targeting of the product from the manufacturer to the consumer with concrete indication of intermediaries;
- ensuring a higher quality of products, with consumers being able to check the production process along the way.
- strengthening the local food market, both in terms of product diversity and quantity and the logistical space required – direct sales stalls or outdoor markets;
- the creation of new jobs in agriculture, food production and related sectors;

- reducing the distances on which food is transported – a fundamental indicator of the short chain with multiple economic, environmental, social effects;
- increasing social cohesion and community spirit by promoting local, authentic, traditional, original, seasonal, sustainable products.

Local food production has always been a part of the specifics of rural areas, but it has been steadily increasing in all 28 Member States of the European Union in recent times. Consumer demand for 'local' products with a safe provenance, together with the need of producers to add value to the production and marketing of their agricultural goods, has led to the development of a diverse range of local food networks and short supply chains. Thus, each local initiative has evolved according to the area concerned, the products brought to the market, and the consumers it is addressed to them.

Short supply chains have behind them, as I have shown, a local philosophy, specific to a well-defined area or a region. As such, the measures by which this mechanism can develop take these aspects into account. Among the solutions that central and local authorities may consider are: promoting policies/schemes to help/access funds for producers – measure 16 – cooperation, sub measure 16.4, 16.4a (via AFIR), measures to strengthen local food markets – through local authorities; measures for the development of direct selling stalls; measures for the creation of outdoor fly-mobile markets.

At the time when this concept was being penciled in, 2011, it was considered to be an instrument that would mark the future of European agriculture. Almost 10 years later, April 2020, the Union proposes an agri-food strategy based on the short supply chain. Before making a brief analysis of it, necessary for this article, some macrosocial statistical data that customize Romanian agriculture are necessary to try to understand why the "farm to fork" strategy becomes so important for Romania.

The strategy proposed by the Union is not coincidental, as the mechanism of the short supply chain, which underpins it, is important for Europe. Let us not forget that at European level, 65% of farms have less than 5 ha. In Romania the share is much higher – 92%. As Cecilia Alexandri, Lucian Luca (2012) said in "The Role of Small Farms in Romania and Their Future in the Face of Challenges of the CAP Post 2013" small-sized farms have a significant share in Romania's agriculture, as a result of the specificity of land restitution to former owners in the early 1990s. Although the total number of agricultural holdings in Romania was down by almost half a million in the last decade, from 4.48 million according to the 2002 census to 3.85 million according to the 2010 census, it remains one of the highest in the EU countries and reveals the social, subsistence character of a large part of agricultural holdings. As an average of the years 2007-2010, out of the 4 million holdings, only about one million were eligible for direct payments (those larger than one hectare. There are elements of considering a household as farm. Probably in the EU even on these areas we talk about farms because, beyond the fact that in them the members of a family work up to the third degree – the century, what sets them apart from the peasant households in Romania is the fact that economically they manage to make the most efficient use of the products. Romanian households are subsistence or semi-subsistence. There's one other important point.

The average per farm in Romania, taking into account the division of the land is 3,4 ha, in the Union the average exceeds 16 ha. Or a 16-ha farm has another efficiency, coupled with technology and the short supply chain system, which is much more developed in the Union. The agricultural middle class in Europe is approaching this area and an SO economic index exceeding EUR 15000-20000. There is much discussion with the classification of farms in small, medium or large. The small farm can climb up to 25 ha, depending on the object of activity and the technologies used. The organic farming that is being talked about today, implicitly the targets by 2030, i.e. 25% of the land, are targeting this kind of farm and it is expected that small farms will be financially or fiscally helped to a much greater extent than large farms.

The Commission's recommendations show that more than two thirds of Romania's territory is considered rural and 53% of the population lived in rural areas in 2019.

Although declining, rural territories and rural populations in Romania are among the highest in the EU. In 2019, the rural population decreased by more than 12% compared to 2010. Rural areas are characterized by depopulation, poverty and an ageing population.

In the period 2010-2019, only the category of rural population over the age of 64 increased (by 9.4 %), while the other two categories (< 15 years and 15-64 years) decreased by 13 % and 18% respectively (the decrease was slightly higher for women in the 15-64 age category (87 years)). While in 2010 net rural migration was around -10 000 inhabitants, it exceeded 60 000 inhabitants in 2018, thus reflecting the trend of depopulation of rural areas.

The increase in agricultural productivity and the migration process have led to a reduction in the population working in agriculture from 30.4% in 2010 to 22.2% in 2017. In 2016, 44.9% of the agricultural workforce was women and 34% of farm managers were women, which exceeded the EU average of 28%. In agriculture, day laborers are used, apart from full-time workers. Between 2011 and 2016, the number of day laborers increased from 170.5 thousand to 803.6 thousand people. Their share of the total labour force increased from 1.2% in 2011 to 6.7% in 2016. 80 % of day work is carried out in agriculture (including vineyards, orchards and livestock farming), forestry and fishing. This sector usually employs people with a lower level of education, who sometimes combine seasonal work abroad with casual work in Romania.

The results clearly indicate that agrarian Romania is of contrasts. 40% of the land is owned by small farms, over 790,000, of which 600,000 under 5 ha and 40% of the land is owned by large farms 0.56%, over 300 ha. 20 % of the land is owned by medium farms, over 1700 with areas between 30 and 300 ha.

Farm to Fork strategy and promoting the interests of European family farming

The Farm to Fork strategy promoted by the Union is a new holistic approach to how Europeans value food sustainability. It is an effort to improve, in addition to food, lifestyle, health and the environment. Creating a favorable agri-food environment that facilitates the choice of a healthy and sustainable diet will benefit consumer health and quality of life and reduce health costs to society. People are paying more and more attention to what they eat. They want healthy, fresh, natural and produced food as close to them as possible. Calls for shorter supply chains have intensified and are the basis of this strategy. Food production, processing, retail, packaging and transport make a major contribution to air, soil and water pollution and GHG emissions and has a profound impact on biodiversity, and the Union is increasingly paying attention to this. Food systems remain one of the key factors in climate change and environmental degradation. There is an urgent need to reduce dependence on pesticides and antimicrobials, reduce excess fertilization, increase organic farming, improve animal welfare and reverse biodiversity loss.

The transition to sustainable food systems is also a huge economic opportunity. Citizens' expectations are evolving and leading to significant changes in the food market. The transition to sustainability is a 'first opportunity' for all actors in the food chain. It is clear that the transition will not be achieved without a change in people's diets and in their eating behavior.

Food waste is a major problem in Romania. The main sources of waste are: consumers (50%), producers/processors (44%) and the retail sector (6 %)118. Statistics indicate 5 million tones of food waste each year, representing between one and a half of the total quantity of food for human consumption produced in a year, i.e. around 250 kg/resident119 source (above the EU average of 179 kg/inhabitant).

Although food waste after the farm gate is well addressed in the recently adopted waste legislation, insufficient attention is paid to food waste and waste occurring at the level of primary production and in the early stages of the supply chain. This problem could be addressed through the implementation of the national food waste prevention program provided for in Article 29(2)a of the Waste Framework Directive 2008/98/EC.

The EU's objectives aim to reduce the environmental and climate footprint of the EU's food system and strengthen its resilience in order to lead to a global transition to competitive sustainability from farm to consumer and to exploit new opportunities:

- the production, transport, distribution, marketing and consumption of foodstuffs must have a neutral or positive impact on the environment;



- contributing to climate change mitigation and adaptation to its impact;
- protecting the health of land, soil, water, air, plants and animals, stopping the destruction of biodiversity;
- ensuring food security and public health – ensuring that everyone has access to sufficient, nutritious, sustainable food that meets high standards of safety and quality;
- preserving the accessibility of food while generating fairer economic returns in the supply chain;
- promoting fair trade in the short supply chain creating new business opportunities;
- ensuring the integrity of the single market, safety and health at work.

The new reality proposed by the Commission encourages the traditional small and medium European farm. The efficiency of the short supply chain will be based on this reality. Without disregarding large farms, the Commission insists that the new food lifestyle will be linked to communities, traditions, promoting the step-by-step re-enjoyment of local charm and organic farming. From this point of view the EC considers that:

- Direct payments to farmers will be reduced from EUR 60 000 and capped for payments above EUR 100 000 per farm.
- Small and medium farms will receive more support per hectare.
- Countries will have to reserve at least 2% of their allocation for direct payments to support young farmers in their installation. This support will be complemented by financial support for rural development and various measures to facilitate access to and transfer of land.
- Direct payments will continue to be an essential part of the policy, ensuring stability and predictability for farmers.
- Priority will be given to supporting small and medium-sized farms, which are the majority of the EU's agricultural sector, and to aid to young farmers.
- The Commission remains true to its commitment to a fairer distribution of direct payments between Member States through external convergence.

In conclusion, the strategy promotes 5 key strategic objectives:

1. Ensuring sustainable food production

This includes efforts to: strengthen the efforts of farmers and fishermen to combat climate change, protect the environment and conserve biodiversity; significantly reduce the use and dependence on chemical pesticides, fertilizers and antibiotics; further develop organic farming; continue to support the livelihoods of farmers and fishermen in transition.

2. Stimulating sustainable food processing and sustainable downstream practices

This includes efforts to: influence consumer choices regarding diet; review marketing standards; establish nutritional profiles; improve food packaging.

3. Promoting sustainable food consumption

This includes efforts to: reverse the tendency to increase the incidence of overweight and obesity at EU level; strengthen consumers' capacity for action by better labelling of food; establish mandatory minimum criteria for sustainable public procurement.

4. Reducing food loss and waste

This includes efforts to: reduce food losses in the supply chain; improve the recovery of nutrients and secondary raw materials; strengthen the bioeconomy, waste management and renewable energy.

5. Combating food fraud in the supply chain

This includes efforts to: improve traceability and food alerts.

Perception of farmers on EC recommendations for Romania's CAP strategic plan – scientific study

According to European experts, the quality of life in rural areas in Romania is much lower than in urban areas. Road infrastructure is poor (only 19% of rural roads being upgraded); living conditions are poor (50% of rural households have indoor bathrooms and 47% of rural households have indoor toilets), and basic services are low (only 7% of nurseries and kindergartens are located in rural areas). The area covered by local development strategies increased in the current programming period compared to the previous one, covering 92 % of the eligible area and 86 % of the eligible population. The total budget allocated to LEADER is around EUR 636 million. 31 % of the projects financed under LEADER are investments in the improvement and development of rural infrastructure and services, followed by investments in non-agricultural activities.

The new common agricultural policy can be of real help to our country. Focusing on the protection of small and medium-sized farms, on organic farming and on a fairer distribution of direct payments to farmers can be important support points. The Commission's recommendations, as they arrived in Bucharest, the analysis of European documents on the new agricultural policy, the analysis of transitional aid schemes, the prolonged discussions with specialists in the field led me to the construction of 12 affirmative sentences describing the new European CAP and the recommendations to the Bucharest authorities. These statements correspond to important structural problems in the logic of the new European agricultural strategy. These statements are:

1. Protection and aid of small farms with development potential through direct payments or other aid (fixed amount payments for small farmers).
2. Reducing the vulnerability of farmers' incomes to external factors, including climate change by supporting sustainable agricultural management practices (sowed directly in stubble, strip work, especially on slopes, crop rotation using forage legume crops); the use of risk management tools; investment in new technologies; planting forests and the creation of forested areas (including agroforestry belts and woody landscape elements), especially in the plain.
3. Support the diversity of agricultural production by supporting farmers to focus on high value-added product markets and increase protein crop production, to create new value chains and optimize trade opportunities.
4. Capping direct payments at EUR 100,000 per farm.
5. Improving the position of farmers within the value chain, in particular by supporting the establishment of producer organizations.
6. Improving nutrient management, soil protection and water management by supporting appropriate agricultural practices, longer and more diversified rotation fertilization techniques, .agroecological practices of investments in water management systems.
7. Contributing to the objective of the EU Green Pact with regard to agricultural landscape elements by maintaining the presence of landscape elements and their introduction where they are lacking, improving the conservation status of agricultural and forest habitats, and fully respecting biodiversity-friendly ecological principles.
8. Promote organic farming through appropriate incentives to maintain and convert to it.
9. Reduced use of pesticides due to their risk, implementation of integrated pest management.
- 10.Reducing the economic and social gap between urban and rural areas, reducing poverty in some rural areas, slowing the depopulation of rural areas through investments in rural infrastructure.
11. Facility for the installation of young farmers and support the development of enterprises through access to finance and land.
12. Promoting short supply chains and combating artificial intermediate levels.

Objectives and sample of the scientific study

Through the study - The perception of farmers on EC recommendations for Romania's CAP strategic plan, we have looked at how EC recommendations are considered desirable by farmers.

Objective 1 – the extent to which European analyses are realistic and valid in relation to the perceived situation of farmers.

Objective 2 – the extent to which recommendations are beneficial for Romanian agriculture.

Objective 3 – the extent to which there may be large differences between the recommendations made in relation to the real needs of Romanian agriculture.

As a qualitative study, we did not question the representativeness of the sample that we will question. We have built a sanction consisting of two categories of respondents.

First, independent farmers and farmers entrepreneurs enrolled in associations (producer organizations or producer groups) with farms between 15-30 ha. (25 respondents)

Secondly, independent farmers and farmers entrepreneurs enrolled in associations (producer organizations or producer groups) with farms between 100-300 ha. (25 respondents).

I did not take into account the indicator of economic profitability, SO, because I was interested in the context of the exaggerated division of land, classes above the small farm but below the average farm and classes specific to the average farm.

I presented the affirmative sentences in the form of a questionnaire and asked the respondents to respond on a scale of 1 to 10, where 1 means totally irrelevant for Romanian agriculture and 10 totally relevant for Romanian agriculture.

Data processing and analysis of results

The processing of the 50 questionnaires and the analysis of the data were highlighted the following:

- the highest average score was 9.80 and the lowest was 5.04 for respondents with farms between 15 and 30 ha and for respondents with farms between 100 and 300 ha, 9.52, the highest, and 1.2, the lowest,

- for a number of statements in the questionnaire the average scores were close to what denotes a convergence of objectives

- to a series of statements in the questionnaire, the average scores recorded were of great differences, which shows differences of opinion on certain structural problems.

For respondents with farms between 15 and 30 ha, the highest average scores were obtained in order as follows:

- improving the position of farmers within the value chain, in particular by supporting the establishment of producer organizations – 9,80;

- improving nutrient management, soil protection and water management by supporting appropriate agricultural practices, longer and more diversified rotation fertilization techniques, agroecological practices of investments in water management systems – 9,80;

- promoting short supply chains and combating artificial intermediate levels – 9.72;

- reducing the vulnerability of farmers' incomes to external factors, including climate change by supporting sustainable agricultural management practices (sowed directly in stubble, strip work, especially on slopes, crop rotation using forage legume crops); the use of risk management tools; investment in new technologies; planting of forests and the creation of forested areas (including agroforestry belts and woody landscape elements), in particular in the plain – 9.52.

It follows from these answers that farmers in this category consider very relevant aspects related to the continuation of the establishment of producer organizations, a phenomenon constantly in recent

years, strengthening the position of farmers in the value chain so that it no longer sells products for derisory amounts and can have a say in relation to beneficiaries. Respondents are interested in short supply chains, seeing mechanisms in them that can allow them to capitalize on their wares as close as possible to the place of production, minimizing costs. Farmers agree with the practices of modern agriculture both in terms of nutrient management, soil protection and water management and in terms of reducing vulnerabilities to external factors that cannot be controlled by them.

The lowest average scores obtained by respondents relate to:

- protection and aid of small farms with development potential through direct payments or other aid (fixed amount payments for small farmers) – 8.48;
- capping direct payments per EUR 100,000 per farm – 8.44;
- reduced use of pesticides due to their risk, implementation of integrated pest management – 8.00
- contributing to the objective of the EU Green Pact with regard to agricultural landscape elements by maintaining the presence of landscape elements and their introduction where they are lacking, improving the conservation status of agricultural and forest habitats, fully respecting biodiversity-friendly ecological principles – 5.04.

Respondents do not consider relevant agricultural landscape elements and improvement of the conservation status of agricultural and forest habitats. The other scores, even if they are low compared to the others, still show the involvement of the respondents and the fact that overall, I consider these aspects relevant, including protection and help for small farms. The explanation is logical because the new surfaces between 15-30 ha will be formed through producer organizations. It is necessary for small farms to be helped so that in the future they can associate.

Conclusions

Following the processing and analysis of the data from the qualitative scientific study carried out within the article we can detach some interesting things. First, there are different perceptions in the groups of respondents that we sampled in research – the farmers respondents with areas between 15-30 ha and the surveys farmers with areas between 100-300 ha.

Secondly, the respondent with farms between 15-30 ha considers in a greater proportion the vast majority of claims submitted to the research. Moreover, the overall average score in this category was 8.77, a score that clearly shows the fact that the respondents consider the recommendations relevant. On the other hand, the respondents of large farms had an overall average score of 5.88, which shows that these respondents consider to a lesser extent that these recommendations are relevant.

In terms of comparative analysis of scores, respondents have the highest average scores on aspects related to the continuation of the establishment of producer organizations, a constant phenomenon in recent years, strengthening the position of farmers in the value chain so that it no longer sells products for derisory amounts and can have a say in relation to beneficiaries. Respondents are interested in short supply chains, seeing mechanisms in them that can allow them to capitalize on their wares as close as possible to the place of production, minimizing costs. Farmers agree with the practices of modern agriculture both in terms of nutrient management, soil protection and water management and in terms of reducing vulnerabilities to external factors that cannot be controlled by them.

Respondents do not consider relevant agricultural landscape elements and improvement of the conservation status of agricultural and forest habitats. The other scores, even if they are low compared to the others, still show the involvement of the respondents and the fact that overall, I consider these aspects relevant, including protection and help for small farms. The explanation is logical because the new surfaces between 15-30 ha will be formed through producer organizations. It is desirable that small farms be helped so that in the future they can associate in order to be able to work larger areas.

On the other hand, large farmers consider relevant problems related to the security and development of their businesses. They are interested in promoting short supply chains and combating speculation because they believe that this way, they can have the supply market close to production and can use it complementary in relation to the large contracts they have. Supporting the diversity of agricultural production and finding value-added markets for optimizing commercial opportunities is another relevant assertion. Reducing vulnerabilities to external factors, especially water management, is another claim considered true.

Not relevant to large farmers are the specific problems of small farmers that they no longer consider relevant. The reduced use of pesticides and integrated pest management is once again an irrelevant aspect. This is probably due to the fact that there are still problems with the use of certain pesticides. In the EU there is no uniform picture of the types of pesticides that can be used and it is possible that large farmers consider themselves wronged. The claim that is considered most irrelevant is that related to the capping of direct payments, which somehow logically takes into account the amounts of money that large farmers collect. The Commission's recommendations already divide into two Romanian farmers. Large farmers consider that many recommendations are irrelevant to their interests. On the other hand, respondents with medium farms consider the recommendations are relevant for Romanian agriculture.

Acknowledgements:

This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.

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Particularities of Education Based on Competences in the Online Environment – Qualitative Study

Mihaela Prună¹

¹Romanian-American University, Bucharest, Romania.

E-mail: mjitea@yahoo.com

Please cite this paper as:

Prună, M., 2021. Particularities of Education Based on Competences in the Online Environment - Qualitative Study. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 871-880
DOI: 10.24818/BASIQ/2021/07/109

Abstract

In this scientific study, the author slots to identify the particularities of online learning within the framework of competence-based education. The intention is to analyze the specifics of online learning when it is a predominant and independent method in competent education and not a complementary one in the case of distance learning. After a brief historical analysis of pedagogical systems based on content, objectives and competences, the author analyses the impact that the key competences promoted at EU level. The analysis allows it to emphasize the importance of key competences by their purpose, which lies not only in the act of learning but also in the act of turning into practice. The COVID-19 has made the most of the proficiency-based pedagogy in both the university and the pre-university environment. Based on a quality study, using the Delphi method, the author used two samples to identify these particularities. In the first part of the study in relation to the specifics of competence-based learning, the author identified the top 12 aspects of learning that online are harder for teachers to achieve. Both categories of respondents (from academia and pre-university) identified the same aspect in a group of 12. Using the results of the research and professional experience the respondents were asked to identify the main characteristics of the virtual class and to put them in correspondence with the characteristics of the real class. The group of 10 identified characteristics was similar to the 2 learning environments. In the second part of the study a number of 50 respondents, divided equally in university and pre-university were asked to respond on a scale of 1 to 10 which is the negative impact of each characteristic of the virtual class previously identified. The result shows differences between two categories of respondents, which were interpreted in the study.

Keywords

competence-based education, predominant online learning, undefined physical space, competent key.

DOI: 10.24818/BASIQ/2021/07/109

Introduction

The term education comes from the noun *education*, which means growth, feeding, cultivation. As meaning, the purpose of education is to prepare man as an active element of social life, to transform him into a socially proactive actor, able to support society and help develop it. As a philosophy of action, education is an intervention or targeting, a tool for socializing and ensuring balance and social dynamics.

From this recital we understand that education does not refer strictly to education received in school, to teaching education but ultimately refers to the development of a general culture and learning and the promotion of moral values capable of developing conformism and creativity, order and spontaneity, discipline and flexibility. That's why F. Skinner said that education is "what survives after everything that has been learned has been forgotten" (Skinner, 1976).

In this scientific study we will analyze the term education in the sense of didactic education. As a field of knowledge, even as a science, education is the fundamental concept used in pedagogy. Pedagogy studies and proposes the most effective educational systems, so that the student receives an education as close as possible to its general meaning, in terms of teaching, learning, evaluation, support including socio-emotional education, as defined by the OECD, encompassing the ability to manage a person's thoughts, emotions and behavior that enable them to understand and manage their emotions, set goals, show empathy for others, establish positive relationships and make responsible decisions.

To what extent does teaching education prepare the student as a proactive social actor? What should such an educational system look like? These are the questions and ambition of any effective and effective pedagogical system. Without going into a historical analysis of pedagogy let's say that three answers were considered the most important. Content-centered education that involved the transmission/assimilation of verified knowledge, as comprehensive and qualitative as possible and diversified. It was also called encyclopedic education because of the claim to transmit all the significant knowledge that existed at one time.

This type of education has been overcome by goal-oriented education. Bloom, (1956), through the taxonomy of educational objectives, gave a significant impetus to this type of education. It was the stage in which psychology had a hard word to say through components and dimensions of individualized learning psychology applied to the design, organization and evaluation of the educational process. By operationalizing the objectives (Mager) it was possible to describe the pursued behaviors. The formalism and the excessive focus on the efficiency of the operationalization slowly transformed the didactic approach into a scholastic one, moving it away from reality.

Since the last part of the last century (after 1980), the finalities of the training process go beyond the area of objectives and move to the area of skills, as a result of the development of cognitive concepts, according to which information processing leads to the formation of skills. The purpose of education in general, but also of the educational process in particular, will be based on skills so that the learning of knowledge is matched by their transfer to everyday life. In theory, pedagogy embraces the sociological conception of society, more comprehensive than the psychological one, pedagogy becoming social and promoting the idea that education systems must make it possible to transfer knowledge into everyday life, the educational act having to make the transition from the instructive dimension to the humanistic (functional) dimension, to functional literacy, which allows the optimal transfer of knowledge and values from one generation to the next.

Skills-based education and effective social integration

Skills-based education is currently in the midst of theoretical disputes far from ending. I will translate into a pedagogical context, the definition of competence formulated by the "Recommendation of the European Parliament and of the Council of 23 April 2008 (Official Journal of the European Union C 111 of 6.05.2008) and also mentioned in Law 1/ 2011 (National Education Act), as representing the student's proven ability to select, combine and use adequately, knowledge, skills, values and attitudes, in concrete situations, in order to achieve an effective and effective learning task. From the perspective of the educational process, competence can be considered as an actionable availability of the student, based both on prior experience and as a potential that must be translated into practice in concrete situations. In this logic, the pedagogical approach must be analyzed. Moreover, two issues need to be clarified before this type of education can be promoted.

A. On the one hand, to what extent is it realistic to talk about skills training from a pedagogical perspective, in other words is it possible to build a plan, a mental map containing the most appropriate content of learning? That is, a competency-based curriculum. What is in it about entrepreneurial competence? What content – knowledge, skills, values and attitudes – comprises in such a way as to define entrepreneurial competence?

The problem of the curriculum is as important as the education system, and each of the educational systems mentioned - content, objectives and competences - had in the alternative concrete content. In

building an information society or a knowledge society, the question of choosing the content of education becomes a strategic one.

The need for changes in learning content is determined by the emergence of new educational needs (Braslavsky, 2001). We can talk about a paradigm shift at the social level. The society of 30-40 years ago was founded on the paradigm of information accumulation. This involved adding as much information as possible (quantity was the main structuring indicator). Today this paradigm is outdated. What we need to do today is to filter to synthesize, a paradigm of information synthesis (with emphasis on its quality) is what we need to systematically follow. The social actor is facing diversity, over-information (see social media and smart phone), the growth of the public area that attacks the private area using questionable ethics.

These problems oblige education researchers, as well as decision-makers, to redefine the meaning of education, the structure of the education system, the content and methods of education. The new content must be able to help the student integrate both professionally and into everyday life. This pedagogical *road* is called the scientific curriculum. In a daily sense, the curriculum is a path that the student has to go through during the schooling period, day by day.

In a historical analysis there are two different perspectives in the conception of the notion of curriculum. The first perspective, which dominates goal-centered education systems, is technical and planning (Tyler, 1949). The perspective involves defining, within the framework of the curricula, objectives, including their operationalization, which divide teaching-learning activities into micro-units and generate pedagogy through objectives.

The second perspective is inspired by the works of Lawton (1983) and is called a humanistic (sociocultural) approach to the curriculum. According to this approach, an individual can humanize and socialize only by becoming a member of a social group and sharing the culture, language and experience of other members of the group. From this perspective, the curriculum should allow the student to be opened up to others and to society in general, by appropriating the right knowledge and experiences in the form of competences – pedagogy through competences.

From the point of view of structure, multifunctional analysis of the notion of "curriculum" integrates the answers to all the questions that can be formulated regarding the act of learning (derived from the classic questions of the communication process, starting from the idea that learning is basically a communication): why? (meaning, values, functions), who? (characteristics of the subject of learning), what? (content), when? (time), how? (learning strategies), under what conditions? (learning situations, materials used) and with what effect? (expected results) (Walterova, 1991).

From a functional point of view, pedagogical practice has led to the emergence of complex, dynamic curricular content centered on skills management, student/student needs, proactivist, multidisciplinary and ness and knowledge, including cross-cutting skills and contextual learning as part of the skills system.

Of these, the focus of education on the student has become important in a knowledge society. No matter which methods they prefer, students should be active when searching for knowledge. They should research and explore the issues on their own through the studio individually or in the work teams. This will help them accumulate the knowledge they need to prepare for future use. Even when there is a change in the knowledge needed, perhaps as a result of technological advances, they will still be able to adapt and work just as effectively. Full education is the one that can harness the potential of students. Education must provide them with the necessary conditions to discover their calling, to do what they are interested in and what they can do best.

Competence-based education systems will only be able to prove their pragmatism in complementary (formal, nonformal, informal) and contextual contexts only if certain conditions are met cumulatively. First, the competences that the student must prove at the end of each school year, at the end of a school cycle, and at the end of the curricula are clearly defined. Secondly, the teacher's work should focus less on designing and more on the organization and coordination of learning, (including feedback). Thirdly, the student must prove that he knows how to use and apply, which he learns, both in a professional context and in everyday life. Skills pedagogy must give a pragmatic/functional

meaning to learning, facilitating real learning contexts, whereby the student is motivated that everything they learn is useful to him.

Fourthly, competences should no longer be regarded as a sum of knowledge, skills and attitudes, but as the result of their combined application to solve concrete situations. This will allow, very important in the logic of the pedagogy of competences, the integration of socio-emotional skills in educational design;

B. On the other hand, what powers would it contain? What would be the most important skills we need to focus on so that we can prepare the student for professional and daily life?

Key competences as recommended by the European Union (2006):

Key competences are a cumulation of knowledge, skills and attitudes that all individuals need for personal development and development, to socialize and for their professional career.

They must be developed until compulsory education is completed and must act as a foundation for further learning as part of lifelong learning. The eight key competencies are:

- Communication in the mother tongue.
- Communication in foreign languages.
- Mathematical competence and basic skills in science and technology
- Digital competence.
- The competence to learn to learn.
- Social and civic skills.
- The spirit of initiative and entrepreneurship.
- Cultural awareness and expression.

All these key competences are interdependent, and the emphasis in each case is on critical thinking, creativity, initiative, problem solving, risk assessment, decision-making and constructive management of feelings.

Skills-based education in the online space. Qualitative study

Online learning is usually understood as education that takes place on the internet. It can be part of distance education programs, but it can also be used to complement the teaching that takes place in the classroom. As a complementary form, online skills-based education is based on the whole instrumentation as well as learning techniques and curriculum logic specific to competence-based learning. Although certain peculiarities arise generated strictly by teacher-student/student communication online, as long as it remains a complementary technique, its impact remains small.

Significant changes in online education occur to the extent that this type of education becomes somewhat independent and self-contained, as was the case last year due to the Covid pandemic 19. The scientific study underlying the article takes into account this situation. Two qualitative studies have been conducted that analyze how competence-based education supports significant features insofar as online learning becomes the main or even the only one after which evaluations are made and class performance is analyzed.

In the first study we asked 40 teachers (teachers) from pre-university and university education, based on the logic of skills-based education - the content of learning (the curriculum) - to mention those aspects that are difficult to manage from the perspective of online education. I made sure that all respondents had taught in the last year online, as the predominant technique opposite the subjects taught. We used a simple Delphi questionnaire – one open question – which are in your opinion the difficult-to-manage aspects in the online system and which are specific to skills-based learning. I used a single structuring question – pre-university or university. I did not take into account either the seniority in education or their possible digital skills acquired previously. In order of their

identification by the respondents, the top 12 are shown below - Difficult to manage aspects of online education, Support for students with learning disabilities, Direct human relation (teacher-student and student-student interpersonal communication), Monitoring learning progress, Feedback to correct some aspects of learning, Individual focused counseling, Constant attention to hours, Lack of digital educational content, Direct didactic control, Managing disruptive factors, Manage motivation in class, Limits due to the specifics of the disciplines, Limited powers to use platforms.

Support for students with learning disabilities

Competence-based education enables support for students with learning disabilities by providing a somewhat secondary path, easier transmission of content or the use of less abstract language. This is much harder to achieve online and requires a much greater effort on the part of the teacher.

Direct human relation

An extremely important issue in skills-based education is almost completely losing its effect. Media mediation, even video, cannot replace face-to-face communication, in terms of attention, presence of mind, affectivity and information exchange. This applies to both type communications – teacher/student/student and student/student – student/student. Management of nonverbal communication, dynamic dialogue, spatial positioning of those who communicate are important elements in the economy of the game that in online teaching are very limited.

Monitoring learning progress

We are talking here about that continuous monitoring that takes place in the classroom through a rapid dialogue at the beginning of the classes, through the request for adhoc opinions, through the authority that the teacher exercises by his mere presence. Quick, short tests, sometimes with their quick resolution along with the class that marked an increased attention to monitoring the progress of learning are difficult to achieve in online learning.

Feedback to correct some aspects of learning

It is an important aspect of education based on competence and which is much harder to manage online. The overall picture that the teacher has in the class is important for feedback. Correcting less understood aspects, viewing other students, further approval feedback are time-consuming elements. Teachers insist on this subject, especially when they believe they have taught heavier elements. The fact that in online, argumentation, case study, paraphrases are less, focusing on synthesis, on the main ideas on important issues makes this aspect even more important.

Individual focused counselling

It is a tool by which the teacher is attentive to certain aspects of learning, which by monitoring progress requires additional individual clarifications. In face-to-face communication counseling is done much more easily, some teachers using certain downtimes in the program or staying at school after a certain planning. Today it is a tool that many teachers have given up due to pandemic conditions.

Constant attention to hours

It is a secondary activity that is carried out at the same time as teaching. The existence of the physical class, the direct authority of the teacher, the spatial arrangement of the banks (the u-system that allows everyone to see everyone), direct visual contact makes the attention to be maintained somewhat ad hoc. In online, besides the fact that these whistle-blowers disappear, other vulnerabilities related to video access appear, the presence of other people in the room, other devices that the student can use, etc. All of these result in diminished attention in online classes, which is reflected in the effectiveness of teaching listening.

Lack of digital educational content

It's a real problem, considering that online education was complementary to distance education. It takes time to structure efficient and functional digital educational content. PowerPoints, graphs, tables, classifications or other small summaries also have a minus. When used, the video connection

between the teacher and the students is interrupted. These contents will require greater effort on the part of the teacher to conceive and realize them.

Direct didactic control

It's an important aspect in the physical class. The physical presence of the teacher, the visual contact, the adhoc correction of some behaviors, the identification of a state of fatigue, misunderstanding or non-involvement leads to the immediate change of the teaching strategy by short steps, paraphrasing, pointing out a main idea and arguing it. It's a strategic interruption of surrender to correct disruptive factors and gain control. This indirectly extremely important aspect through its effects is almost impossible to achieve in the virtual class.

Managing disruptive factors

A disruptive factor is a factor that has a negative influence on the learning process. In the practice of teaching, we encounter many disruptive factors, the important element in the physical class is its rapid identification and taking the necessary measures. Lack of notebook or writing tool, non-involvement in dialogue, misunderstanding of a term, discussions between students, teasing of colleagues are elements that are corrected somewhat naturally. In the virtual class there are other factors, impossible to control and manage by the teacher. Perhaps the most important disruptive factor in the virtual class is the lack of video connection, which greatly decreases interest in the hour.

Manage motivation in class

This is more important than maintaining attention. The existence of motivation implies that the student wants to be effective in class. Due to psychological duplicity, it is easy to induce the idea that the student is in class, when in fact his mind is in a completely different place. The question of motivation is related to self-interest and depends very much on the will and choice of the student. In the physical class an experienced teacher can *read* students easily and can be able to figure out whether or not they are in the class mentally. In the virtual class this is done much harder. Ensuring motivation in class is really an important aspect in pedagogical practice and it is often many other aspects included in the learning process.

Limits due to the specifics of the disciplines

Each discipline has its own specificity. Humanistic disciplines that do not use a technical language are easier to teach. Technical or natural science disciplines that use planes, graphs or other visual instruments are harder to teach because they often stop interrupting by contact, visual and video.

Limited powers to use platforms

The digital competences of teachers and students also have an important role and little in the first months or in the first year, the lack of these competences will affect the effectiveness of online learning. To the extent that the software that will be built will be easy to use, they will be easily learned and these skills will be more and more efficient.

These 12 aspects captured in research will need to be analyzed by school management and IT specialists in order to find quick solutions for their efficient management.

It should also be remembered that between the university and the university there were no differences in the group of 12 aspects indicated. The scores obtained were slightly different but not significant enough to use them separately in research. The unmanageable aspects of online education in the two learning environments are significantly the same.

In phase two we asked the same sample to identify the main features and characteristics of the virtual class. They had at their disposal the results of the research in the first phase, coupled with their experience working with the class of students in the physical environment. In order to do a comparative socio-didactic analysis we also retained the correspondence of the trait or characteristic of the physical house. Data processing and analysis led to the following conclusions.

Real Class	Virtual Class
<i>Physical space defined</i>	<i>Undefined physical space</i>
<i>Direct interpersonal communication</i>	<i>Indirect interpersonal communication</i>
<i>Uninterrupted eye contact</i>	<i>Interrupted eye contact</i>
<i>Direct control of students</i>	<i>Limiting student control</i>
<i>Disruptive factors under control</i>	<i>Disruptive factors that are hard to control</i>
<i>Teamwork</i>	<i>Strictly individual work</i>
<i>Adhoc rating</i>	<i>Rating announced</i>
<i>Direct interpersonal cooperation</i>	<i>Indirect interpersonal cooperation</i>
<i>Individualization and personalization of learning</i>	<i>Lack of individualization and personalization of learning</i>
<i>The socio-humanistic dimension of learning</i>	<i>Instructive dimension of learning</i>

Defined physical space vs. undefined physical space

The first advanced feature was the difference between the physical space and the virtual class. Pedagogical practice uses the constituent elements of the physical space in the class as sources of attention-keeping. The existence of the board, the department and the banks have a direct impact in the learning process. Laboratories use much more varied elements besides those mentioned appear exposed on the walls important information for discipline or visual elements specific to the discipline, which have important impact in ensuring motivation. Physical space is well defined relative to the surface, bounded by other spaces which ensure beneficial intimacy. Virtual space is diverse, undefined, spatially scattered, undelimited. It has two small advantages – it is chosen by the student according to his desire and can be familiar to him.

Direct interpersonal communication vs. indirect interpersonal communication

I looked above at the impact of direct interpersonal communication, face to face. Probably the most effective way of teaching communication, in turn influences many other aspects of learning. Even if in the virtual class, through the video system, we can talk about face-to-face interpersonal communication, in reality this is much limited in relation to communication in the physical class. Lack of physical image, exchange of nonverbal impressions – gesture, mimicry, eye contact, look, smile, laughter, etc. – creates major differences between the two types of communication.

Uninterrupted eye contact vs. interrupted eye contact

The visual analyzer is the most important analyzer. Over 85% of the information the man receives through the see. In the practice of learning eye contact is extremely effective, for attention, understanding, solving of small divergences. Visual contact creates a psychological comfort, which in turn influences memory, attention affectivity. It is a feature that in the virtual class no longer has the same impact due to interruptions. Its absence creates an adhoc intimidated student who can become a vulnerability for teaching.

Direct student control vs. limiting student control

The pedagogical control of the students is as important as the eye contact. He relies on the authority of the teacher and the fact that they have the freedom to run the class as he sees fit. It is also based on the teacher's freedom of movement, which can decide at any time the time of the class, and can send any message he deems necessary. The humanistic dimension of education based on competence practically increases the authority and freedom of movement of the teacher. In online education this control is drastically limited due to the context. Even if freedom of movement and authority, theoretic, remain unchanged, the effects are entirely different due to lack of proximity.

Disruptive factors under control vs. disruptive factors hard to control

In practical pedagogy, disruptive factors are all aspects that make learning difficult, jam or block. There are many, psychological, cognitive, affective, physical and the online learning environment adds other specific factors. A thorough study is needed to identify them and seek solutions to counter the negative effects. The integrative element remains the teacher who can manage and limit the action of these factors. Online teaching emphasizes their effect and limits the teacher's ability to manage them effectively.

Teamwork vs. individual work

One of the great advantages of competence-based education is teamwork and teamwork. Topics, projects and problems that are solved in a team have a different impact on students/students than individual ones, generating communication, cooperation, joint search for solutions, division of tasks, choice of persons with a role of verification or coordination. These things do not meet in individual projects. Online learning greatly limits this kind of projects, being preferred individual ones, flesh and in the form of projects

Adhoc rating vs. evaluation announced

Adhoc or direct evaluation is an effective tool in education based on competence. In the form of questions, exchange of ideas or rapid tests, it is important for monitoring progress, correcting some aspects of less understood learning or simply for evaluation along the way. In online learning, although theoretically it can be yes, they are exempted due to the context, going on announced evaluations.

Direct interpersonal cooperation vs indirect interpersonal cooperation

The didactic interpersonal cover covers the broad process of communication and action together to cover all the problems generated by learning. Since education based on competence has a practical-functional, cooperation becomes important in projects aimed at working in a team or in the dialogue generated by the practicality of everyday life of assimilated competences. Cooperation is an indicator of social life and a psychological indicator in the sense that each individual has a personalized measure of interpersonal cooperation in the form of a skill, ritual or detailed mental map. All people cooperate, for some this is a threat to others is an opportunity. A didactic approach that promotes cooperation, such as learning through competence, has the advantage of polishing the cooperation of the student, to highlight it and to put it in agreement with the cell cooperation. In online learning this is no longer manifested, cooperation is much limited.

Individualization and personalization of learning vs. lack of individualization and personalization of learning

Personalized learning is an important dimension in skills-based education. How the transfer of competences in everyday life is done subjectively, people encounter personal hardships that require personalized answers. For this reason, both the assimilation of competences and their transposition into real life, requires increased communication with those who encounter difficulties and cannot use the standard model. These deviations are not exceptions for this type of learning, on the contrary it is accepted the idea that custom horses must be found whenever contextually requires it. It is an important aspect that suffers greatly in online learning. That's because it often takes a certain discretion, a certain pedagogical intimacy to assimilate the need for knowledge that online space does not offer.

The socio-humanistic dimension of learning vs. the instructive dimension of learning

Focused on competences, a cumulation of skills, knowledge and attitudes, learning has a deeply sociumanista character, because it cultivates in students the need to be a socially proactive actor that promotes balance and social order. The humanist dimension also resides in entrepreneurial or civic competences, related to spiritual initiative or social. The sociumanista dimension is more easily achieved in face-to-face, direct communication, in order to track the student's feedback, and better manage the needs of the receiver (student/student). In the online environment the dimension is rather

instructive and this will put its mark on the transposition into the practice of life of assimilated competences.

An important aspect of the research was that the respondents in the two groups stopped at the same 10 important characteristics of the virtual class, which we identified as small differences resulted from the number of choices for each feature. In order to try to rank these characteristics according to their impact on online education, however, I asked for another sample consisting of respondents from the pre-university or university environment, in number of 50 subjects divided equally to give a score of 1 to 10 for each trait depending on the importance and negative impact it has in effective online learning, where 1 represents a very small negative impact, and 10 represents a very large negative impact.

These are - Undefined physical space, Indirect interpersonal communication, Interrupted eye contact, Limiting student control, Disruptive factors that are hard to control, Strictly individual work, Rating announced, Indirect interpersonal cooperation, Lack of individualization and personalization of learning, Instructive dimension of learning.

Hierarchy of virtual class traits according to their negative impact on competency-based learning. The processing and analysis of data for the 2 categories of respondents highlighted the following aspects.

A. Respondents from the pre-university environment

The characteristics with the greatest negative impact on the learning process were in order – the undefined physical space, with an average score of 9.5, limiting student control, score 9.3, disruptive factors difficult to control, 9.00, interrupted interpersonal communication, 8.4.

The lowest negative impact characteristics were the instructive dimension of learning, score 6.0, announced evaluations, 6.3, strictly individual work, 6.7 and indirect interpersonal cooperation, score 7.1.

From the analysis of the data we understand that for the respondents in the pre-university environment the very large impact is given by the undefined physical space, followed by the limitation of control, disruptive factors and interrupted communication, characteristics that indicate both a pressure of the workspace and the possibility of manifestation of the teacher's authority, especially by lack of control.

The characteristic with the least impact is the instructive dimension, announced evaluations, individual work and cooperation, which indicates a teacher's focus on the more formal aspect of teaching, evaluations, individual work and a lower impact of cooperation.

The overall average score (the one that shows overall negative impact) is 7.7.

B. Responses from academia

Characteristics with the greatest negative impact were in order undefined physical space, score 9.7, indirect interpersonal cooperation, score 9.3, interpersonal communication indirect, score 9.2 and evaluations announced, score 9.

The characteristics with the least negative impact were in order limiting the control of the students, score 6.2, lack of individualization and customization of learning score 7.1, factors perturbator difficult to control, score 8.6 and interrupted eye contact 8.7.

From the analysis of the data we understand that even for respondents in the physical space university environment undefined remains the characteristic with the greatest negative impact. The rest of the characteristics are related to a proactive teaching approach which at the moment is more difficult to achieve, I am referring here to cooperation, communication and announced evaluations, which are probably not specific to the university environment.

The characteristics with the lower impact are those that are not really used by teachers or student control, lack of individualization, disruptive factors or eye contact.

The average overall score was 8.5.

Conclusions

The findings of the research contained in the scientific study show important things that are worth highlighting.

First of all, online learning has a particular aspect that endangers the effectiveness of competent learning. Both categories of respondents have close answers. Moreover, the pedagogical aspects that are much harder to follow in this situation are the same in a group of 12 identified. What differentiated the respondents' responses were the number of choices for each aspect but the very small difference led me not to give them a meaning in the study

Secondly, the identification of the characteristics of the virtual class highlighted the same situation. Respondents in both categories identified a group of 10 features that they found important for the virtual class. The identification of these characteristics shows that in both categories – pre-university and university, the characteristics of a virtual class are similar. Mirror identification of the characteristics of the physical class gave me the opportunity to do a comparative socio-didactic analysis of these characteristics.

Thirdly, I wanted to analyze the negative impact of the characteristics of the virtual class from the point of view of the subjects. Here the results were more differentiated as follows:

- Respondents in the university environment feel in a stronger manner the negative impact of the characteristics of the class, overall score, 8.5, compared to those in pre-university, 7.7; even though both categories still perceived a high negative pressure, 7.7 and 8.5 on a scale of 1 to 10, so greater than 75%. This shows the weight faced by teachers in both teaching backgrounds;
- The undefined physical space (lack of physical class with its advantages) was considered the characteristic with the highest pressure of both categories of respondent;
- Those in academia consider the characteristics with very high negative impact as those that no longer allow dialogue, teamwork, active and two-way teaching. The least impact has the somewhat training characteristics related to student control or individualization of learning;
- Those in the pre-university environment consider that the greatest negative impact is the characteristics that refer to the authority of the teacher, especially by lack of control and direct communication or disruptive factors difficult to define. The least negative impact is the characteristics that indicate a certain formalism of teaching, especially by the instructive dimension and the announced evaluations or by indirect cooperation.

As a general conclusion, online learning as a predominant and independent technique raises a number of obstacles when it comes to education based on competence in both learning environments – university and pre-university. Whether we are talking about some aspects specific to competence-based pedagogy that can no longer be carried out in optimal conditions, or characteristics of the virtual class that have a strong negative impact in the efficient conduct of the learning process.

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A Review of Social Media Use and Cyber-Psychological Behavior of Young People During the Covid-19 Pandemic

Andreea Fortuna Schiopu¹, Ana Mihaela Pădurean², Ionela-Andreea Istrate³ and Elena-Mihaela Purecel⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: andreea.schiopu@com.ase.ro; E-mail: mihaela.padurean@com.ase.ro;

E-mail: istratelonela19@stud.ase.ro; E-mail: purecelelena19@stud.ase.ro

Please cite this paper as:

Șchiopu, A.F., Pădurean, A.M., Istrate, I.A. and Purecel, E.M., 2021. A Review of Social Media Use and Cyber-Psychological Behavior of Young People During the Covid-19 Pandemic. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. 7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 881-888 DOI: 10.24818/BASIQ/2021/07/110

Abstract

The movement restrictions adopted following the Covid-19 pandemic outbreak strongly impacted societies in general, determining modifications in human behaviour. Under these new conditions, information and communication technologies have provided useful and efficient communication instruments. In this context, social networks have offered young people and not only the possibility to maintain and develop inter-personal relationships transferred almost entirely to the virtual environment in the conditions of quarantine. At the same time, social networks have contributed to continuing educational activities, thus significantly increasing the time spent in online settings; this has also generated some unwanted psychological and behavioural effects. This paper aims to research the use of social networks among young people during the COVID-19 pandemic and its impact in cyber-psychological terms by using a survey. The transfer of activities in the online environment has amplified the social isolation among young people, boosting their anxiety levels and, as our results show, accentuating the tendency to replace real life friends with virtual ones. Identifying these changes in young people's behaviour can generate concerns for the development of preventive educational programs. At the same time, optimistic, friendly and extremely confident people can communicate more easily online. The novelty of the research is argued by connecting personality traits and the use of social networks during the pandemic and by interpreting the results from a cyber-psychological perspective.

Keywords

social media, youth, personality, virtual life

DOI: 10.24818/BASIQ/2021/07/110

Introduction

The accelerated progress in the field of information and communication technologies has generated a series of changes at global level both in terms of the economy, society, culture, environment and psychology, causing changes in human behaviour. The need to research the influence of technology on human behaviour is materialized in a multitude of studies whose results may have significant theoretical and practical implications over society. Beyond the benefits that information and communication technologies offer, it is equally as important to point out the negative impact of the increasing use of social networks at younger ages. Studies have shown that the youth's use of social media brings forth a variety of positive aspects, especially after the outbreak of the Covid-19 pandemic (Wong, et al., 2020; Aduba and Mayowa-Adebara, 2021; Chu, et al., 2020; Bashingwa, 2020; Eghtesadi and Florea, 2020). However, there are countless opinions stating that, under certain circumstances, the

use of social media affects the relationships with friends and family and might contribute to the occurrence of unwanted psychological effects, which could be deepened in the context of this pandemic. (Lee, 2009; Kraut, et al., 1998; Przepiorka, et al., 2019; Christakis, et al., 2011; Gómez-Galán, et al., 2020). Starting in early 2020, the COVID-19 pandemic has considerably increased the role of online platforms in the private and professional lives of young people, making it necessary to study their impact on human habits along with the increasing differences in behaviour between real life and the virtual environment. Also, on this basis, it is necessary to study the characteristics of the so-called „cyber-self” in the context of technology-mediated inter-human relations as well as concerns in the field of cyber-psychology, which is an increasingly current field. For that matter, a series of research studies have shown the connection between the use of the internet and personality traits. (Aiken, 2017; Arab and Diaz, 2015; Jin, 2012; Firth, et al., 2019). Knowing the associations between multiple personality elements and the use of social networks provides useful information in planning individual-family or public-educational interventions.

Literature review and hypotheses development

Young people and social networks

Present on multiple plans of society, the internet is generally associated with education, travelling, knowledge, trade, socialization, labour mobility and offers a variety of opportunities for fun and relaxation (Firth, et al., 2019). Socially, the use of information and communication technology is linked to a series of advantages related to knowledge and communication (Scott, 2004; Rodriguez-Donaire and Barodzich, 2012). Other studies demonstrate the positive impact of online communication in terms of volunteering, online communication complementing offline communication without diminishing or increasing it (Wellman, et al., 2001) and contributing to raising self-esteem and the quality of friendship (Valkenburg and Peter, 2011).

However, the use of social networks can also generate unwanted effects such as affecting relationships with friends or family due to the time spent online that determines the replacement of offline connections with the more superficial online ones (Lee, 2009). At the same time, the use of the internet and social networks in the online environment could represent the source of loneliness and depression (Kraut, et al., 1998; Przepiorka, et al., 2019); some applications may contribute to creating an addiction, and research demonstrates a significant link between problematic internet usage and moderate to severe depression (Christakis, et al., 2011). All these aspects have been deepened by the COVID-19 pandemic (Gómez-Galán, et al., 2020).

Regarding the link between age and the frequent use of social networks, it is more pronounced among young people, the younger generations evolving in a digitally connected world (Firth et al., 2019). Although many studies have shown young people’s interest in social networks regarding education, excessive use is related to leisure activities (Gómez-Galán, et al., 2020). The coming of the COVID-19 pandemic shifted young people’s interest in educational use to a greater extent due to lack of mobility and the moving from on-campus to online education, making online platforms decisive in continuing youth education and making isolation easier to bear (Gómez-Galán, et al., 2020). Thus, the time spent by young people on online platforms has considerably increased:

H1. Young people put in more time on social media as a result of the COVID-19 pandemic

The benefits of using social networks in education refer to their ability to build communities and stimulate collaboration and access to education (Bower, 2017). While the use of social media in education before the pandemic was controversial, with the declaration of this pandemic, along with messaging and conferencing platforms such as Zoom, Skype, WhatsApp, these played a significant role in distributing information and sharing ideas in teleworking conditions, organizing events for the dissemination of information and innovation with a large audience, in sharing international knowledge beyond geographical and linguistic barriers (Wong, et al., 2020). Through social networks and their associated services such as Facebook, Twitter, Instagram, WhatsApp, etc., free access to various resources was offered, and interactive communication was achieved between students and teachers, these becoming more accessible in the case of distance education, e-learning opportunities being a dominant factor in today’s digital world (Aduba and Mayowa-Adebara, 2021).

During the COVID-19 pandemic, the importance of social networks has become even greater, knowing their role in distributing information to patients and scientists if they are used correctly. Of all the available social networks, Facebook has played an important role in communicating health care issues during the pandemic as an effective platform for preventing the spread of the virus and as a way to recruit health professionals (Chu, et al., 2020; Bashingwa, 2020; Eghtesadi and Florea, 2020). Though, studies have shown that misinformation about this pandemic occurs frequently among social networks socialization (Cuello-Garcia, et al., 2020). Therefore, we hypothesize:

H2. Social networks have a role in creating panic by spreading fake news among young people

The online environment and the need for cyber-psychology

Studies have shown that the use of online platforms affects the structure of the human brain, its function, and cognitive development by influencing attention, memory, knowledge and social knowledge along with the psychological consequences of interactions and status in the virtual environment (Firth, et al., 2019). Cyber-psychology or online psychology represents the “study of the impact of new technologies on human behaviour” (Aiken, 2016); research conducted so far in this field shows the availability of human behaviour to register mutations due to the phenomenon of online disinhibition, which causes people to do things they would refrain from doing in the real world (Aiken, 2016).

In the digital age, there is a concern for the creation of a new identity, one that wants to be revealed and which specialists call the "cybernetic self", an idealized self that represents rather what people want to be and not what they are in reality and which, in the case of young people, is manifested by the way they interact with others (Aiken, 2017). Thus, the number of friends, social contacts with which a person can interact is about 150 called Dunbar, and anything beyond is more complicated to manage (Carron, et al., 2016). Given that a young person has a Facebook account, Instagram and participates in WhatsApp and Twitter, it is clear that we cannot talk about friends in real life, which makes young people less socially competent (Aiken, 2017).

Privacy paradox is a topic initiated by Professor Susan B. Barnes according to which in the online environment, young people are not necessarily concerned about privacy but are outraged when parents, teachers, or other acquaintances enter the privacy of their actions (Barnes, 2006).

An individual's personality is formed based on a series of factors - social environment, family, experiences, etc. and the presence among social networks can encourage the expression of feelings, feelings usually hidden in real life (Ahuja and Alavi, 2017). Research has shown that the use of the Internet in social relationships has brought more benefits among extroverts by increasing self-esteem and decreasing feelings of loneliness and poorer results among introverts (Kraut, et al., 2002); in other words, social skills act as moderators based on the interaction effect of Internet use with extroversion (Lee, 2009).

Examining the relationship between personality and internet use, studies have shown that extraversion, openness and neuroticism positively relate to internet communication and extroversion, openness, conscientiousness positively to internet leisure use (Mark and Ganzach, 2014). Also in this sense, it has been demonstrated that there is a connection between internet use and two narrow traits - optimism and work drive, more pessimistic young people being attracted to the online environment in order to confirm their negative expectations or to share their ideas with other young people with the same concepts as them and, consequently, spend more time online (Landers and Lounsbury, 2006). During the COVID-19 pandemic, proactive personality has been shown to enhance the quality of online interaction and self-efficacy on the Internet (Zheng, et al., 2020). Thus, we hypothesize:

H3. Some personality traits influence young people's easiness to communicate online

For a broader picture of the impact of using social platforms, it is necessary to identify the typology of both online activities and online platforms (social networks) used (Lee, 2009) and their distinctive evaluation (Valkenburg and Peter, 2011). For example, the impact of using online platforms on the quality of youth friendship can be seen as positive in the absence of anonymity and when the Internet is used to strengthen existing friendships (Desjarlais and Willoughby, 2010). But an important element to analyse in the presence of young people on social networks is the experience of anonymity that can

generate both positive aspects (for example, can reduce concern about physical aspect problems) but can stimulate aggressive, offensive behaviour and cyber harassment (Valkenburg and Peter, 2011). Online anonymity is another “super-power” that gives users a sense of security (Aiken, 2017). Increasingly, the online presence manages to replace important aspects of real life. For example, Japanese video games such as LovePlus offer "dating simulators" through which people learn how to approach a relationship and how to love, and players said that love for virtual girlfriends programmed to be faithful comforts, supports and protects them (Aiken, 2016).

The diversity of online media can lead to the creation of different identities that change rapidly and can lead to constructive or destructive interpersonal and intrapersonal experiences, depending on variables such as time of use, type of virtual social group chosen for membership, etc. (Arab and Diaz, 2015; Jin, 2012). Under these conditions, the construction of youth identity focuses on a new paradigm of communication in which the boundary between public and private becomes increasingly unclear (Arab and Diaz, 2015); in the brain, some unique aspects of using online social networks are not found to be central to real-life social connections (Firth, et al., 2019). In this context, we might assume that:

H4. The length of time spent on social networks influences the attitude toward an online or virtual life

Method

This study aimed to understand how social networks have influenced young people in terms of social media use and some associated behaviours during the COVID-19 pandemic. The most appropriate method was the survey, materialized in a questionnaire containing questions targeted at specific topics such as time spent on social media before and during the pandemic, social media platforms accessed daily, easiness to communicate online, accessibility of developing friendships in real life or in virtual life or predominant role of social media regarding information sharing during the COVID-19 pandemic. The questionnaire was distributed online through a Google Docs form between March 23 and April 2, 2021. A number of 118 responses were collected. From our sample, 32 are male and 86 female, 50% are from 16 to 20 years old, 43.2% from 21 to 25 years old, and the rest between 26 and 30 years old. 78.8% of the sample is represented by high school graduates and 10.2 college graduates. 72% of our respondents live in urban areas while 28% live in rural villages. 79.7% of the sample is represented by students.

We used IBM SPSS 27 to analyse the data. First, we screened the data and utilized some basic statistical analysis such as descriptive statistics and frequencies. Skewness and kurtosis statistics were examined and we concluded that all values were within acceptable limits of ± 2 (George and Mallery, 2016). Only one exception of this principle appeared, concluding data can be considered normally distributed. Moreover, in order to compare the observed values based on some criteria, we used cross-tabulation and Pearson’s Chi Square test of independence. Also, we chose the paired sample t-test to tackle differences between respondents’ answers and the Mann-Whitney U test to compare responses of some sub-groups from our sample. For the Mann-Whitney U test, the null hypothesis declares there is no difference between the medians in the included variables and the alternative hypothesis entails there is such a difference. The significant level was 0.05 for all tests and statistical analysis in this study.

Results

The first hypothesis of our study was that, under the new conditions imposed by the COVID-19 pandemic, young people spend more time on social media platforms. First, we looked at frequencies of the responses given to the first two questions of the questionnaire (Table 1). Youth put in much more time on social platforms after the start of the pandemic, with a whopping 34% of them allocating more than 6 hours rising from 11% before the pandemic.

Table no. 1. Time spent on social media before and during the COVID-19 pandemic (% , N=118).

Answers	Frequencies	
	Before COVID-19	During COVID-19
Less than 1 hour	14.4	5.1
Between 1 and 3 hours	49.2	27.1
Between 3 and 6 hours	25.4	33.9
More than 6 hours	11.0	33.9

Second, the paired t-test was applied to analyse if there was a significant difference between these answers. As shown in Table 2, the COVID-19 pandemic had a significant effect on the time spent on social media by young people. Therefore, since the p-value is less than our significance level of 0.05, we reject the null hypothesis and accept H1. The proportion of time spent on social networks significantly changed from before to during the COVID-19 pandemic ($t(117) = 9.101, p < 0.05$ with 117 degrees of freedom and a p-value of $0.000 < 0.05$).

Table no. 2. Paired sample T-test statistics for time spent on social media before and during the COVID-19 pandemic (N=118)

Pair	Variables	Mean	95% CI		t	df	Sig. (2-tailed)
			Lower	Upper			
1	Time spent on social media during pandemic- Time spent on social media before the pandemic	.636	.497	.774	9.101	117	.000

Asked about the extent to which they access a series of social platforms on a daily basis, the young people mentioned they use Facebook (with a mean of 3.00 out of a maximum of 5), Instagram (mean of 3.76), Tik Tok (mean of 2.83), WhatsApp (mean of 4.25), Twitter (mean of 1.29), and YouTube (mean of 3.78). We can see that youth is drawn mainly towards Instagram, YouTube and WhatsApp, with their visual content. For learning purposes, the respondents' choices of online platforms are WhatsApp, Zoom, Google Meet and Google Classroom. Regarding the predominant role of social media during the COVID-19 pandemic, 56.8% of respondents said the social networks mainly inform, and 33.9% they mainly misinform people, while 9.3 say they do not know. Another question was about the role of social networks in spreading false information and creating panic among the population. 0.8% of respondents say social networks never spread fake-news and create panic, 5.1% rarely, 28% sometimes, 34.7% often, and 31.4% always. This massive proportion of respondents believing social media has a role in creating panic by spreading fake-news help us conclude H2 is supported.

Another aim of this study was to assess the easiness of young people to communicate online, coupled with some personality traits. One of our hypotheses implies that the personality type affects the way young people communicate online; to be more exact, some personality traits facilitate the online communication. First, we looked at the overall easiness to communicate online (Table 3); then we used cross-tabulation and Pearson's Chi Square test (Table 4) to see if some personality features influence the easiness to communicate online.

Table no. 3. Easiness to communicate online (% , N=118).

Answers	Frequency
1 Impossible	0.0
2 Difficult	4.2
3 Not difficult, but not easy	20.3
4 Easy	30.5
5 Extremely easy	44.9

Table 3 shows that most respondents consider easy or extremely easy to communicate online (approximately 75% altogether), but 25% see this form of communication as difficult or at least not easy. Overall, these results of young people communicating easily online were also shown in the mean of responses (4.16 out of maximum 5). This might be explained by the time spent online by youth and,

as we presume, by some personality features. Therefore, we measured the optimistic attitude, the self-esteem, their own perceived charisma, the extent to which people live an active life and the friendliness on a 5 level scale and cross-tabulated the easiness to communicate online against all these personality features.

Table no. 4. Chi-Square for Personality Traits and Easiness to communicate online (N=118).

Variables	Pearson Chi-Square	Asymptotic Significance
Optimistic attitude * Easiness to communicate online	34.961	0.000
Self-esteem * Easiness to communicate online	21.704	0.041
Charisma * Easiness to communicate online	39.328	0.000
Active life * Easiness to communicate online	11.719	0.468
Friendliness * Easiness to communicate online	28.338	0.005

The results in Table 4 show that optimism (χ^2 of 34.961, $p < 0.05$), self-esteem (χ^2 of 21.704, $p < 0.05$), charisma (χ^2 of 39.328, $p < 0.05$), and friendliness (χ^2 of 28.338, $p < 0.05$) significantly affect easiness to communicate online, supporting H3. It is therefore easier for optimistic, charismatic, friendly people and those with high self-esteem to exchange messages in the online environment. The only trait that did not have a significant effect on the way young people communicate online is the degree to which they live an active life (χ^2 of 11.719, $p = 0.468 > 0.05$).

Last but not least, we studied the accessibility of developing friendships in real or in virtual life. 80.5% of our respondents appreciate it is easier to form friendships in real life and 19.5% in virtual life. Interestingly, the Spearman’s rho correlation coefficient between easiness of developing friends in real or virtual life and time spent on social media is 0.233 with a p-value of 0.011, entailing a weak correlation between the two variables. We went further with the Mann-Whitney U test to compare the responses of people that think it is easier to form friends in real life with the ones that think it is easier in virtual life based on the number of hours spent on social media. From these results, we can conclude that the number of hours spent on social media was significantly higher in the “easier to develop friendships in virtual life” group than in the “easier to develop friendships in real life” group (Mann-Whitney U of 739.500, $p = 0.012 < 0.05$). This finding implies that the length of time spent on social networks influences the attitude toward an online or virtual life, supporting H4. To better understand this choice, we followed with an open question asking to motivate the given response. Some of the most representative answers are presented in Figure 1.

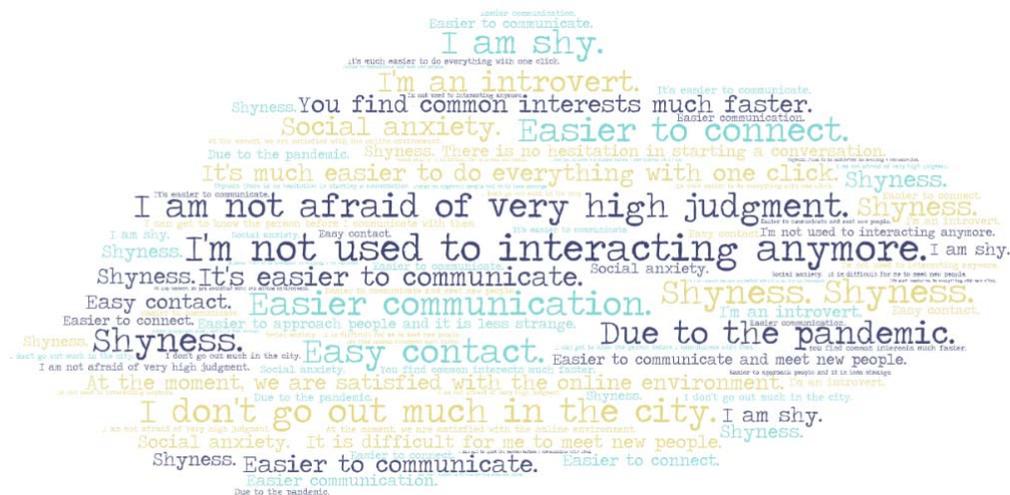


Figure no. 1. Motivations for developing friends in virtual life

The option of virtual life as an environment to develop friendships to the detriment of real interaction is mainly explained by shyness, easy communication or limited options to connect in real life.

Worrisome are some mentions of social anxiety or difficulty of meeting new people in real life. This tendency toward the virtual might create problems in the future, especially for young people, since they might become accustomed to interact in the simulated environment and refrain from involving themselves in real surroundings.

Conclusions

The COVID-19 pandemic required quick and practical solutions to continue peoples' lives which entailed using technology and online communication. Moreover, social distancing and the imposed restrictions and lockdowns have amplified the fundamental need people have to connect and socialize with others. The isolation and the loneliness felt during the restrictions have pushed people into spending more time on social platforms to socialize, work or participate in online classes. Given the fact that social distancing does not allow people to see each other and be physically close to friends, social networks were the only bridge to them. This has further deepened the gap between real and virtual; the online environment is used not only for entertainment or relaxation purposes, but also for education and socialization. Our findings show that the time spent on social media increased as a result of the COVID-19 pandemic; the time spent on social networks is correlated with people thinking it is easier to develop friends in virtual life. Social networks contributed to creating panic by spreading fake news among young people during the pandemic. Another finding is that most young people think it is easy to communicate online. We also concluded that some personality traits such as optimism, self-esteem or friendly attitude influence young people's easiness to communicate online. One limitation of this study is represented by the number of respondents; therefore, future studies should include bigger samples. Another limitation is materialized in the use of one research method, and more diverse methods should be used for data triangulation.

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Scientific System in Romania and Portugal. A Quantitative Approach

Calcedonia Enache¹ and Pedro Ribeiro Mucharreira²

¹*The Bucharest University of Economic Studies, Bucharest, Romania.*

²*Institute of Education, University of Lisbon, Lisbon, Portugal.*

E-mail: calcedoniaenache@yahoo.com; E-mail: prmucharreira@ie.ulisboa.pt

Please cite this paper as:

Enache, C. and Mucharreira, P.R., 2021. Scientific System in Romania and Portugal. A Quantitative Approach. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 889-896 DOI: 10.24818/BASIQ/2021/07/111

Abstract

This research aims to highlight the evolution of the Portuguese and Romanian scientific system in the recent decades. This article presents the process of expansion of higher education in both countries, particularly at the level of the scientific system, trying to understand how scientific research in Portugal and Romania has evolved, as well as to know the sectors that conduct this activity. In this article, the authors support their analysis using Portuguese and Romanian official statistics and from international organizations, some indicators that can clarify the volume and quality of scientific research in these two countries between 2007 to 2019, analyzing the expansion of scientific research in the post-Bologna context. The article will be finished with two unifactorial regression models analysis. The main results of the study point towards that, for the period 2007-2019, in the higher education sector, a 1% growth in R&D expenditures leads, on average, to an increase in the number of researchers by 0.18% in Romania and 1.25% in Portugal. These results may help to formulate public policies conducive to improving the state of public higher education in Portugal and Romania, especially in the financing of postgraduate and scientific production.

Keywords

Higher Education, Scientific System, Public Policies, Research, Financing.

DOI: 10.24818/BASIQ/2021/07/111

Introduction

Education and science are key factors in promoting economic growth and human development. Higher levels of investment in these sectors significantly affects the quality of life and the possibility of constant development in both a country and the international community at large. Thus, science and qualified personnel are recognized in Europe as the decisive factor for the achievement of the internationalization objectives of the educational process, that is, to make European education more competitive, dynamic and capable of ensuring sustainable growth and the employment of the population. and social cohesion (Antunes, et al., 2018).

Several authors mention the importance of education and research for the growth and economic development of countries. The expenditure on this sector must be seen as an investment. These associated costs can be lessened, in the medium and long term, by taking into account reductions in grade retention and dropout rates, the rising educational level of the population, and the consequent increase in economic productivity and purchasing power, and the reinforcement of equity and social justice, among other aspects that may generally promote economic growth and development. Many studies demonstrate the positive relationship – a spillover effect – between educational levels and rising

levels of economic growth and development, as well the social and economic development resulting from other indirect and non-monetary benefits, such as changes in fertility and birth rates, the encouragement of political participation and solidarity, as well as crime reduction. All of these represent incalculable positive externalities of education. (Mucharreira, et al., 2019a)

The development of the country as well as the improvement of the quality of the education provided requires the development of scientific research (Cerdeira, et al., 2020). For this reason, it is important to understand how scientific research in these two Member States of the European Union, Portugal and Romania, has evolved, as well as to know the sectors that conduct this activity.

The paper is structured as follows. After the introduction, a section describes the evolution of research and scientific production in Romania and Portugal. Section 3 presents the employed methodology and the data and the fourth the results of the model. Fifth section discusses the results, and the paper ends with the conclusions.

Evolution of research and scientific production in Romania and Portugal

In Portugal, in the last decades, the demand for higher education have increased continuously and significantly. The exception was in the period of economic and financial crisis that will have seen a reversal of the trend after 2015. Instead, Romania, during the economic crisis, went through a restructuring process, creating the conditions for further development on sustainable criteria (the number of employees in the public sector decreased, bank lending favored the tradable sector and the fiscal deficit eased). Thus, Table no. 1 shows the evolution of the total number of researchers in the period 2007-2019 as well as the sectors that develop it, both in Portugal and Romania.

Table no. 1. Number of researchers by sector in Romania and Portugal, 2007-2019

Years	Total		Business enterprise sector		Government sector		Higher education sector		Private non-profit sector	
	RO	PT	RO	PT	RO	PT	RO	PT	RO	PT
2007	30740	51443	7971	14457	6100	4607	16510	26703	159	5676
2008	30864	75073	6623	18206	6541	4421	17579	46456	121	5990
2009	30645	75206	6389	18126	6010	4425	18137	46717	109	5938
2010	30707	80259	6182	19235	5831	5101	18540	48677	154	7246
2011	25489	82354	4122	21191	6117	6059	15086	47017	164	8087
2012	27838	81750	5451	21471	6664	4784	15569	48007	154	7488
2013	27600	78290	5738	20621	6859	4101	14884	52827	119	741
2014	27535	78736	5848	21646	6799	4510	14743	51924	145	656
2015	27253	81005	4923	23498	7032	4620	15057	52325	241	562
2016	27801	85780	5402	26332	7043	4614	15083	54248	273	586
2017	27367	89659	4852	29410	6856	5327	15523	54307	136	615
2018	27471	96123	5119	32411	7064	5501	15111	57532	177	679
2019	27168	100823	4809	36855	7267	5839	14867	57416	225	713

Source: EUROSTAT; Romanian National Institute of Statistics

In 2019, by fields of science, the structure of researchers in the higher education sector in Romania illustrates the fact that most researchers worked in the field of engineering and technology (37.6%, down 10.8 percentage points against end 2007), followed by the fields of medical and health sciences (26.6 %, up 15.1 percentage points) and natural sciences (19.1%, down 2.6 percentage points). On the other hand, in Portugal, most researchers worked in the field of social sciences (24.6%, up 2.7 percentage points), followed by the fields of natural sciences (21.6%, down 6.3 percentage points) and engineering and technology (19.7%, down 0.2 percentage points) (Table no. 2).

Table no. 2. Number and percentage weight of researchers in the higher education sector by science fields in Romania and Portugal, 2007-2019

Year s	Total		Science Fields (%)											
			Natural sciences		Engineerin g and technology		Medical and health sciences		Agricultura l sciences		Social sciences		Humanitie s	
	RO	PT	RO	PT	RO	PT	RO	PT	RO	PT	RO	PT	RO	PT
2007	16510	26703	16.5	27.9	48.4	19.9	11.5	10.3	3.8	4.2	16.6	21.9	3.2	15.8
2008	17579	46456	5.2	21.3	44.7	16.6	15.1	15.9	4.2	3.2	24.1	27.9	6.7	15.1
2009	18137	46717	3.3	22.9	45.5	17	17.9	14.8	4.2	2.6	22.8	26.3	6.3	16.4
2010	18540	48677	2.1	22.7	47	15.8	12.3	14.5	5.5	2.7	25.8	25.5	7.3	18.8
2011	15086	47017	18.8	20.8	32.2	19.1	16.1	14	3	3.9	24.9	25.6	5	16.6
2012	15569	48007	13.8	20.5	42.4	17.6	10.4	15.2	3.6	2.9	23.5	26.1	6.3	17.7
2013	14884	52827	17.6	21.5	40.1	19.2	12.7	14.8	10.1	2.6	12.6	24.2	6.9	17.7
2014	14743	51924	10.9	21.2	40.7	19	12.2	15.1	10.5	2.6	23.7	24	2	18.1
2015	15057	52325	18.5	20.5	37	19	12.4	16.1	10.8	2.6	18.9	24.4	2.4	17.4
2016	15083	54248	19	20.6	43.4	18.8	13.8	16	10.5	2.7	11.1	24.6	2.2	17.3
2017	15523	54307	20.6	21.7	39.8	19.4	18.3	14.1	14.4	2.8	4.5	24.5	2.4	17.5
2018	15111	57532	20.6	21.5	39.4	20	22.9	13.7	5.9	2.9	8.5	24.3	2.7	17.6
2019	14867	57416	19.1	21.6	37.6	19.7	26.6	13.9	7.4	2.8	6.8	24.6	2.5	17.4

Source: EUROSTAT; Romanian National Institute of Statistics; Own calculations

In Romania, the number of scientific and technical journal articles increased gradually from 5250 unit in 2007 to 10370 unit in 2010 and then shrank to 10055 unit in 2011. Further on, it went up to 10287 unit in 2012 and 10123 unit in 2013, oscillating around the value of 10577 unit during the next five years. At the same time, in Portugal, the number of scientific and technical journal articles had an average of 12303.2 unit in the period 2007-2018, the limits of the interval of variation being between 7654 unit and 14691 unit (Figure no. 1).

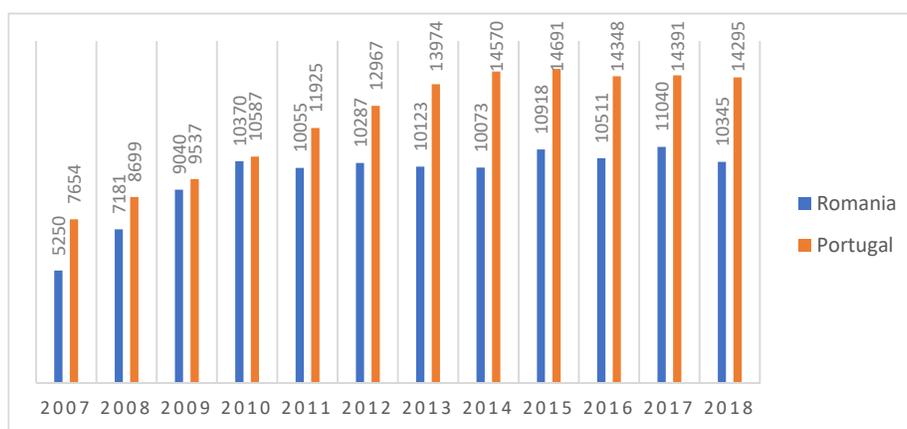


Figure no. 1. Scientific and technical journal articles in Romania and Portugal*, 2007-2018

Source: World Bank

*Scientific and technical journal articles refer to the number of scientific and engineering articles published in the following fields: physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences

According the SCImago Journal & Country Rank portal, in 2019, Portugal and Romania ranked 11th and 17th out of 28 European Union (EU) countries after United Kingdom, Germany, Italy, France, Spain or Netherlands, but ahead of Hungary, Slovakia, Croatia, Slovenia or Bulgaria (Figure no. 2).

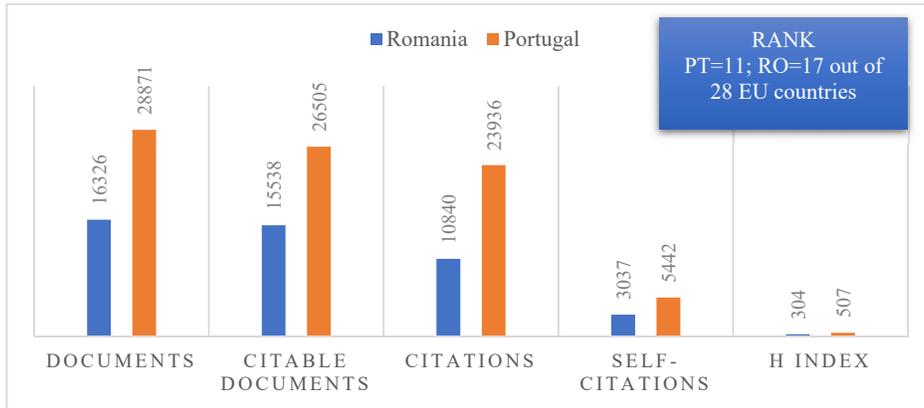


Figure no. 2. SCImago Journal & EU 28 Country Rank in 2019

Source: SCImago Institutions Rankings

In 2019, total expenditure on research and development (R&D) reached 0.48% of GDP (Gross Domestic Product) in Romania and 1.4% of GDP in Portugal (Figure no. 3).

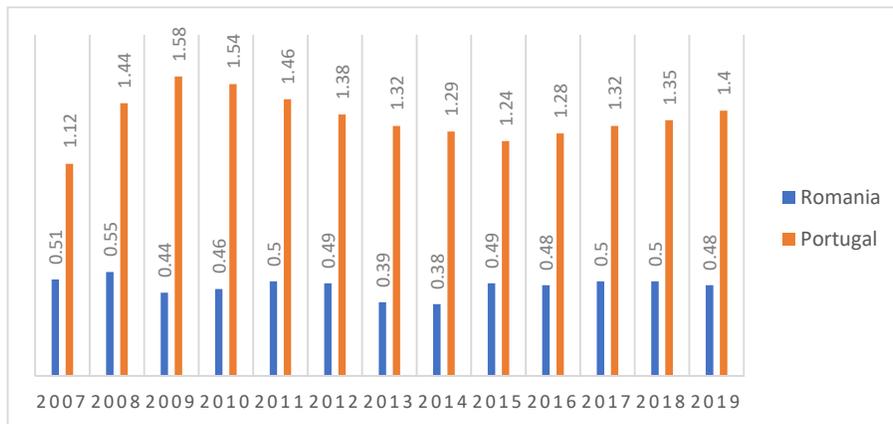


Figure no. 3. Research and development expenditure (% of GDP) in Romania and Portugal, 2007-2019

Source: EUROSTAT

According to Sokolov-Mladenović, et al. (2016), the GERD (Gross domestic expenditure on R&D) as a percentage of GDP presents research and experimental development (R&D), comprising creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society and the use of this stock of knowledge to devise new applications.

Material and method

The present study examines the relationship between number of researchers in the higher education sector (RHES) and R&D expenditure in the higher education sector (expressed in million purchasing

power standards (PPS) at 2005 prices) (RDEE) in the economies of Romania and Portugal. In this regard, we estimated two unifactorial regression models, similar to those presented by Johnston (2014) and Jula et al. (2010). The data series have a yearly frequency, cover the time interval 2007-2019 and were provided by the EUROSTAT website. The series used were expressed in natural logarithms.

Model estimation and results

The two unifactorial regression models were estimated by the least-squares method using IBM SPSS Statistics 20. The results are presented in Table no. 3 and in Table no. 4.

Table no. 3. Romania -Model estimation results

Variable	Unstandardized Coefficients		Standardized Coefficients	t-Statistic	Sig.
	B	Std. Error	Beta		
	Constant	3.792	.128		
RDEE	.180	.056	.695	3.202	.008
R		.695	F-statistic		10.253
R Square		.482	Sig.(F-statistic)		.008
Adjusted R Square		.435	Breush-Pagan		1.8607
Std. Error of the Estimate		.02648	Sig.(Breush Pagan)		.1725
Durbin-Watson		1.764	Koenker		1.7839
			Sig.(Koenker)		.1817

Source: Research data processed by authors with statistical program SPSS

Table no. 4. Portugal -Model estimation results

Variable	Unstandardized Coefficients		Standardized Coefficients	t-Statistic	Sig.
	B	Std. Error	Beta		
	Constant	.885	.387		
RDEE	1.250	.127	.947	9.827	.000
R		.947	F-statistic		96.577
R Square		.898	Sig.(F-statistic)		.000
Adjusted R Square		.888	Breush-Pagan		.0229
Std. Error of the Estimate		.02842	Sig.(Breush Pagan)		.8797
Durbin-Watson		1.322	Koenker		.0188
			Sig.(Koenker)		.8910

Source: Research data processed by authors with statistical program SPSS

The estimation of the coefficients of the models leads to the following relationships:

$$\text{Romania: RHES}_t = 3.792 + 0.18 \cdot \text{RDEE}_t \tag{1}$$

$$\text{Portugal: RHES}_t = 0.885 + 1.25 \cdot \text{RDEE}_t \tag{2}$$

The 2 models are statistically valid, as long as the calculated values of the F-test are 10.253 (Significance F: 0.008) in the case of Romania and 96.577 (Significance F: 0.000) in the case of Portugal, explaining 48.2% and 89.8% respectively of the variation in the number of researchers in the higher education sector. The coefficients of the 2 models proved to be statistically significant after the Student's t-test was applied. The Durbin Watson test (see Durbin and Watson, 1950) was used in order to examine the autocorrelation of the residues. For a number of 13 observations, an exogenous variable and a result guarantee probability of 0.95, the lower and upper critical values of the test are $d_L = 1.01$ and $d_U = 1.34$. We can state that the errors are not autocorrelated in the case of the estimated model for Romania (the value of DW is 1.764). Instead, we cannot say whether the errors are positively correlated in the case of the estimated model for Portugal (the value of DW is 1.322). The Breusch-Pagan test Breusch (see Breusch and Pagan, 1979) and the Koenker test (see Koenker, 1981) indicate that heteroskedasticity is not present in both estimated models. Besides, the results reflect that, for the period 2007-2019, in the higher education sector, a 1% growth in R&D expenditures leads, on average, to an increase in the number of researchers by 0.18% in Romania and 1.25% in Portugal.

Discussions

The R&D expenditure indicator is essential to make the transition to the knowledge-based economy that leads to increased competitiveness and well-being of the country. In the period 2007-2019, the R&D in the higher education sector in terms of percentage of GDP fluctuated between 0.05% (PPS 186.094 million) and 0.16% (PPS 433.949 million) in Romania and between 0.33% (PPS 747.44 million) and 0.59% (PPS 1296.847 million) in Portugal. It should be mentioned that, on average, in the period 2007-2018, in Romania, out of total R&D expenditure in the higher education sector, 59.63% were destined for basic research, 30.62% for applied research and 9.75% for experimental development. Instead, in Portugal, the expenditures for basic research and those for applied research represented 42.79%, respectively 42.57% of total R&D expenditure in the higher education sector. In the period 2007-2019, the number of requests for patent protection of an invention filed with the European Patent Office regardless of whether they are granted or not (PEPO) recorded a positive annual average dynamic in both Romania and Portugal (7.9% and 11.8%, the starting bases being 16 and, respectively, 71). If we correlate PEPO with GDP (expressed in million purchasing power standards), we find a positive relation with a Pearson coefficient of 0.85 for Romania and 0.93 for Portugal. These results were obtained given that in the performance sectors, the largest amounts of public funds were received by units in the government sector, followed by units in the higher education sector.

Romania records less favorable results in the area of innovation compared to Portugal, amid underfunding of the system, and the existence of an insufficient number of specialists employed in activities of research, development and innovation (Cheben, et al., 2020; Imbrișcă and Toma, 2020). It should be noted that the facilitation of the innovation by creating a stable legislative framework, by ensuring equal opportunities for access to resources, achieved through measures to reduce disparities between the eight development regions of the country and by applying qualitative criteria based on the results of prestigious international rankings in the financing of universities are important.

In Portugal there has been a gradual growth in the number of researchers and investment in the scientific system, however, underfunding is still a reality. Despite this positive development, the country remains quite far from the performance of the most developed countries in the world. In Portugal, higher education is the biggest employer of researchers, with its role growing over the last years. Conversely, the role of the State is decreasing intensely, at the same time that the role of research in the business world is growing. The growing participation of private companies in the employment of researchers, particularly in recent years, evidencing a change in the previous paradigm of higher participation of the State in scientific research (Cabrito, et al., 2019; Cerdeira, et al., 2019). In a country with huge public expenditure and which depends on the exterior such as Portugal, the funding issue is definitely a serious problem to be solved. And it is more serious when the investment is on goods or services, whose results are only perceived in the long-term. This takes place with services, such as security, health or education, which, in times of crisis, tend to be viewed as expenses and not as an investment, which generally results in their underfunding (Mucharreira, et al., 2019a; 2019b). In this context, it is not surprising that expenses with education are neglected when it is necessary to allocate the existing resources, particularly in times of depression and economic crisis. This is exactly what has been happening in Portugal with the provision of public services, including education (Mucharreira, et al. 2019a; 2019b).

Conclusions

In the present work it was evident the significant growth of the Romanian and Portuguese scientific systems.

Such growth is evidenced, among other indicators, by the increase in the number of researchers and the increase in scientific production, particularly in terms of publications in indexed journals. The study examined the relationship between the number of researchers in the higher education sector and research and development expenditure in the higher education sector in the economies of Romania and Portugal.

Thus, using two unifactorial regression models, it was found that the models are statistically valid, explaining for Romania and Portugal, respectively, 48.2% and 89.8% of the variation in the number of researchers in the higher education sector. The results reflect that, for the period between 2007 and

2019, in the higher education sector, a 1% growth in research and development expenditures leads, on average, to an increase in the number of researchers by 0.18% in Romania and 1.25% in Portugal.

Thus, this research can help better decision-making at the level of higher education policies in Romania and Portugal, so it is certain that more financial resources allocated to scientific systems will lead to more researchers and better research outputs, with positive externalities for the economy, and for the society of these two countries.

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The Attitude of Young Romanian People on Cooperative Entrepreneurship

Alina-Elena Iosif¹ and Caroline Hussler²

¹⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

²⁾ *Lyon University, IAE Lyon, Magellan, France.*

E-mail: alina.balalia@com.ase.ro; E-mail: caroline.hussler@univ-lyon3.fr

Please cite this paper as:

Iosif, A.E. and Hussler, C., 2021. The Attitude of Young Romanian People on Cooperative Entrepreneurship. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 897-904 DOI: 10.24818/BASIQ/2021/07/112

Abstract

Our paper is approaching the subject of cooperative entrepreneurship as a particular form of social entrepreneurship focused on the cooperative status of a business. The subject of cooperative entrepreneurship has still a little coverage in the scientific literature, while it is becoming more and more visible in practice. The main aim of our paper is to provide an overview of the attitude of young people on cooperative entrepreneurship in a post-communist country, namely Romania. The corresponding objectives of the paper are connected to the cognitive, affective and conative components of a common attitude model. Methodologically, we have applied a questionnaire and we have registered 95 responses. The results of our paper indicate that even though the young Romanian people have not so solid knowledge about cooperatives, they are slightly positively oriented towards the possibility of creating a cooperative as long as they are supported by a community where people are sharing similar interests and they may dispose of dedicated spaces/incubators. Based on the comfort feelings that young Romanian people experience in relation to cooperative entrepreneurship, policy-makers, academia, and cooperative representatives could react and develop the necessary tools to encourage the increasing social spirit manifested by the young generation.

Keywords

Cooperative entrepreneurship, cooperative, attitude, Romania

DOI: 10.24818/BASIQ/2021/07/112

Introduction

Entrepreneurship is a highly approached topic both in literature and practice, while research on the topic of social entrepreneurship is starting to gain more popularity both among practitioners and academia. Social economy is the third economic sector that was developed as a solution for the economic and social problems that were without solving from the side of the public and private sectors. As an exponential player of the social economy, cooperatives had developed themselves in situations where the market was inefficient to serve the demand, and where the classic enterprises were not attracted to develop their activity. Even though the cooperative subject was not so attractive in the last three decades, we are encouraged to intensify our studies as the subject is receiving increasing attention from the part of business and organizational scholars (Barin Cruz, et al., 2017). Distinct from the social economy, the concept of social entrepreneurship implies the use of entrepreneurial principles for solving social problems. When talking about cooperative entrepreneurship, as part of social entrepreneurship, the research is still at its beginnings (Bastida, et al., 2020) and various directions of research could be adopted. Our paper is contributing to the literature by studying the young people's attitude on cooperative entrepreneurship. The way this article seeks to shed light on this subject is by analysing the case of a post-communist country, namely Romania. In the communist period, the

cooperatives were considered public enterprises with management regulations established by public authorities (Petrescu, 2011), and individuals were constrained to be part of a cooperative. Nowadays, young Romanian people are manifesting a social oriented perspective (Iosif, et al., 2020; Roman and Paraschiv, 2020) making cooperative entrepreneurship an attractive choice for their careers. Another encouraging study (Țigu, et al., 2014) reveals that Romanian social entrepreneurs are motivated to adopt this position as they feel their mission is to bring changes to this world.

The main aim of the paper is to provide an overview of the attitude of young Romanian people regarding cooperative entrepreneurship, by answering the following research questions:

- What young Romanian people know about cooperatives, both in conceptual and practical terms? Conceptual direction refers to elements characterizing cooperative, and practical aspects are connected to cooperative businesses acting on the market.
- How young Romanian people feel about cooperative entrepreneurship? How challenging they find being a cooperative entrepreneur?
- What is the intention of young Romanian people in relation to cooperative entrepreneurship? Would they assume the entrepreneur position or they would like to play a more passive role in relation to a cooperative?

In the vision of answering these research questions, the paper is structured as follows: a short review of the literature regarding the attitude model, followed by aspects regarding methodology, and a section dedicated to the descriptive analysis of the collected data and its interpretation. The paper ends with a conclusion section where the main results, practical implications and limits of research are pointed out.

Review of the scientific literature

The paper is capturing the vision of young Romanian people on cooperative entrepreneurship and is answering the research questions by using a classical attitude model. After reviewing multiple definitions and models, Jain (2014) has identified the most common aspects that characterize an attitude model, concluding that it consists of three components:

- Cognitive component that is related to belief/evaluation;
- Affective component that is addressing feelings/ emotions;
- Behavioral component that is connected to response/action.

Chhabra (2021) is having a similar vision to Jain (2014), by invoking the evaluation of the consumer's attitude through the knowledge and cognitive component, the feeling and affect component, and behavioral and conative component. Further on, the connections between the research questions and the components of the attitude model are revealed.

The knowledge and cognitive component is providing information about the notoriety of the subject/product/ mark from the consumer perspective. In our particular case, through the cognitive element we are capturing what young Romanian people know/ what is their level of knowledge about our research subject, namely cooperative and cooperative entrepreneurs.

Through the feeling and affect component, the emotional approach of the customers in relation to the subject is revealed. In the perspective of our paper, we are studying how the young Romanian people feel about cooperative entrepreneurship. When analysing the affective stage, we are capturing the feelings of the respondents towards cooperative entrepreneurship through the lens of the support young people think they need for cooperative entrepreneurship versus classic entrepreneurship.

The behavioral and conative component regards the performing action plan that is responsible for making the step from the desire to action (Roman and Paraschiv, 2020). In the vision of our research, we are seeing the conviction of the respondents in connection to cooperative entrepreneurship, by asking their preference for a particular status within the cooperative.

Research methodology

The purpose of our study is to investigate cooperative entrepreneurship through the components of the attitude model, by capturing the vision of young Romanian persons on the subject. Methodologically,

the study is adopting a quantitative approach where the data were collected through a questionnaire applied among young Romanian people in the period of April – May 2020. The current paper is tackling nine questions out of the 18 questions of a more complex research carried on cooperative entrepreneurship among young Romanian people. In the next section of our paper, we are going to present the results of the questions that are connected to the classic attitude model and responding to our current research questions. The discussed questions are distributed as follows: five questions are regarding the knowledge of the respondents in relation to the cooperative entrepreneurship, responding to the cognitive stage; one question is capturing the feeling towards cooperative entrepreneurship through the vision on the needed support, corresponding to the affective stage; one question is connected to the respondents view on acting towards the cooperative entrepreneurship, related to conative stage; and two identification questions.

The study includes 95 responses from the young Romanian people, aged between 18-26 years old, 72% of the respondents declaring that they are females with superior studies. Moreover, 81% of the respondents have mentioned living in the urban environment.

Results and discussion

Cognitive element in relation to cooperative entrepreneurship

In the perspective of the cognitive element, we are checking the notoriety of the cooperative and cooperative entrepreneurship among young Romanian people, by assessing their level of knowledge on these subjects.

When asked to name at least a cooperative acting either nationally or internationally, 63% out of the total respondents have successfully nominalized at least one. More than half of the respondents have nominalized FruFru, a Romanian cooperative acting in the food industry, as a cooperative.

Another result of our study shows that the predominant sector associated with cooperative entrepreneurship is agriculture. 76% of the respondents have named agriculture as being the most dominant sector when talking about cooperatives, followed at a considerable distance by trade. Banking and energetic sectors were also mentioned, but in a very low proportion.

Each of the seven principles of cooperatives, as defined by the International Cooperative Alliance (ICA, n.d.), were included as items within the question that is checking the level of agreement of the respondents in connection to the cooperative status (Table no. 1). The principles associated with the functioning of a cooperative were evaluated by the respondents, by applying a Likert scale from 1 (strongly disagree) to 7 (strongly agree).

It can be seen from table 1 that the element referring to “open and voluntary membership” is “partially agreed” by the respondents as being a functioning principle of a cooperative, being the less popular principle of all (median 5). The highest percentages of “moderately agreement” per functioning principle of a cooperative were registered by the “democratic member control”, and the “autonomy and independence”. The “members’ economic participation”, “education, training and information”, “cooperation among cooperatives”, and “the concern for community” are the most convincing functioning principles of a cooperative into the respondents’ view, registering the highest percentages for “strongly agreement” option per item. Concluding, the “open and voluntary membership” is the principle that has the lowest connection to cooperatives into the respondents’ view (median 5), while the “concern for community” is strongly associated (median 7) to the way cooperatives are functioning.

Table no. 1. The respondents' perspective on the principles that characterize the functioning of a cooperative

Principles	1 Strongly disagree	2	3	4	5	6	7 Strongly agree	Median
Open and Voluntary Membership	2.11%	2.11%	5.26%	16.84%	33.68%	16.84%	23.16%	5
Democratic Member Control	2.1%	0%	2.1%	13.7%	27.4%	35.8%	18.9%	6
Members' Economic Participation	1.1%	0%	2.1%	2.1%	20%	31.6%	43.2%	6
Autonomy and Independence	1.1%	2.1%	8.4%	13.7%	21.1%	27.4%	26.3%	6
Education, Training, and Information	1.1%	0%	2.1%	5.3%	15.8%	27.4%	48.4%	6
Cooperation Among Cooperatives	1.1%	1.1%	3.2%	10.5%	16.8%	24.2%	43.2%	6
Concern for Community	1.1%	0%	2.1%	3.2%	15.8%	27.4%	50.5%	7

Further on, a view on the connection that respondents are making between several business brands and the cooperative status (Figure no. 1) is provided. The referred businesses within this question are all cooperatives. By addressing this question, we are checking the level of knowledge of the young Romanian people regarding certain businesses that are functioning as cooperative.

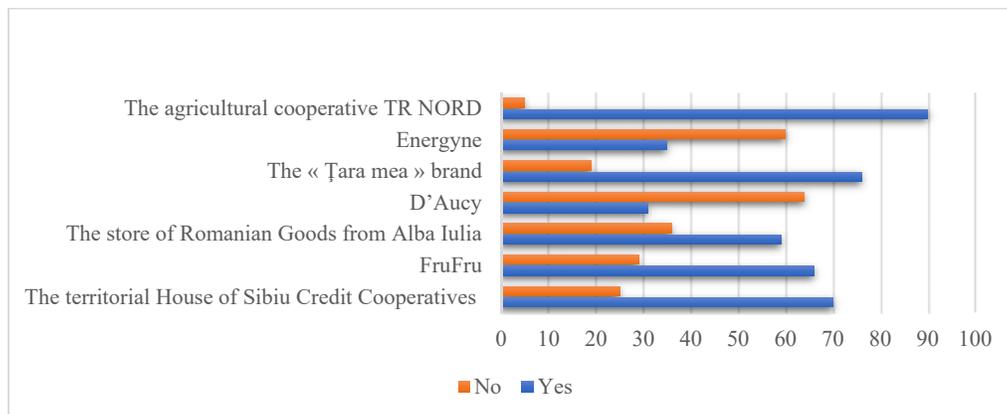


Figure no.1. The respondents' perspective on the cooperative status of the invoked businesses

In most of the cases, there are more respondents confirming that the businesses are cooperatives than the ones rejecting this hypothesis. There are also two cases that are getting out of the pattern, namely D'Aucy and Energyne, where there are more respondents that are not considering them as cooperative brands. This situation may enforce the idea that respondents are guided by the names of the brands, associating contemporary brand names with classic enterprises and less with cooperatives that "are from the past" (Iosif, et al., 2020). The cooperatives that registered the highest recognition are the cooperatives that have included in their name the "cooperative" term, such as Cooperativa Agricolă TR Nord and Casa teritorială a cooperativelor de credit Sibiu, or the cooperatives that have managed to be more visible on the market through their products, such as FruFru and the "Țara mea" brand.

The spread of knowledge among young people regarding cooperative businesses is a double responsibility, on one way the young Romanian people as consumers could be more informed, and on the other hand the cooperatives themselves as providers of products/services could invest more in their brands' awareness. Young people are invoking the need for a higher visibility on the market of the cooperatives and they are claiming the presence of cooperatives on social media (Iosif et al., 2020) in order to reach them fast.

Further on, we are accelerating on the component of knowledge regarding cooperatives among the young Romanian public by capturing their view on several statements (Table no. 2).

The highest proportion (32.6%) of the respondents are "partially agreeing" that the cooperative is an enterprise as any other, and the median of 4 is indicating a neutral position of the respondents towards this statement. In the case of the second item, 38% of respondents are "partially agreeing" that the cooperative is differentiating from the classic enterprise by its way of operating, and the median of 6 is showing a "moderate agreement" of the respondents towards this statement.

Table no. 2. The respondents' perspective regarding cooperatives

Items	1-Strongly disagree	2	3	4	5	6	7- Strongly agree	Median
It is an enterprise as any other.	8.42	8.42	17.89	22.11	32.63	9.47	1.05	4
It differs from the classical enterprise by the way it operates.	0.00	0.00	1.05	8.42	37.89	33.68	18.95	6
It differs from the classical enterprise by its legal form.	3.16	1.05	1.05	25.26	26.32	26.32	16.84	5
It differs from the classical enterprise by the initiating procedure.	0.00	0.00	3.16	16.84	27.37	28.42	24.21	6
It differs from the classical enterprise by its daily management system.	1.05	0.00	0.00	20.00	26.32	30.53	22.11	6
It has a more complex management system compared to a classic enterprise.	2.11	2.11	3.16	29.47	14.74	25.26	23.16	5

Moreover, the respondents are "moderately agreeing" (median of 6) that the cooperative is differentiating from the classic enterprise by both its "initiating procedure" and its "daily management system". Overall, the respondents are more convinced on the facts that, compared to a classic enterprise, the cooperative differs by its way of operating, its initiating procedure and its daily management system. These aspects are partially true, indicating a good knowledge among respondents, but also a potential reluctance towards the unknown.

Affective element in relation to cooperative entrepreneurship

An image on the respondents' feelings when picturing themselves putting into practice a cooperative is provided in order to highlight the affective element of the attitude model. Concretely, we are checking their perspective on the support they need for being a cooperative entrepreneur. Depending on the number of support initiatives that respondents are nominalizing as being relevant for them to enter into action, we can picture the level of comfort they have when thinking about cooperative entrepreneurship. The higher the number of support initiatives young Romanian people are invoking for cooperative entrepreneurship, the lower their level of comfort with the position of cooperative entrepreneur is.

For addressing the affective stage, we have formulated a question that is focused on the support that young people envisage they need to initiate a cooperative or a classic business (Figure no. 2). This support is translated into punctual actions that the respondents would feel necessary to help them launch into cooperative and/or classic entrepreneurship. The respondents have multiple choices for answering.

They could choose several actions as being necessary to initiate a cooperative, others for initiating a classic business, or they could mark both options or none of them.

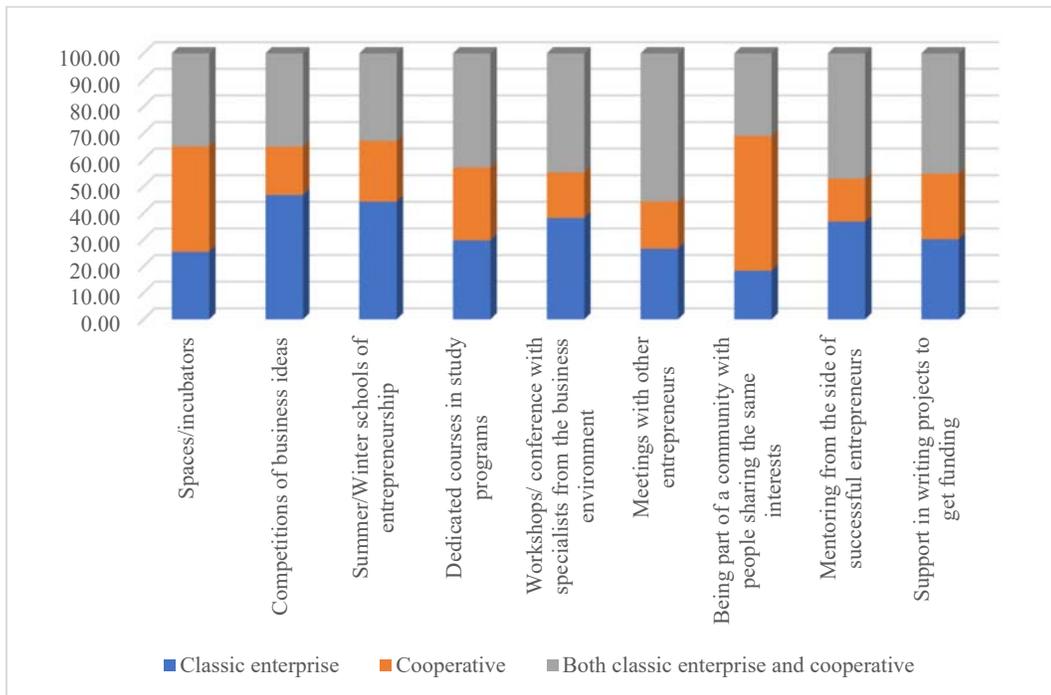


Figure no. 2. Respondents' perspectives on the support they need to initiate a classic enterprise, a cooperative, or both of them

As shown in figure no. 2, young Romanian people are feeling comfortable with the cooperative option when initiating a business, as only two support actions out of nine register a predominant percentage associated with cooperative entrepreneurship. Two of the most relevant activities that respondents find useful for initiating a cooperative are represented by the existence of spaces/incubators where the potential entrepreneurs could interact and gain confidence in this kind of governance; and the involvement into a community where people are sharing similar interests. These two activities are interconnected, namely a community could have a high potential in developing its activities into spaces/incubators or vice versa, the spaces such as incubators could generate the creation of a community focused on cooperatives. For sure, these two components are constituting a necessity for the young people that would like to feel more comfortable with the cooperative option when initiating a business.

Among the actions that the respondents find most necessary in order to support both the classic and the cooperative entrepreneurship are the “meetings with other entrepreneurs” and “mentoring from the side of successful entrepreneurs”. The two aforementioned actions are highly connected by putting a particular focus on the support that potential young entrepreneurs need from the side of more experimented entrepreneurs.

The balance between the support actions that respondents find necessary to put into practice a classic enterprise and a cooperative is equilibrated. This result may indicate that young Romanian people feel a similar level of comfort when initiating a cooperative as in the case of a classic business. This is also in line with the findings of Dabija and Băbuț (2019). The difference that is made in the vision of respondents between initiating a classic business or a cooperative refers to the particularity of needed actions: for the classic enterprise, competitions of business ideas, and the organization of summer/winter schools of entrepreneurship are prioritized, while in the case of cooperatives, joining a community and a space/incubator are essential. We may conclude that young Romania people have a

similar openness towards cooperative entrepreneurship as for a classic enterprise, only that different support actions are required.

Conative element in relation to cooperative entrepreneurship

By passing to the conative stage of the marketing, we are addressing a question that surprises the respondents' preference for a particular role within the cooperative. Addressing this question allows us to see the way young Romanian people are willing to connect with cooperative entrepreneurship by attributing themselves to a more active or passive role in relation to a cooperative. Practically, the respondents have to project themselves into the role of an entrepreneur, member, and client and express their level of agreement on a Likert scale, from 1 (strongly disagree) to 7 (strongly agree) for each of them.

The intentions of the respondents in relation to these various roles are exposed below (Figure no. 3).

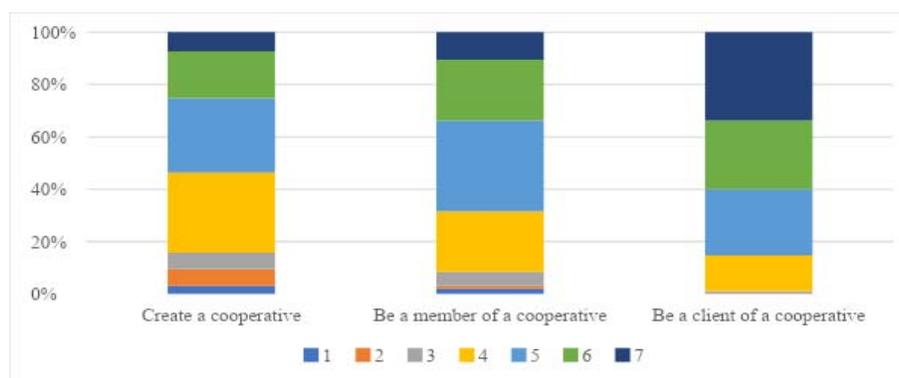


Figure no. 3. The respondents' intentions in relation to cooperatives

For the role of cooperative entrepreneur, the highest percentage (31%) of the respondents are manifesting a neutral attitude, followed by the "partially agreement" option that registered 28.4% of the answers. In the case of being a member of a cooperative, the highest percentage (35%) was associated with "the partially agreement" option, followed by the "neutral" and "moderately agreement" variants that have similar shares of 23.16%. When approaching the role, the respondents are moderately agreeing to be clients of a cooperative (median 6), and the higher percentage of 34% of the respondents are strongly agreeing being clients of a cooperative. Concluding, the respondents are showing a larger interest in supporting the cooperatives as clients, and even as members, and less being initiators of a cooperative.

Conclusions

Approaching entrepreneurship in connection to cooperative is a relatively new subject into the scientific literature. Moreover, our paper proves its originality by addressing the subject of cooperatives into a country that has a controversial history in relation to the subject. The main contribution of our paper consists in picturing the attitude of young Romanian people on the subject of cooperative entrepreneurship. The attitude is studied through its cognitive, affective and conative components that are captured through a questionnaire applied to the target group. The results of our paper indicate that even though young Romanian people have a fragile knowledge about cooperatives, they are not rejecting the possibility of creating a cooperative as long as they could find support into a community where people are sharing similar interests. Another encouraging result shows us that the respondents are feeling comfortable about initiating a cooperative as much as a classic business.

Our work is useful for the representatives of the cooperatives that could do more efforts towards increasing the popularity of their businesses among the young Romanian people that have almost no knowledge regarding the cooperative brands. Moreover, the authorities could be encouraged by the

positive feelings and intentions of the respondents towards cooperatives, and develop schemes, responsive policies and programmes that could support and promote the cooperative business model. In addition, various actors of the society could develop together solutions for covering the need of dedicated spaces and communities expressed by young Romanian respondents to encourage cooperative entrepreneurship.

Our research has its limits represented by the narrow number of received responses, but an extension of the study, even by surprising the attitude towards cooperative entrepreneurship into another country, is envisaged.

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Food Consumption in the Context of Covid-19 Pandemic: Romanian Market Analysis

Roxana Procopie¹, Magdalena Bobe², Robert Bumbac³ and Smaranda Giușcă⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: roxana.procopie@com.ase.ro; E-mail: magdalena.bobe@com.ase.ro;

E-mail: robert.bumbac@com.ase.ro; E-mail: smaranda.giusca@com.ase.ro;

Please cite this paper as:

Procopie, R., Bobe, M., Bumbac, R. and Giușcă, S., 2021. Food Consumption in the Context of COVID-19 Pandemic: Romanian Market Analysis. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 905-914
DOI: 10.24818/BASIQ/2021/07/113

Abstract

The Covid-19 pandemic and the measures taken to reduce the virus spreading have left their mark on many sectors of activity, including the food industry. In order to better understand the main changes in eating behavior and to identify the factors that contributed to changing the eating habits in this atypical context generated by the pandemic, a secondary analysis of statistical data on food consumption in Romania was performed. The data taken into account were those available on the Euromonitor International platform as well as in other reports published on this topic. The analysis of the values registered in Romania in 2020, compared to the pre-pandemic period (2015-2019) and to the pandemic and post-pandemic estimation (2021-2025) highlighted the orientation of consumers towards essential foods, implicitly the increase of vegetable and meat consumption, and a decrease in the consumption of fruits, sugar and sweeteners. Moreover, the study shows a growing awareness of the importance of health and quality issues in food choice, of the increasing importance of home delivery in the purchasing decision, all in the context of a maintained price sensitivity. The possible practical implications draw our attention to agri-food businesses' need to adapt to current socioeconomic realities, in an attempt to understand the new purchasing behaviors and to meet the current food consumption requirements of the population.

Keywords

Food consumption, packaged food, fresh food, changes, estimates, Covid-19 pandemic, consumption behavior, Romanian market.

DOI: 10.24818/BASIQ/2021/07/113

Introduction

With its place between objectivity and subjectivity, eating behavior plays an essential part both in personal health as well as population health, given that current patterns of food production and consumption have a major impact on the food system and its sustainability (Janssen, et al., 2021).

Eating behavior is influenced by the level of culture, which is based in turn on the level of education and the capacity for analysis, systematization and interpretation of knowledge. While economic and utility considerations are the easiest to identify as having a part in guiding the eating behavior, traditions, beliefs, habits, fashion, attitudes and personal experiences also play an important part in guiding it. On the other hand, eating behavior can undergo significant changes under the impact of unforeseen situations, such as the case of the COVID-19 pandemic, which brought major changes in all sectors of activity including the food system (PricewaterhouseCoopers, 2021).

In Romania, the pandemic impact on incomes, the labor market uncertainty, coupled with the psychological effects on consumers (e.g. cutting down on non-essential expenditures) and restricting the activity of the hospitality sector are factors that contributed to changing the buying and consumption behavior of the population in 2020 (Competition Council Romania, 2020). One can observe how the patterns of the Romanian consumer's behavior are more and more similar to those of consumers in developed countries such as Germany, Denmark, France or the USA. Specifically, the change in the pattern of consumption, also observed in the evolution of food sales, has been achieved in the sense of increasing demand for staple foods, especially non-perishable foods, and also an increase in demand for pharmaceuticals, amid movement restrictions and economic uncertainty. At the same time, more and more consumers have rediscovered the method of preparing food in the household (Sandi Wachyuni and Wiweka, 2020).

Review of the scientific literature on changes in food behavior due to COVID-19 pandemic

Culture reflects the distinct characteristics of a society in spiritual, material, intellectual and emotional terms (UNESCO, 2001), and the appreciation of cultural behavior involves the evaluation of both the activity in society and the way of eating. Eating behavior includes a series of innate reflex reactions (instincts), as well as reactions acquired during life through experience in response to internal or external stimuli that require food intake. Thus, eating behavior translates into performing certain physical acts, aiming at the intake of nutrients, in the form of food, whose meaning is much more complex than that of the nutrients they contain.

From a conjunctural point of view, the health crisis generated by Covid-19 caused unexpected changes, in a short time, in the behavior of food consumption, changes signaled by global and local studies and research. Consumer preferences of people around the world have changed. After the initial period of non-discriminatory food storage, observed in many countries following the introduction of restrictions, the impact of COVID-19 on the eating habits of the population varied according to individual and household attitudes and experiences (Borsellino, Kaliji and Schimmenti, 2020).

A change in eating-related buying behaviors is noticeable - studies (McKINSEY and Company, 2020) show that people around the world have tried different buying behaviors and expressed a high intention (65% or more) to maintain these behaviors in the future. However, in countries where the economic shock was less felt (Germany and Japan, for example), the change in purchasing behavior was less pronounced; a national study for three developed European countries - Denmark, Germany and Slovenia - (Janssen, et al., 2021) highlighted that these were caused by the lockdown and personal factors such as anxiety related to COVID-19, loss of income, household composition and gender. These results help identify populations that are particularly vulnerable to nutritional changes during the pandemic and the ways that might minimize the negative effects of the pandemic on food consumption.

More and more consumers are manifesting unhealthy eating behaviors. According to Simone, et al. (2021) the most common unhealthy eating behaviors, associated with lower stress control, greater depressive symptoms and moderate or extreme financial difficulties are: eating and snacking as a nervous reaction; increasing food consumption in general; decreased appetite and reduced food intake; eating to cope; increasing the number of eating disorder symptoms (Simone, et al., 2021).

Gradually, people gave up the initial stockpiling behavior. The COVID-19 pandemic caused blockages throughout the agri-food system, influencing food supply chains from primary production, processing, transportation, marketing to consumption. These demonstrated the resilience of the agri-food system, with stores constantly supplied and meeting the increased demand, so that the initial stockpiling behavior disappeared (OECD, 2020a). This trend manifested itself not only in European countries, but also in the United States, where, at the beginning of the pandemic, consumers tended to buy more food than usual, a trend that declined later (Chenarides, et al., 2021).

In what concerns the choice of new brands and of the place of purchase, consumers reconsidered the factors that influenced their decisions in certain respects. Consumer price sensitivity remains the main reason why they are trying new brands as well as new shopping places. In addition to price, convenience and availability are increasingly important factors in choosing the place of purchase, while the quality and the desire to support local companies are mentioned as the main drivers of consumer decision (McKINSEY and Company, 2020).

Another trend specific to this period is the increase in the share of food consumed at home to the detriment of those consumed outside the home (in hotels, restaurants, catering and cafes). COVID-19 has led to a drastic decrease in consumer demand for food consumed in the hospitality network, which requires major changes in the way food supply chains operate (OpenTable, 2020). In Germany and Slovenia, 22% of the respondents in a study by Janssen et al. used to eat at cafes and restaurants at least once a week before the pandemic, which also meant a shift to online orders (Janssen, et al., 2021). At the same time, grocery stores have seen an average increase of over 30% in the online customer base in different countries (McKINSEY and Company, 2020) explained by the fact that consumers tried to avoid shopping at the beginning of the pandemic, when clear rules of protection (such as wearing masks, stickers for distance, etc.) did not yet exist (Chenarides, et al., 2021). Thus, online food orders - both nationally and by food category, have increased as consumers in most parts of the world spend more time at home. In Europe, the COVID-19 pandemic has drastically changed the way food is ordered online, as online delivery expands choice and availability, allowing consumers to order from more and more diverse locations through the use of more and more applications and delivery platforms. Thus, the value of the Europe Online Food Delivery market in 2020 was USD 13.8 Billion, and is estimated to reach the level of USD 20.27 billion by 2026 (Research and Markets, 2021b). Statistics show that revenues from the global online food delivery market increased from USD 107.44 billion in 2019 to USD 136.4 billion in 2020. The upward trend will continue in the coming years, with this value estimated to increase to USD 182.3 billion until 2024 (Research and Markets, 2021a; Business Wire, 2021).

Global research published by McKinsey and Company (2020) reveals that the impact of the pandemic is felt differently in different countries, despite the general uncertainty. In most countries, consumers redirect their spending towards the purchase of essential food and household products, to the detriment of discretionary spending such as travel and clothing (McKINSEY and Company, 2020). It can be said that the global spread of the SARS-CoV-2 virus marked the last period (2020-2021) from an economic and social point of view and strongly impacted both developed and emerging or developing economies.

Research methodology

In order to identify the main changes generated by the Covid-19 pandemic, an analysis of the secondary data identified in specialized reports was performed. Collected data was available from McKinsey and Company, Boston Consulting Group, PricewaterhouseCoopers, Ernst and Young, Competition Council, Research and Markets etc. as well as data provided by Euromonitor International. Specifically, the quantitative data on food consumption in Romania in the period 2015 - 2020 and the estimated data for the period 2021 - 2025 (published on the Euromonitor International Passport platform) were interpreted, making a comparison between the trends and values recorded until 2019 and those recorded after 2020.

The main focus were the differences between Packed Food vs. Fresh Food as well as the evolution of the main categories of Fresh Food products. Euromonitor International defines Packaged Food as packaged and prepared foods and includes both retail sales (all shops, excluding hotels, cafes, restaurants, canteens, etc.) and foodservice (restaurants, fast food, home-delivery, takeaway, cafe-bars, street kiosks etc.). At the same time, Fresh Food refers to all unprepared and unprocessed foods whether or not they are packaged (including packaged dried fruits or raw sugar), regardless of the distribution channel (including retail as well as Foodservice or institutions) as long as they are meant for home preparation and consumption. The total sales volume of these product categories is referred to as market size. The steps followed in conducting this research were: (1) identifying the main food changes identified internationally in the literature and the reports made by companies in the field; (2) extracting and analyzing relevant statistical data on food consumption in Romania; (3) understanding the factors that contributed to these changes; (4) identifying the main changes in food consumption in Romania and globally.

Results and discussion

In Romania, as in other European countries, not only the crisis but also the measures taken to limit the spread of the virus have left their mark on many sectors of activity and imposed interventions that have led to many changes in people's consumption preferences. From the analysis of the data regarding

packaged vs fresh food (Figure no. 1) it can be seen that the year 2020, the year of the Covid-19 crisis, did not bring major changes regarding the growth trend of packaged and prepared foods. A possible interpretation in this sense could be that the losses registered by the decrease of the Foodservice sector were compensated by an increase of the quantity of products prepared in the Retail sales sector, people having to find alternatives for the consumption of ready-to-eat foods to eat at home or through the increased use of online platforms for home delivery of ready-to-eat food. The same cannot be said for fresh food, which has seen a significant increase in 2020 compared to future growth estimates. This phenomenon can be justified by the forced increase of food consumed at home to the detriment of food consumed away from home, as was the case before the pandemic. Other factors that have influenced this increase may be a greater concern for health and, in some cases, an increase in the time available for better planning, preparation and consumption of natural foods. Cooking at home has led to an increase in the consumption of staple foods largely included in the fresh food category. In Romania's case, the significantly higher share of the fresh food category compared to packaged food is also explained by the share of food products of 33% of total consumer spending (compared to the European average of approx. 16%), a situation that influences the structure of the consumption basket (Competition Council Romania, 2020).

As seen in Figure no. 1, the gap between Packaged and Fresh Food is expected to gradually narrow by 2025, as this gap is expected to narrow and as activities and lifestyles will return to their period-specific normality before the Covid-19 crisis.

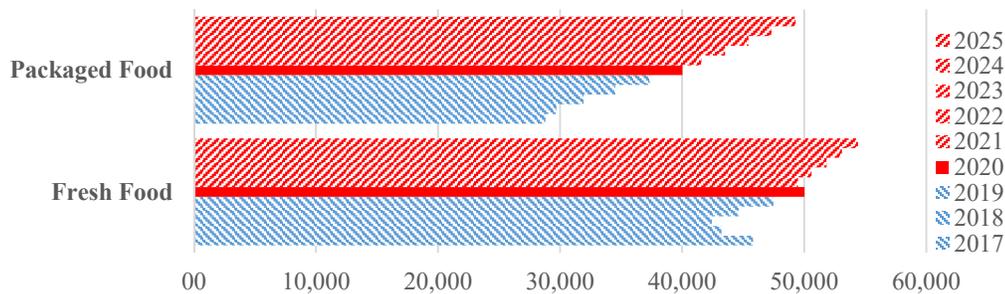


Figure no. 1. The Romanian Food Market Size before and after COVID-19 pandemic (Fresh Food vs Packaged Food, current prices RON million)

Source: Own representation based on data from Euromonitor International.

An increase in the volume of food purchases can be observed, and the increase is more accentuated in the case of fresh food products, with an obvious migration to local products to the detriment of imported ones, as shown by the study conducted in Romania by Ernst and Young (Carstoiu, 2020). To better understand the structure of the consumer basket and more precisely which are the types of products in the Fresh Food category that contributed to this increase in 2020, the changes registered for the main products were analyzed (as seen in Figure no. 2). Thus, it can be said that, in Romania, in the case of Fresh Food type foods, in the case of Fresh Food type foods, the Covid-19 pandemic led to:

- a change of trend (for the period 2020-2025 vs the period 2015-2019):
 - in the *negative* in the case of starchy roots, sugar and sweeteners, fish and seafood;
 - respectively in a *positive* sense for products in the vegetables and meat category;
- *an annual increase* (2020 vs. 2019) in the consumption of vegetables, meat, nuts (excluding from this category fried or peeled nuts, as well as those used for flavoring beverages and extraction of oil), pulses (especially dry beans, peas and other pulses);
- *an annual decrease* (2020 vs. 2019) in the consumption of starchy roots (such as potatoes, cassava and other roots), fruits, sugar and sweeteners (excluding those used for industrial processing), eggs, fish and seafood.

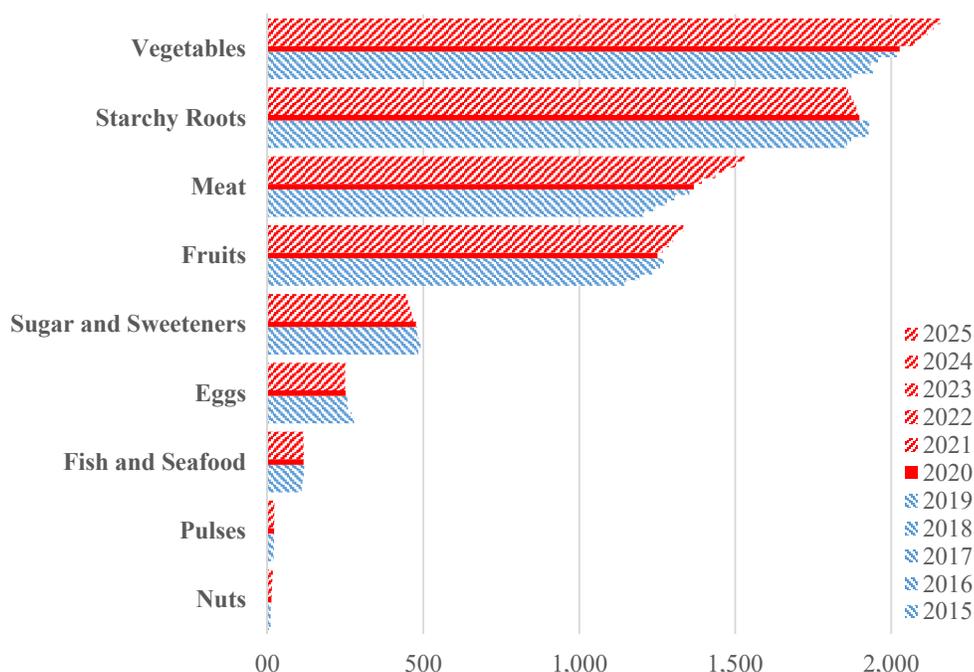


Figure no. 2. The Romanian Food Market Size before and after COVID-19 pandemic (main food categories, total volume in thousand tonnes)

Source: Own representation based on data from Euromonitor International.

These variations are also confirmed by the values recorded in Table no. 1, which provides a detailed perspective on the percentage changes in quantity consumed from one year to another. The use of different colors helps us understand whether the variation is an increase or decrease and its amplitude. One can easily identify the main changes that occurred in 2020, in terms of food consumption in Romania, compared to the previous year and the estimation of their variation for the next period, until 2025.

Table no. 1. Changes in the Romanian Food Market Size – main categories (%)

Category	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Eggs	-1,10%	-2,41%	-4,68%	-1,51%	0,75%	-2,30%	-0,64%	-0,12%	0,00%	0,16%	0,28%
Fish and Seafood	1,57%	2,64%	2,13%	1,57%	0,77%	-1,53%	0,52%	-0,52%	-0,35%	-0,17%	-0,09%
Fruits	-1,73%	3,87%	3,43%	2,02%	1,02%	-1,67%	1,46%	1,46%	1,11%	1,15%	1,32%
Meat	2,37%	3,06%	3,09%	1,97%	3,49%	1,06%	1,90%	3,10%	2,35%	2,23%	1,87%
Nuts	1,02%	2,02%	0,99%	0,98%	16,50%	3,33%	8,06%	6,72%	6,99%	6,54%	6,13%
Pulses	2,09%	2,05%	3,52%	0,97%	1,92%	0,47%	-0,94%	1,42%	0,93%	1,39%	1,37%
Starchy Roots	0,97%	0,72%	2,96%	-0,16%	0,30%	-1,66%	-0,28%	-0,24%	-0,44%	-0,48%	-0,51%
Sugar and Sweeteners	0,17%	1,45%	-0,88%	-1,17%	-0,06%	-0,90%	-1,89%	-0,99%	-1,34%	-1,29%	-1,31%
Vegetables	3,04%	3,64%	-0,38%	1,23%	3,12%	0,43%	2,39%	0,98%	0,98%	0,95%	0,95%

Source: Own calculation based on data from Euromonitor International.

Among the series of changes noticed are:

- a *significant increase* in the consumption of nuts, a trend that continues since 2019, largely justified by a significant increase of investments and by a development of companies in this field of activity, implicitly of the food offer in this category;
- an *increase* in meat consumption, but this trend has been recorded before and continues after the Covid-19 pandemic, which can be explained as a general situation in developing countries;

- the *decrease* in fruit consumption only in 2020 is an atypical change in the general variation of this indicator, possibly explained by the increase in consumption of frozen and canned vegetables as well as disruptions in the availability of certain categories of foods caused both by labor problems and by transportation problems - especially in the case of perishable products which generally have small stocks;
- a *decrease* in the consumption of sugar and sweeteners, which indicates a greater attention to the products consumed and the tendency of the population to focus on basic products and a reduction in the consumption of non-essential foods which include most of the products containing sugar or sweeteners, a trend estimated to be maintained until 2025;
- a *decrease* in starchy roots mixed with a slight increase in vegetables, explained by an increased interest in fresh products with higher vitamin content.

These causes only partially explain the identified changes, as it is difficult to differentiate between consumption patterns within a category or even between different product categories, and the variance can be attributed to factors that cannot be easily identified or controlled.

Understanding the factors that contributed to about reshaped consumer food behavior: factors related to Covid-19

With its rapid evolution, the medical crisis caused by Covid-19 brought many changes in people's lifestyle. The perceived level of risk and anxiety generated by the pandemic had significant effects on food consumption (Janssen et al., 2021). A study by PricewaterhouseCoopers suggests that some of these changes will have long-term effects on consumers' purchasing behavior (PricewaterhouseCoopers, 2021).

Financial, economic and logistical constraints have become relevant in understanding the influence of the coronavirus pandemic on food purchasing and consumption behavior in general (Borsellino, Kaliji and Schimmenti, 2020). Modeling the eating behavior is thus the result of combining known factors - related to the individual and the environment - with unpredictable factors, such as the Covid-19 pandemic. Individual factors and personal differences, such as a greater emphasis on health or convenience, are always in competition with the body's requirements for nutrients. In turn, individual factors are more influenced by environmental factors (which are given increasing importance today taking into account the consumers' quality of life and their ability to adapt) than by the ability to fulfill the physiological and metabolic needs. Moreover, environmental factors influence nutritional behavior through effects on food production and availability.

According to the analysis made in the previous chapter, most of the changes identified were caused by contextual factors, of an objective and subjective nature, being generated by conditions and circumstances which, at one point in time, influence the eating behavior. More interesting to note is the fact that this type of factors has the ability to reshape consumer behavior in the medium and long term, such as:

- lower accessibility to food - the Covid-19 pandemic both influenced the agri-food system, which proved to be resilient, and led to a decrease in the income of many socio-professional categories. Thus, the main risk to food security is not necessarily related to the availability of food but also to the convenience and the consumers purchasing power. A number of precise and flexible social policies are essential in this regard in order to avoid increasing hunger and food insecurity, especially in developing countries and for vulnerable categories of consumers (OECD, 2020a).
- adapting the retail sector to new food consumption trends - transferring the volume of food consumed away from home to the retail sector is not easy, involving both logistical challenges, but also adjusting to home consumption patterns that are different from those previously practiced away from home (OECD, 2020b); in Romania, the short food chain has been replaced by direct partnerships - direct trade relations between retailers and agri-food producers for at least 12 months and a waiver of the retailer's obligation to supply the short food chain with at least 51% of the volume of goods on the shelf in the case of products such as dairies, bakery products, eggs, meat, vegetables, fruits, honey - republished Law no. 321 of October 15, 2009 (Romanian Parliament, 2020).

- changes in the structure of retail products - sales of frozen and packaged food have increased dramatically. After a spectacular initial increase (of up to 63% in France and 56% in Germany), the retail demand for frozen or packaged products remained about 15-20% higher than usual (Boston Consulting Group; IRI Growth delivered, 2020).
- frequency of food purchases decreased significantly during the pandemic compared to the previous period - some people partially replacing fresh food with frozen and canned food.
- declining incomes due to the pandemic had different effects on the changes in food consumption: in Slovenia, there was a decrease in the consumption of fruits and vegetables, ready meals, alcoholic beverages and an increase in the consumption of bread. Opposite trends were observed in other countries: in Denmark, the consumption of sweet snacks and alcoholic beverages increased; in Germany, the consumption of frozen foods and ready meals has increased (Janssen, et al., 2021).
- changes in the availability of food supply in stores - delayed deliveries due to restrictions imposed led to reduced availability or even unavailability on the shelf of certain categories of products; in the United States, studies regarding the behavior and consumption of groceries during the first wave of the pandemic caused by COVID-19 show that, due to depletion of stocks in stores, consumers were buying food that was available on the shelf (Chenarides, et al., 2021). In

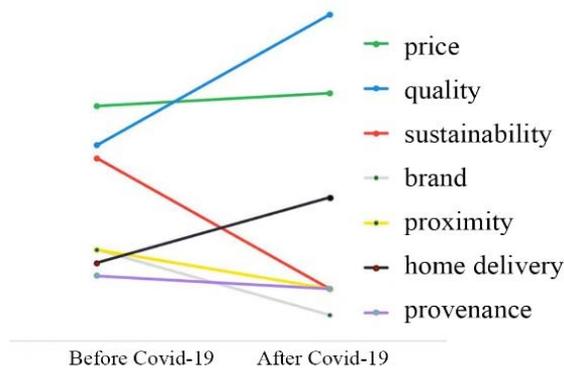


Figure no. 3. Acquisition criteria before and after the beginning of the pandemic in Romania

Source: Carstoiu, Ernst and Young 2020

- Romania, retailers have tried to adapt by placing additional orders, streamlining stocks of sensitive products, changing internal flows and those made with suppliers, accepting batches of products with shorter shelf life, increasing the supply of local food. The ability to respond to major changes in demand is conditioned by the nature of the products, for example vegetables and fruits have a low level of stocks relative to the sales volume, while commodities have significantly higher stocks (Competition Council Romania, 2020).
- the increasingly important role of food quality in the consumption decision - according to a Ernst and Young study, considerable changes were found in terms of purchasing criteria in Romania, as seen in Figure no. 3, quality becoming the main factor taken into account, with the largest increase in importance during the pandemic, of 66%, followed by price as a level of importance. The possibility of home delivery also registered a significant increase, with more than a third of study respondents preferring to order food online with home delivery. Criteria such as sustainability, brand, proximity and provenance have decreased in importance in the food purchasing decision (Carstoiu, 2020).

Summarizing, we can say that the changes in food consumption registered on the Romanian market are, with small differences, in line with the trends manifested on the global market, as shown in Figure no. 4.

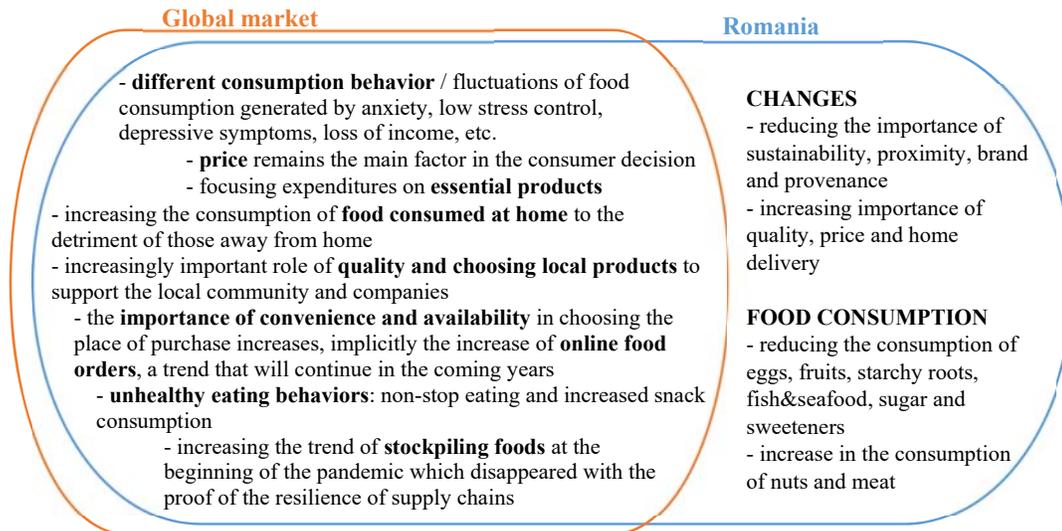


Figure no. 4. Summary of changes in food consumption preferences generated by Covid-19

Source: Own representation based on literature review and secondary data analysis

Conclusions

The analysis of the changes generated by Covid-19 on food consumption preferences in Romania highlighted an increased interest towards essential foods and implicitly a higher increase in Fresh Food consumption compared to Packaged Food, similar to the global trend. An increased importance placed on food quality and delivery methods can also be observed, with the convenience of online orders becoming an important factor in the purchasing decision. At the same time, there was an increase in the interest in consuming local products and the intention to support the community and the companies operating locally. For each type of food, the level of consumption before and after the beginning of the pandemic was compared and, in the case of Romania, there was an increase in consumption of vegetables, meat, nuts, pulses and a decrease in consumption of starchy roots, fruits, sugar and sweeteners, eggs, fish and seafood. What is interesting to note is that much of the current changes in consumer behavior are predicted to continue in the future.

Eating patterns, influenced by pandemic factors, are based on the three components of human-food interaction: (1) personal component - based on elements characteristic of the individual's physical, emotional, aesthetic, economic and social environment, factors related to time, income level, skill, information and education; (2) the national component - which reflects both food culture and education at the national level with consumption habits and food traditions, as well as the demand-supply relationship; (3) the international component - through the effects induced by globalization and global economic interests. The realities thus identified during the pandemic must be wisely exploited by producers and retailers to meet consumer demand, to design effective strategies based on innovation, design and improving product quality. The pandemic generated by COVID-19 can lead to the redesign of a flexible and resilient agri-food system, facilitating the transition to more equitable partnerships between farmers, producers, retailers and consumers, to more sustainable production, supply and consumption patterns.

In what regards the limitations of this research, we acknowledge that, despite the low occurrence of such an impacting and disruptive worldwide phenomenon like a pandemic, the analysis stands as proof of how the consumer's eating behavior can be influenced both in the short and long term even if the factor causing the disturbance is not directly related to the food sector. In this also resides the replicability of the analysis for various other events. Future research can revisit the analysis by comparing the estimated figures with the future reality.

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Success Factors for Digital Sales Development in B2B Sales of Products Requiring Explanation

Jörg Bothe¹, Pablo Valentin Weiss² and Bianca Ioana Trifan³
¹⁾²⁾³⁾ Bucharest University of Economic Studies, Bucharest, Romania.
E-mail: joerg.bothe@gmx.de; E-mail: pablo.weiss@gmx.de
E-mail: bianca.dumitr@gmail.com

Please cite this paper as:

Bothe, J., Weiss, P. and Trifan, B.I., 2021. Success Factors for Digital Sales Development in B2B Sales of Products Requiring Explanation. In: Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp.915-920
DOI: 10.24818/BASIQ/2021/07/114

Abstract

The article focuses on the strategic-operational success factors that make digital sales development possible. For this purpose, different elements are combined into a structured approach. The individual elements look at the opportunities as well as the risks of digitalisation in business-to-business sales with products that need to be explained.

Keywords

Digitalization, B2B Sales, Sales Management, Sales Development, Success Factors.
DOI: 10.24818/BASIQ/2021/07/114

Introduction

The current situation of increasing international competitive pressure, technological change and disruptive market changes make it essential for companies to adapt to the changed environment as quickly as possible (Marquardt, et al., 2018). The changes are not only limited to companies, but also encompass sustainable development in society as a whole (Feroz, 2021). In most companies, the key result driver here is sales, especially in the business-to-business (B2B) sector with products that require explanation (Bothe, 2021). For these reasons, the work of sales is facing enormous changes. Firstly, digitalization opportunities in sales must not be overlooked; secondly, caution is advisable in the result-sensitive area of sales in order to avoid long-term collateral damage. The requirements due to the special characteristics of a digitalisation process are very high. Many companies fail in solving problems not only due to the technical requirements, but also in the permanent implementation in the daily business. These special requirements, combined with the high impact on results of a failed process in result-sensitive sales, make a structured and fast process all the more necessary (Mingaleva, et al.). Digitalisation in sales requiring explanation can not only influence existing processes and organisational forms, it can also change the entire business model of the company. (Rachinger, et al. 2018) The focus should not only be on externally visible changes such as different office or team organisations of large successful digitalisation winners such as Apple, Google, Facebook.

Literature Review

Success in selling products that require explanation requires a close personal relationship between sales and customers. In combination with technical competence, this results in different positioning for success, with all implications on results. (Grimm, 2001, Bothe, 2019, Mingelva, et al.). Efficient and successful sales management takes into account the most important success factors in sales (Bothe

2019) and result options as the most important starting points for the orientation of the digitalisation strategy. (Bothe, 2020) Concentrating on the latest app or software programmes also obscures the view of the importance of a highly developed strategic corporate management that understands sales as the core of value creation (Grab, Olaru and Gavril, 2019) (Ritter, 2019). The creation and use of new digital opportunities changes the competitive opportunities through greater degrees of freedom for the company and therefore its business strategy (Kurtz, et al. 2021,).

Research Methodology

The present topic identifies the success factors for successful digital sales development in the B2B sector. The study refers to the goal of sales development using digital technologies, i.e. focused on strengthening sales success and not on specific technology itself (Ritter and Pedersen, 2019). In addition, the study highlights the important aspect of risks associated with digitalisation, for example with regard to the possible loss of the current sales positioning and the resulting business consequences. The article based on a desk based literature review.

Success factors for digital sales development in B2B sales of products requiring explanation

In the sale of products and services that require explanation, customer confidence in the performance of the offering company is of decisive importance. An important decision criterion for customers is that the solution offered is also the best possible fit for the customer's existing problem. A technical solution that has a considerable positive differentiation potential compared to competitors and can be communicated to the customer by the sales department is of decisive importance in the operative business. If the technical differentiation potential of the company is low compared to competitors, the sales positioning, the options for action that have an effect on results and the three sales success factors become all the more important. (Bothe, 2019)

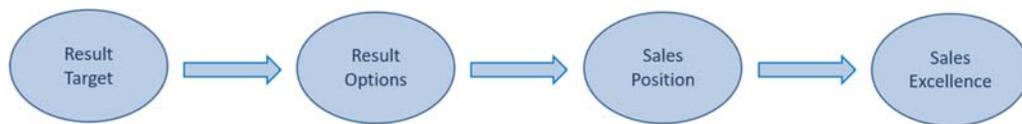


Figure no. 1. Strategy Sales Development in B2B Sales of products requiring explanation

Source: Authors' own work

Result-oriented Options for Action

Ensuring the success of the entire organisation is the most important task of sales management. A profit-oriented sales development strategy must therefore be based on one or more result factors. (Bothe, 2020, p. 117) The profit equation offers the right options for action for sales and a possible complete or partial digitalisation for the envisaged goal of change.

$$\text{Profit} = \text{Turnover} - \text{Costs}$$

Equation 1: Profit

This equation is composed of the factors: quantity, price, costs and contribution margin, as the difference between price and costs. Another option for action is operational excellence, which includes the key success factors of sales management. (Bothe, 2019)

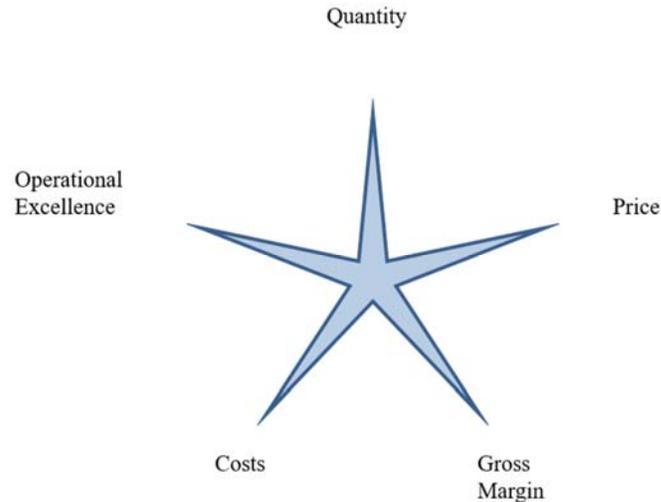


Figure no. 2. Result oriented action opportunities

Source: Bothe, 2020

A sales development needs a clear result target, no matter if it is a full digitalisation, a partial digitalisation (hybrid sales) or a pure analogue one. In choosing a fully digital or hybrid sales approach, sales leader must consider worthwhile scaling effects and take into account the use of (partial) digitisation while weighing the associated risks (Weiss and Grab 2020). The next step is to decide which result-oriented factor should be expanded to achieve this goal. Increasing volume requires a different approach than a pure price strategy. Better customer retention or up-selling programmes to increase the contribution margin also require differentiated approaches. Relative to the number of employees, sales is a significant cost factor. A result target can therefore also be to achieve the same turnover with lower sales costs. The considerable influence that sales also has on costs in the company, e.g. through the information quality of the order forecast, is an independent result-oriented option for action. The selection of the strategy and the options for action then determines the operational implementation and the selection of the digitalisation techniques. (Bothe, 2021)

Sales Positioning

Every sales organisation with products that require explanation has a certain positioning in relation to customer proximity and technical competence. The matrix formed from these two factors creates the possibility for sales management to compare the desired positioning with the actual positioning of individual salespersons, technical or regional sub-organisations and to initiate the appropriate measures to develop the relevant people (Grimm, 2001).

Essentially, it is necessary to recognise which of the four quadrants is or should be used to sell successfully. Each of the four positioning opens up the possibility for the company to be successful and profitable, but it must fit the overall strategy of the company. In B2B sales of products that need to be explained, it goes without saying that close customer contact is necessary in order to be able to offer and sell one's own technical advantages to the customer. The most sought-after sector here is *best technical solution*. In connection with the key success factors of sales management, it should be pointed out in particular how important it is to link these success factors with the desired positioning of sales performance in the market. If not completely considered and implemented in operational sales, there is a danger of slipping into the *price* sector. In practice, however, this alignment takes place too rarely, with corresponding problems in sales and in the company (Bothe, 2019).

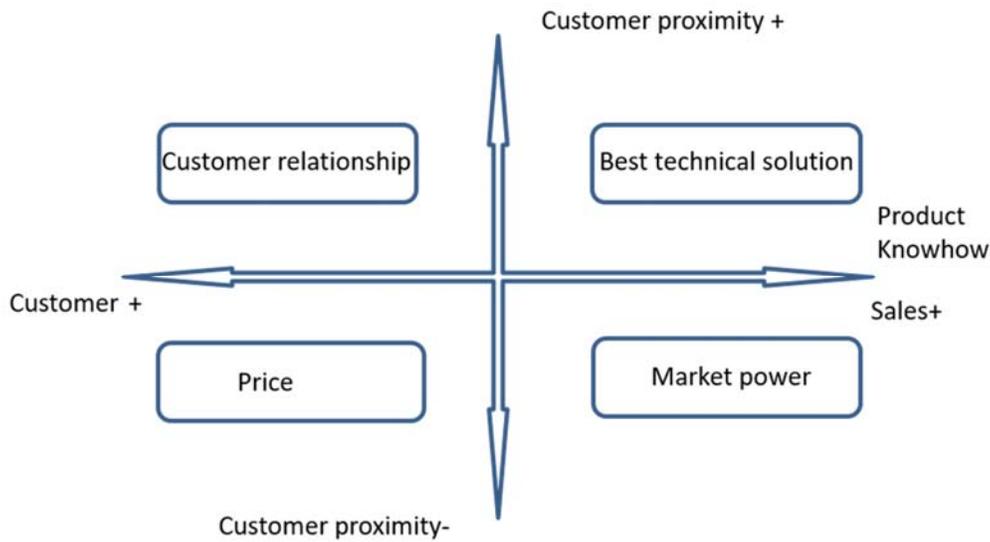


Figure no. 3. Positioning Matrix of B2B-Sales with products that requires explanation

Source: Bothe, 2019, according to Grimm, 2001

Once a positioning has been taken, it can change because of competitive dynamics, or changes in the company itself that have not been fully thought through. One reason can be digitalisation in sales, especially if this affects the personal proximity to the customer. Customer increase their product know-how with each project and thus increase the pressure on companies own competence considerably. Furthermore, customers are increasingly trying to avoid close personal relationship between internal and external persons.

Sales Management Success Factors

In order to manage a sales department safely and successfully in daily business, it is important to know the success factors for sales success and to recognise the absence of these success factors. In order to do justice to the complexity of the demands placed on a sales department, it is crucial to identify universally valid success factors. The complexity of the task is determined by the role as information and knowledge mediator between independent organisations (Schmitz and Rader 2010; Verbeke, Dietz and Verwaal, 2010; Bothe, 2019).

The Sales Management Key Success factors are the three elements of time, information and motivation. These three factors are complex and mutually dependent. The connection to the complexity of the task of sales to ensure the utilisation of the company and the necessary cash flow makes it necessary to define the key success factors on a high level of abstraction. (Bothe, 2019)



Figure no. 4. Sales Management Key Success Factors triangle

Source: Bothe, 2019

Results and Discussion

The work shows that in the current digitalisation projects in B2B sales of products requiring explanation, which are primarily concerned with the automation of existing processes, simple and clear procedures are sufficient to be successful. The four step process Result Target, Result Options, Sales Position, Sales Excellence. The four-step process is a simple and effective tool to consider the opportunities and risks in a digitisation process from the beginning and to lead the project to success. Not only are the operational and positioning factors taken into account, but also the strategic orientation towards result-oriented options for action. It is foreseeable that this phase will no longer be sufficient at the latest with the establishment of low-cost and simple artificial intelligence systems. Digitalisation in sales has only just begun and a human-less sales department with independently automating sales processes is no longer unimaginable.

Conclusion

The strategic process for successful digital sales development runs in four stages and looks at the opportunities as well as the risks. A challenging clear result target is set at the beginning to ensure the selection and alignment of options for action to achieve the result target. The resulting activities depend on the current and future sales positioning. This is also important in order not to run the risk of an undesired shift in the targeted and goal-oriented sales positioning. Furthermore, it is important to observe the generally valid key success factors for successful sales in order to reliably achieve the goal in operational sales management as well.

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Mountain Products. A Lot of Opportunities for Romanian Food Producers

Dumitrache Bogdan Bratoveanu¹, Raluca Bianca Costea (Voinea), Jiries Mansour³
and Silviu Stanciu⁴

¹⁾²⁾⁴⁾ "Dunărea de Jos" University of Galați, Galați, Romania.

³⁾ The Bucharest University of Economic Studies, Bucharest, Romania.

E-mail: bbratoveanu@ugal.ro; E-mail: office@go-smart.ro

E-mail: jiries.mansour@gmail.com; E-mail: sstanciu@ugal.ro

Please cite this paper as:

Bratoaveanu, D.B, Costea (Voinea), RB., Mansour, J. and Stanciu, S., 2021. Mountain Products. A Lot of Opportunities for Romanian Food Producers. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. 7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 921-929
DOI: 10.24818/BASIQ/2021/07/115

Abstract

"Mountain product" is a quality scheme recommended BY European Commission to differentiate products obtained in mountainous areas from conventional products. Romania has favourable conditions for the exploitation of this niche market, and national officials have offered support to producers, starting with consultancy services, as well as funds dedicated to the sector. The necessary information has been collected from the publications of the relevant ministry and the national agency with responsibilities in the field.

The research highlighted the national potential in this field, as well as an upward dynamic of the number of certified products. Although the costs of obtaining it is higher, the food produced in mountain areas has specific qualities, due to its special production conditions, and as a result, it can build an opportunity for Romanian producers. The research results can be seized by businesses, which can invest in the mountain agriculture, altogether with the Romanian officials, who can take the most appropriate measures to support the mountain producers.

Keywords: Mountain Product, OQT, opportunities, Romania.

DOI: 10.24818/BASIQ/2021/07/115

Introduction

According to Euromontana (2021), mountain agriculture accounts for about 18% of agricultural holdings, 15% of agricultural areas and uses about 15% of the agricultural workforce in this sector at European level. Due to the difficult geographical conditions, the practice of agriculture in the mountainous area involves higher costs, and labour productivity is lower, on average by 28%, compared to disadvantaged areas, and by 40% compared to lowlands. Mountain farming is characterized by the predominance of small farms, generally below the national mean average, characterized by specialized productions, with high quality products. Animal farms are frequently encountered, being fed mainly through grazing and permanent fruit crops (orchards, vineyards). Agriculture is the basis of the local economy, being closely linked to other sectors: agri-food industry and tourism. The population in the mountainous area carries out a diversified activity, and the number of very small farms is large, especially in the Carpathian Mountains, where semi-subsistence

agriculture is predominant. Optional quality term (OQT) "Mountain product" is a quality scheme created at European level to differentiate a food product obtained in difficult conditions in European mountain areas from conventional products.

The inclusion of a certain food product in this category is associated in the consumer's mind with the image of a high-quality product, with certified origin, obtained in an area with a low degree of pollution (Stanciu, 2014). The mountain product category includes a wide selection: milk and dairy products, meat and meat-based products, fruit and canned food, pastries, mineral water or even medicinal plants. Mountain products have specific characteristics, due to the particular production conditions in high altitude areas, the environment, the natural resources used and the traditional techniques, alongside with knowledge used in their production and processing (Gheorghe, Nistoreanu and Filip, 2013). The specific production conditions lead to the formation of special quality characteristics for mountain products, noticed by the consumer especially from a sensory point of view.

From a geographical perspective, Romania has favourable conditions for the development of the mountainous production sector. Romania's mountainous area comprises about 33% of the national territory and 27 counties with large agricultural areas, as well as 3,354,041 inhabitants, representing 15.08% of Romania's population. Of these, about 2.1 million are found in farming families, 1.3 million identifying as active farmers. There are 815,000 agricultural holdings, of which 254,348 have been registered in the Single Farm Identification Register as of 2016 (Scarlat, 2017). In the local food tradition, the consumption and production of mountain foods are intertwined with the history of the Romanian people, being homemade and consumed at the household level or intended for the small communities in the Carpathian Mountains (Stanciu, et al, 2019).

According to the decision of the Ministry of Agriculture and Rural Development MADR Nr. 5/2017 (MADR, 2017), mountain products are foods intended for human consumption, in which the processed raw materials, respectively feed for farm animals come mainly from mountain areas. In the case of processed products, processing also takes place in mountain areas. Mountain products are promoted in the digital environment by the National Agency for Mountain Areas, created especially to support producers in high altitude areas, and by other public institutions (National Agency for Mountain Areas, 2021).

The decision of MADR and the Ministry of Regional Development and Public Administration (MDRAP) No. 97/2019 (MADR and MDRAP, 2019) defines the criteria for classifying the administrative-territorial units in the mountain area. Thus, the mountainous area is characterized by natural limitations of agricultural productivity, which lead to a lower agricultural production, due to unfavourable climatic and biophysical conditions necessary for the optimal development of agricultural activities.

According to the earlier mentioned ministerial decision, for the delimitation of the mountain area is used a general criteria related to physical conditions (altitude and average slope limitations), membership of the Carpathian Convention (the administrative-territorial units with 50% of their territory within the Carpathian Convention are included), obtaining a combined limit score, inclusion as a mountain area within the Territorial Development Strategy of Romania, or the criterion of continuity of the mountain area (MADR and MDRAP, 2019). At the European level, it has been adopted a common definition of the term quality product: "mountain product", which can be used in the labelling of agricultural products. The term may be used only for products for which feed and raw materials come mainly from mountain areas and for which their processing also takes place in mountain areas. According to Santini, Guri and Gomez Y Paloma (2013), there will be derogations from the European Commission (EC) to Regulation (EU) no. 1151/2012 of the European Parliament and of the Council of 21 November 2012 on quality schemes for agricultural products and foodstuffs.

The authors consider that it is necessary to take into account the specificity of the sectors involved in mountain production, the adaptation of regulations on the place of origin of feed, the places where agricultural raw material produced in mountain areas is shaped into processed food, or the share of non-mountainous ingredients found in a processed mountain product, which can be considered acceptable to maintain the character of a mountain product. Appropriate means should be used for the application of the rules and to ensure coexistence between the term "mountain product" and other

existing instruments, such as trademarks and geographical indications (EC, 2012). In the absence of derogations, the applicability of the optional quality term "mountain products" could be affected.

Materials and methods

Clarivate Analytics, SCOPUS, Google Scholar and ResearchGate databases were used for bibliographic documentation. For specialized information in the legislative field, the regulations of MADR, MDRAP and other national regulations on mountain products were consulted. At the European level, the rules adopted by the European Commission have been used, in particular Regulations on quality schemes and Regulations on mountain products. The data provided by Euromontana was used for the analysis on mountain products at the European level. At the Romanian level, the registrations of certified mountain products were found in the Mountain Product section within the Ministry of Agriculture and Rural Development, where it was established a National Agency for Mountain Areas, an institution specialized in providing consulting services to mountain producers. The collected data was processed, graphically represented and interpreted. The results were then compared with other information from the existing literature.

Results

The term "mountain product" was protected by Regulation (EU) no. 1151/2012, which was subsequently supplemented by the European Commission through the Commission Delegated Regulation (EU) No 665/2014. Since 2014, some European countries have started to implement Community legislation at the national level. The optional quality "mountain product", currently recognized throughout the European Union, aims to help producers better promote their products in a dynamic and competitive European market (Nagy and Dabija, 2020). Romania benefited from the involvement of the officials in expending the potential of the mountain products sector, and as a result, it is currently one of the most active Member States involved in the development of mountain products' certification. Romanian mountain production represents almost 0.7% of mountain production in Europe. The mountainous regions of Romania are areas with an important economic, social, cultural and environmental potential. Furthermore, Romania is one of the most active SM in the development of OQT in its mountainous areas. In addition, a series of funds were allocated for the mountain area through the National Rural Development Program 2014 - 2020 (PNDR 2020), the total amount being estimated to over 683 million euros intended for financing investments.

Euromontana Report (2017) states that Austria has directly applied Community legislation, without adapting it to national specificities, while Romania, France Germany, Italy, Slovenia, the Czech Republic, Bulgaria and Croatia have adapted/are in the process of adapting national legislation to European Commission regulations (Table 1).

Table no. 1. Mountain products in Europe (selected countries).

Country	Mountain area (%)	UAA/ Mountain Area (%)	National Agency/ Control System	Mountain Product Label/Products (e.g)
Austria	73.4	54.7	Ministry of Health / Ministry of Agriculture	Almmilch
France	23.1	18.3	Directorate-General for Competition, Consumer Affairs and Fraud Control	Mont Lait, Origine Montagne,
Germany	2.4	1.8	Federal Government	no information
Italy	47.5	33.8	Ministry of Agriculture	Latteria CISSVA of Capo di Ponte, Latteria di Chiuro,
Romania	29.9	19.7	Mountain Area Agency/ Ministry of Agriculture and Rural Development	National Logo/ 1840 products

Slovenia	63.2	52.9	National Administration for Food Safety, Veterinary Sector and Plant Protection	1 producer/ 1 product
Czech Republic	20.4	11.4	State Administration/Czech Veterinary Administration and Food Inspection Authority	no information
Bulgaria	38.1	7.9	Regional Food Safety Directorate	no information

Source: Euromontana, 2020, own research

According to Euromontana, most manufacturers are registered in Italy, closely followed by Romania. There was insufficient data on mountain producers in the other states presented in the table at the time of the study.

Mountain products in Romania

The disadvantaged mountain area of Romania represents a special geographical area of national interest, with an economic, social, cultural and environmental potential. In line with European policies and the principles of sustainable development, these areas should benefit from a specific, well-defined policy in support of local communities (Nagy and Dabija, 2020). According to the Order of MADR and MRDPA No. 97/2019 (MADR and MDRAP, 2019) 948 territorial administrative units in Romania were included in the category “mountain townships” (figure 1). The delimitation was made on 5 law-based criteria. Due to the fact that in some situations, administrative-territorial units which were surrounded by mountainous areas did not meet all 5 criteria, an exception was put in place, resulting in the so-called "non-mountain islands". As a consequence of this exception, 10 more administrative-territorial units were included in the mountain area. The counties call signs were used in figure 1, according to Abrevieri.ro (2021).

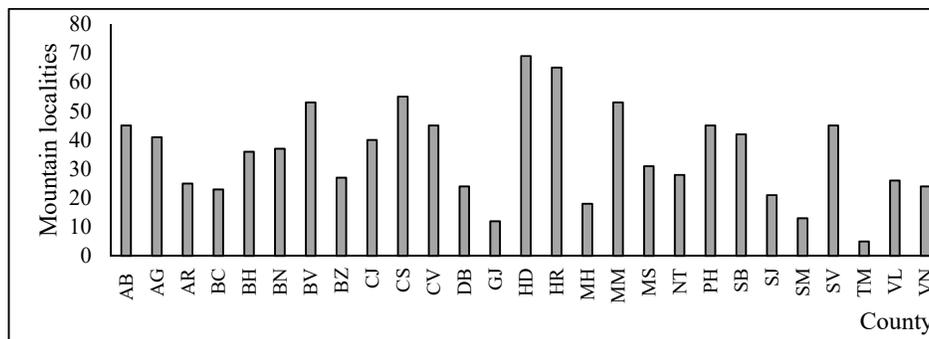


Figure no. 1. Mountain localities in Romania

Source: Authors, by using MADR and MDRAP, 2019

Of the 27 counties presented in figure 1, most mountain townships are classified based on general Criterion 1 (physical conditions related to altitude and slope) being located in the proximity of the Carpathian Mountains. The counties of Hunedoara (69), Harghita (65) and Covasna (55) have the highest number of mountainous townships, while Timișoara (5), Gorj (12) and Satu Mare (13) occupy the last positions. By ATU categories, villages (835 units) are predominant, followed by cities (83) and municipalities (29). A territorial unit was included in the category of component township (figure 2).

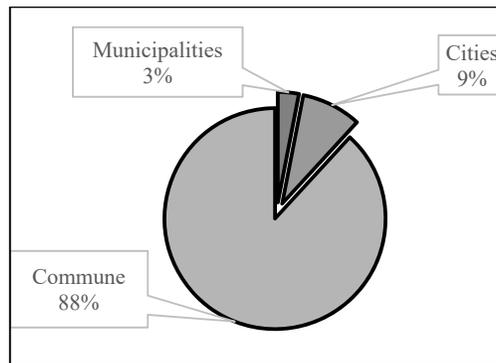


Figure no.2. Distribution of mountain localities by categories

Source: Authors, by using MADR and MDRAP, 2019

The National Agency for Mountain Areas (ANZM) has been operating in Romania since 2018, and was established in accordance with the provisions of the Mountain Law no. 197/2018 and H.G. NO. 1036/2018, by reorganizing the Mountain Area Agency. Their agency is based in Vatra Dornei and is directly subordinated to the Ministry of Agriculture and Rural Development. The main attributions of ANZM are related to the support of the mountain areas in Romania, geographical areas marked by specificity, ecological fragility and economical and social disadvantage (ANZM, 2018). MADR introduced a page specially allocated to mountain products (MADR, 2017), in the section “European Quality Systems and Geographical Indications”. Available on the website is the Good Practice Guide, focused on the right to use the optional quality statements "Mountain product", together with statistical data on the registration of nationally certified products. The evolution of the number of products accredited at the national level is presented in figure 3.

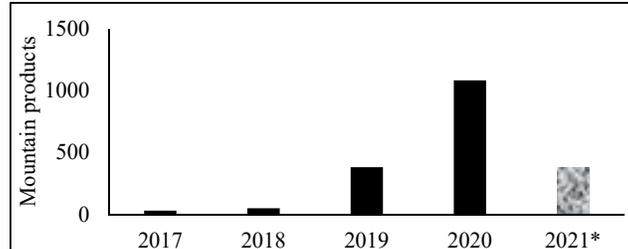


Figure no.3. Mountain products certified in Romania

Source: Authors, by using MADR, 2021

At the time of the research, 1915 products were registered on the MADR website. Only the first four months of the current year are available for analysis. Following a humble start in the beginning of the implementation of specific legislation in Romania, with only 9 products registered in 2017, the number of certified products doubled in 2018, and it has exponentially increased in the next period, leading to a total amount of 1540 products being certified in 2020. Looking at counties individually, in 2020 most products were registered in Bistrița Năsăud (72), followed by Maramures (44) and Hunedoara (39). Timiș and Bihor however, have only one registered product (figure 4).

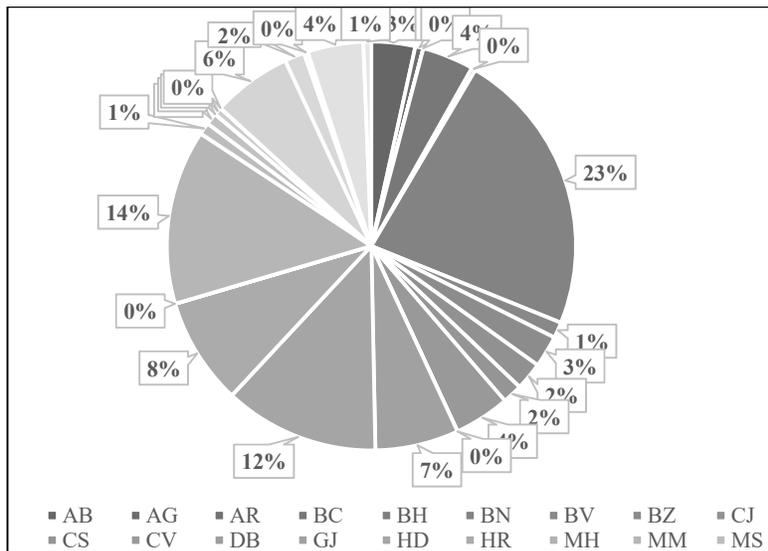


Figure no.4. Share of mountain product records, by counties (2020)

Source: Authors, by using MADR, 2021

By product categories in 2020, the registrations of Vegetable Products are predominant (44%), followed by Milk and Dairy Products (29%), Bee Products and Vegetables - Fruits (11%) (figure 5). Romania's meat production does not follow a positive trend in mountain areas, the market being largely dependent on imports (Stanciu et al. 2015).

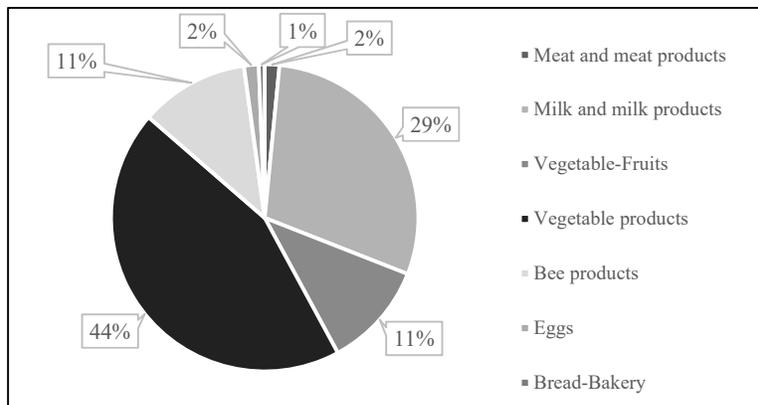


Figure no.5. Share of mountain product records, by categories

Source: Authors, by using MADR, 2021

The last positions were occupied by bread - bakery products (2%), Meat and meat products (2%) and Eggs (2%). Some of these products have also been registered as organic products. According to the specifications of the “Guide of good practices regarding the granting of the right to use the optional quality statement “, MOUNTAIN PRODUCT (MADR, 2017) (figure 6).



Figure no.6. "Mountain product" logo

Source: Taken from ANZM, 2021

Mountain products shall be labelled in accordance with the provisions of Regulation (EU) No 1169/2011 of 25 October 2011 on informing consumers about foodstuffs. The label of products registered at the National Register of Mountain Products shall bear centrally, under the name of the product, the statement of optional quality "mountain product" and the position in the register. Products that are registered with the optional quality label "mountain product" shall be marked with a national logo, the exclusive property of the National Agency for Mountain Areas, with a minimum size of 15 mm in diameter (Figure 6). With respect to the marketing of mountain products, the economic operator must comply with all the conditions for the food marketing, in accordance with the legislation in place. It is mandatory to display a photocopy of the decision to grant the right to use the indication of optional quality at the market place, i.e. mountain product ", in the National Register of Mountain Products (R.N.P.M.).

The consistent verification of the market regarding the proper labelling of the products that have been granted the right to use the optional quality indication "mountain product" is made by the National Authority for Consumer Protection, in compliance with the provisions of Regulation (EU) no. Regulation (EC) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on informing consumers about foodstuffs.

Conclusions

In order to protect European producers in mountain areas, an optional quality scheme "Mountain product" was proposed in 2014, which can contribute to preserving the tradition of production and consumption of local products in mountain areas. EU Regulation 1144/2014 for the promotion of European agricultural products is the basis of the current policy in the field of mountain products, offering existing funds available for the development of projects since 2015. Although the protection process has started in some countries, it is still in its early stages at the European level. Romania has registered a positive evolution in the adoption of European legislation in the field of mountain products, becoming, along with Italy, the Member State with the most certified mountain products. There is a strong upward trend in the certification of Romanian mountain products, due to the support measures provided by national officials, in a community context.

However, significant incentives should be given to domestic mountain producers to encourage the use of OQT so that they are involved in product certification and promotion. Favourable European regulations and available funds can be an important opportunity for Romanian mountain producers to develop their OQT products and brand.

Aknowledgements:

This work is supported by the project ANTREPRENORDOC, in the framework of Human Resources Development Operational Programme 2014-2020, financed from the European Social Fund under the contract number 36355/23.05.2019HRD OP /380/6/13 -SMIS Code: 123847.

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Romanian Universities in Social Media. An Analysis Based on International Rankings

Dumitrache Bogdan Bratoveanu¹, Adrian Petre Liptac, Roxana Sârbu³ and Silviu Stanciu⁴

¹⁾²⁾⁴⁾ "Dunărea de Jos" University of Galați, Galați, Romania.

³⁾ The Bucharest University of Economic Studies, Bucharest, Romania.

E-mail: bbratoveanu@ugal.ro; E-mail: adrianliptac@yahoo.com

E-mail: sarbu.roxana@ase.ro, E-mail: sstanciu@ugal.ro

Please cite this paper as:

Bratoveanu, D.B., Liptac, A.P., Sîrbu, R., and Stanciu, S., 2021. Romanian Universities in Social Media. An Analysis Based on International Rankings. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. 7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 930-938
DOI: 10.24818/BASIQ/2021/07/116

Abstract

Social networks can offer users considerable benefits in terms of information, communication and connections, educational opportunities and promotion of universities, various educational programs and systems. The conditions of social distancing imposed by the COVID-19 Pandemic increased the importance of social media networks. Universities, including those situated in Romania, have perceived the potential of the Internet use and online promotion, including social networks. The research proposes an analysis of the presence of Romanian universities on the main social networks, using the information provided by social networks and international rankings of universities. For documentation, the authors used uniRank™, Facebook, Twitter, LinkedIn, Instagram, YouTube, scientific databases. Data processing was performed using spreadsheet systems. The study showed that the public universities in Romania are better represented on social networks compared to the private ones, that there is a gap between the preferences of social network users and those of academic institutions, as well as differences in approach to social networks from local universities. Facebook, LinkedIn and YouTube are the networks the most frequently used by Romanian universities, and Instagram is at the opposite pole. The research conducted can be useful for higher education institutions in Romania, which can align to the international trends in the use of social media in order to promote the image, recruit students or develop educational programs.

Keywords: Social Media, Universities, Facebook, Twitter, LinkedIn, Instagram, YouTube, Romania.
DOI: 10.24818/BASIQ/2021/07/116

Introduction

Social media networks allow users to introduce themselves, join interest groups and establish or maintain connections with other people, being increasingly present in the promotion of companies and public institutions (Iordache, 2014). These networks can focus on professional issues (e.g. LinkedIn.com), connecting users with common interests, or university students (Facebook.com).

Restrictions due to the COVID-19 Pandemic have led to an increasing importance of the Internet, both for productive activities and for marketing activities.

Universities are no exception trend, a high number of academic institutions being more and more active on social networks. Facebook, Twitter, LinkedIn, Instagram, YouTube are increasingly used for the

transmission of educational information, for the promotion of higher education institutions and for the recruitment of new students.

Materials and methods

Clarivate Analytics, SCOPUS, Google Scholar and ResearchGate databases were used for bibliographic documentation. For specialized information, the social networks Facebook, Twitter, Instagram, LinkedIn YouTube were used.

Data on the presence of academic institutions in social media were selected from the uniRank Ranking™, which includes over 13,800 officially recognized universities and colleges in 200 countries. The data collected were processed, graphically plotted and interpreted. The results obtained were compared with other information from the literature.

Results

The study conducted by Alwreikat, Abu Zaid and Shehata (2021) showed that there is an important correlation between the use of Facebook and the collaborative learning, which means that students get better academic performance if they spend more time on Facebook. Furthermore, the study found that Facebook's use of collaborative learning varies between social sciences and scientific subjects. Social networks such as Facebook have become popular tools in marketing practice for various organizations, including libraries. To build relationships with library users, libraries hope that social networks can actively involve user communities with their collections, services, and activities (Cheng, Lam and Chiu, 2020).

In recent years, social networks have provided higher education institutions with modern means of communication with target groups. In the study by Eger et al. (2020), the research was conducted on top public universities in four Central European countries, with a focus on their public relations activities on Facebook. The aim of the research was to evaluate the use of Facebook by selected universities and to provide a set of practical guidelines on successful communication with the public. The study's findings provided evidence of increased use of Facebook by universities in public relations. Moreover, research results revealed that different post features generate different customer behaviour. The study contributed to a better understanding of social media marketing activities in the field of higher education.

Stanciu, Sârbu and Bucur (2017), in an analysis of the Romanian education system, show that local universities, and especially those financed from the public budget, are open to innovation, being able to adopt the most modern teaching and communication methods, including the Internet. Social networks in higher education have become an essential chapter in almost all institutions.

According to Sehl's research, 98% of universities use social media on campus (Sehl, 2020). Covid-19 has moved higher education entirely online, and universities need to continuously adapt to these developments. One area that quickly adapted to the new conditions was the recruitment of students, and social networks played an important role in these activities.

The Singular study, quoted by The Time Higher Education (2021) showed that 73% of marketing leaders have increased their marketing efforts during this period. The study found that it reallocates 28% to more online advertising, 18% to more content marketing, 15% to organic growth and 12% to social media marketing. While e-mail is a great way to communicate important information, social media is the environment where students like to "get entertained" and spend a lot of time.

Instagram is a way for universities to interact with potential students, share stories about graduates, and provide valuable advice. The administrators of the University of Queensland's Instagram account send home study tips, showing that they are in touch and empathetic with what their students are going through. Indiana University is redistributing videos from students' time at home, and a clip of a violin student garnered more than 19,000 views.

These examples show that social networks can become an important way of communication and promotion for the universities.

Universities on Facebook

The uniRank ranking provides important information about the use of the Facebook social platform (FB) among higher education institutions. Internationally, uniRank is the only ranking that offers a vast list of universities and colleges with an official presence on FB.

The list is arranged alphabetically by country name and then ranked by total number of likes / fans. FB rankings are published twice a year, in February and August.

The hierarchy of universities' presence on FB, made by uniRank (2021), shows that over 10,000 universities, representing about 73% of the almost 14,000 universities analyzed are present on this social network at the beginning of 2021. Between August 2018 and February 2021, about 700 universities have created a page on FB (figure 1).

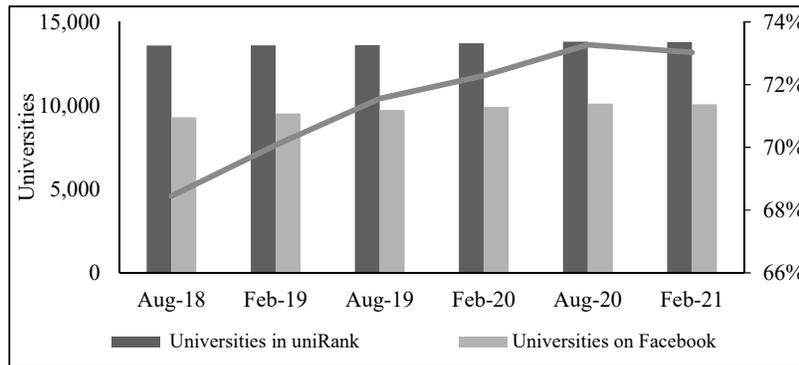


Figure no. 1. Universities on Facebook (2018-2021)

Source: Authors, by using uniRank, 2021

More than 40,000 visitors daily appreciate the FB pages of universities in the uniRank rankings, which also present an international top of higher education institutions according to the number of fans (figure 2). The most popular universities on FB internationally, by number of fans / likes are Harvard, USA (6,148,338), University of Oxford, United Kingdom (4,267,046) and Universidad Nacional Autónoma de México, Mexico (3,276,284).

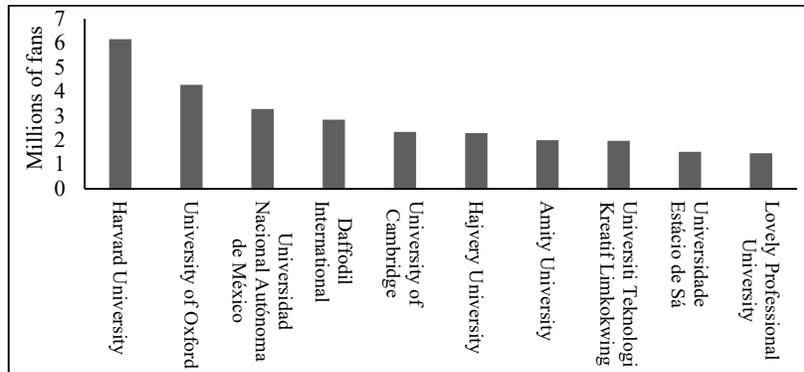


Figure no. 2. Top 10 International - Universities by Facebook page (2021)

Source: Authors, by using uniRank, 2021

Of the 85 functional civilian universities in Romania (according to the data of the National Institute of Statistics, 2021), 67 institutions have created FB pages, which add up to the appreciations of 1,130,346 likes / fans. 34 of them are public institutions, which cumulates a total of 814,357 likes, with an average of 23,267 likes / institution. Compared to state universities, the 33 private universities had, in February 2021, about 315,989 followers and a much lower institutional average of 9,874 likes / institution. Only

one private university, Spiru Haret University of Bucharest, was included in the Top 10 FB in Romania (figure 3).

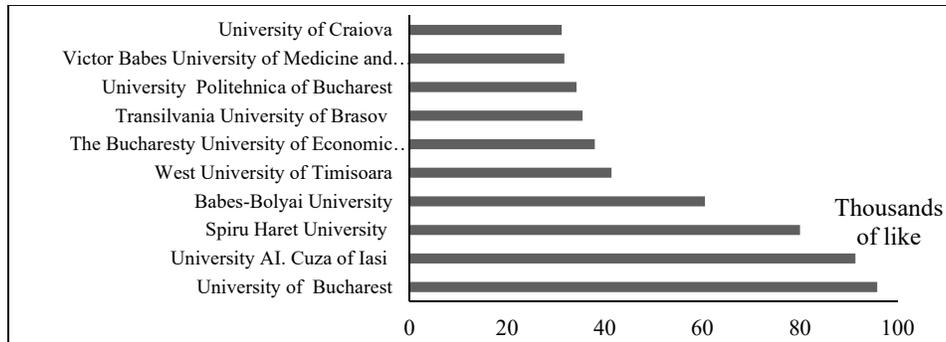


Figure no. 3. Top Romanian Universities on Facebook

Source: Authors, by using uniRank, 2021

With 21,473 likes, “Dunărea de Jos” University ranks 19th in Top Romania FB universities pages.

Universities on Twitter

8,150 out of a total of 13,798 higher education institutions included in the uniRank database had adopted an official Twitter page by February 2021. The presence of universities on Twitter recorded a continuous increase between August 2018 and February 2021, reaching a number of 8,150 institutions, out of the 13,789 registered and an increase of their share by more than 4% (figure 4).

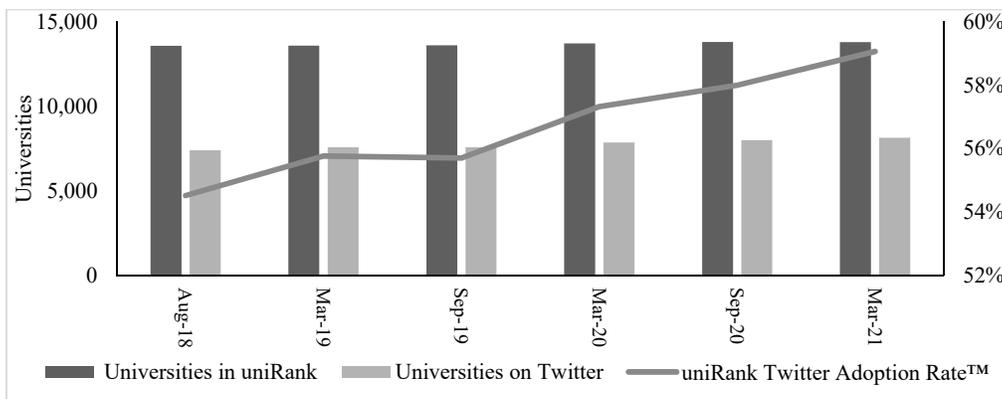


Figure no. 4. Universities on Twitter (2018-2021)

Source: Authors, by using uniRank, 2021

A lot of factors can influence the visibility of universities' Twitter pages, such as the reputation and size of the university, the online presence, the level of Internet use and the speed of the connection, etc. Some large universities have adopted several Twitter pages, associated, for example, with each faculty and / or each administrative area. uniRank 2021 uses the most general institutional Twitter page for each university evaluated.

32 Romanian universities are present on Twitter, totaling 14,428 followers, the first position being occupied by Spiru Haret University, with 4,464 followers (figure 5).

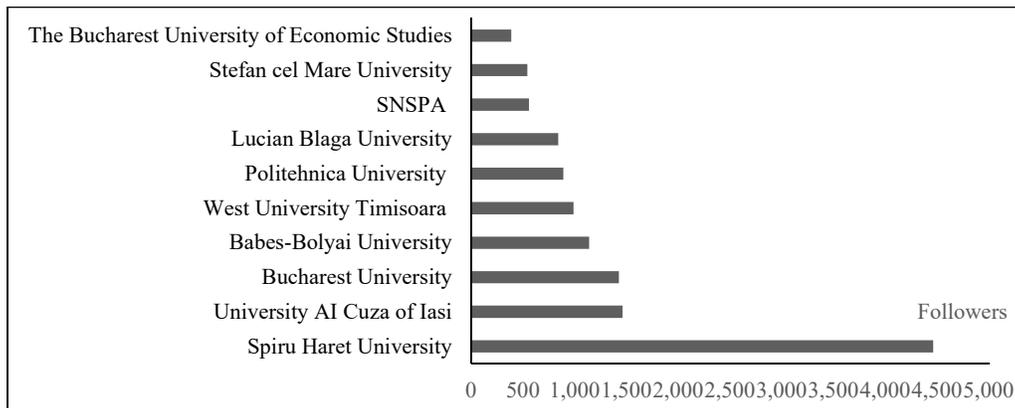


Figure no. 5. Top 10 Romanian Universities on Twitter

Source: Authors, by using uniRank, 2021

Of the 32 universities with a Twitter page, the 20 public institutions have 9,113 followers, with an average of 480 followers, while private universities are followed by 5,315 people, at an average of 409 followers / institution. The Twitter page of "Dunărea de Jos" University of Galati has 77 followers and ranks 18th in Top Twitter Romania.

University on LinkedIn

62 universities in Romania, of which 35 public and 27 private, have at least one LinkedIn page (figure 6). Their distribution by counties / cities of Romania is presented in figure 6. Bucharest, with 20 universities, is on the first position, Iași and Timișoara, with 6 universities each, occupy the following positions. Galați is present in the uniRank statistics (2021) with the "Dunărea de Jos" University of Galați and with the Danubius University.

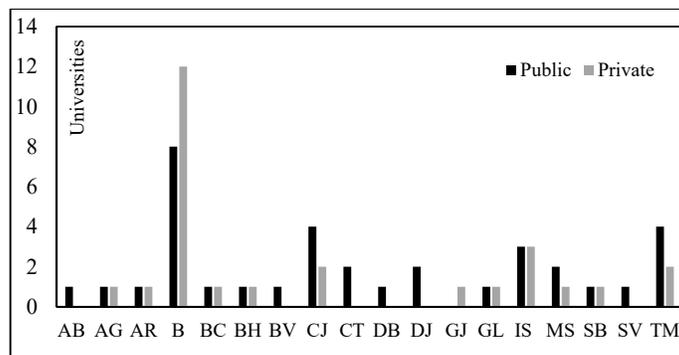


Figure no. 6. Romanian universities using LinkedIn, by county

Source: Authors, by using uniRank, 2021

Universities on Instagram

Like other rankings based on social networks, Instagram uniRank (2021) proposes a ranking of each university based on the total number of followers, without considering an assessment of the quality of education or the level of academic services provided. Of the 13,813 universities in the uniRank database, almost 49% have an Instagram account (figure 7).

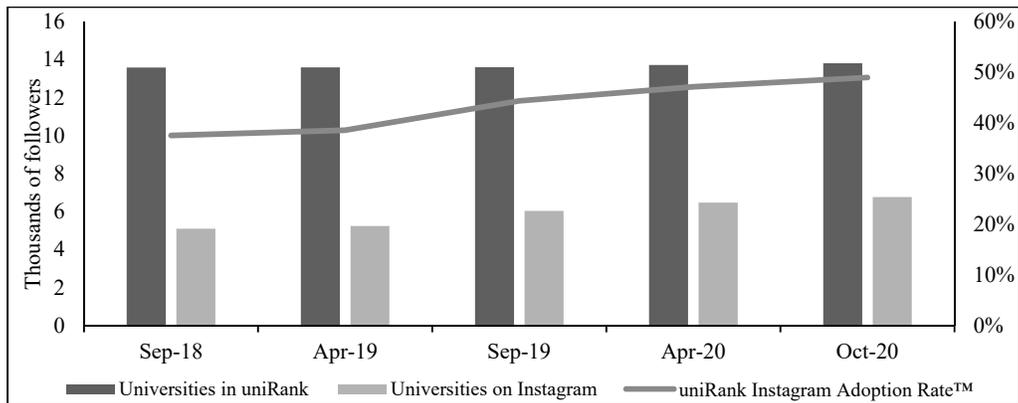


Figure no. 7. Universities on Instagram (2018-2021)

Source: Authors, by using uniRank, 2021

19 Romanian universities are present on Instagram and have a total of 4,256 posts and 36,658 likes. Of these, the 16 public universities had a total of 3,032 posts, being followed by 33,518 people, with an average of 11 people / post. With 1,315 followers and 340 posts, the “Dunărea de Jos” University of Galați occupied in 2021 the 8th position in the national ranking, with an average of 4 followers per post (figure 8).

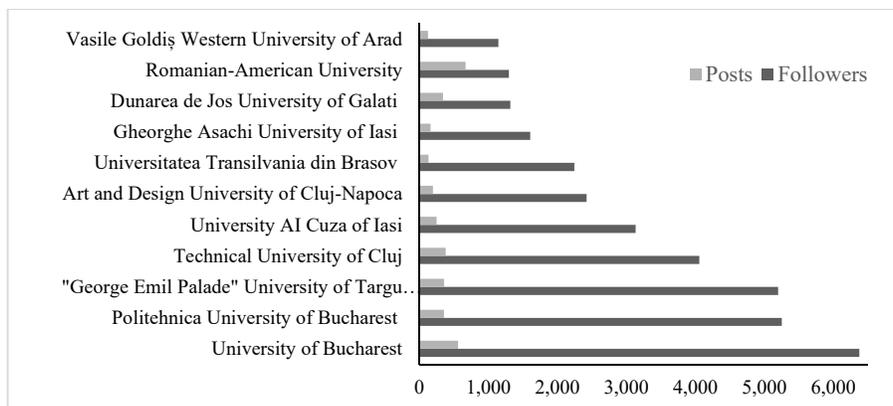


Figure no. 8. Top 10 Romanian Universities on Instagram

Source: Authors, by using uniRank, 2021

Universities in YouTube

There are 8,381 out of a total of 13,723 higher education institutions included in the uniRank database that have adopted an official institutional YouTube page. The estimated number of universities adopting a YouTube page has been calculated by identifying institutional YouTube pages through two methods: direct submission from Universities, or a search of YouTube channel links publicly published in the Universities' homepages (figure 9).

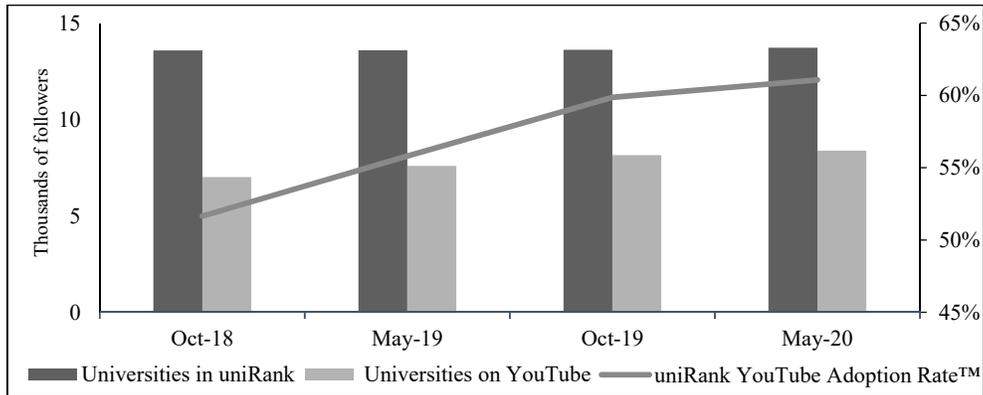


Figure no.9. Universities on YouTube (2018-2021)

Source: Authors, by using uniRank, 2021

46 universities in Romania have created YouTube channels, where 15,199 materials have been uploaded, with an average of 330 posts / university. With 1,520 posts, University A.I. Cuza University of Iasi ranks first (figure 10), and at the opposite pole we find the Danubius University of Galați, with zero posts. "Dunărea de Jos" University of Galați occupies the 37th position in the national ranking, with 19 posts.

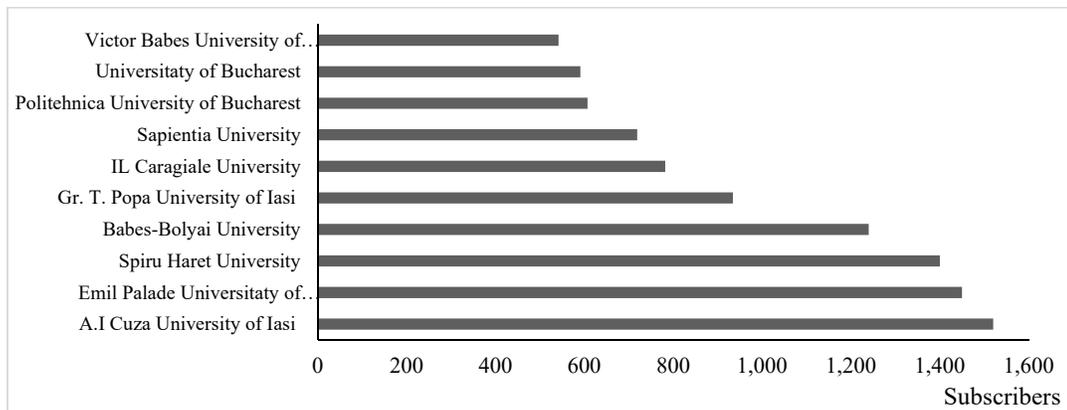


Figure no. 10. Top 10 Romanian Universities on YouTube

Source: Authors, by using uniRank, 2021

With 11,632 posts, the 33 state universities in Romania cover about 76.53% of the total posts on Youtube of all Romanian educational institutions. The Romanian universities show a different degree of attraction compared to social networks. A total of 226 pages / channels are opened by the Romanian institutions on the 5 analysed networks.

Facebook, LinkedIn and YouTube occupy the first positions in the preferences of higher education institutions in our country, while Instagram is on the last position, with only 19 pages opened by universities (figure 11).

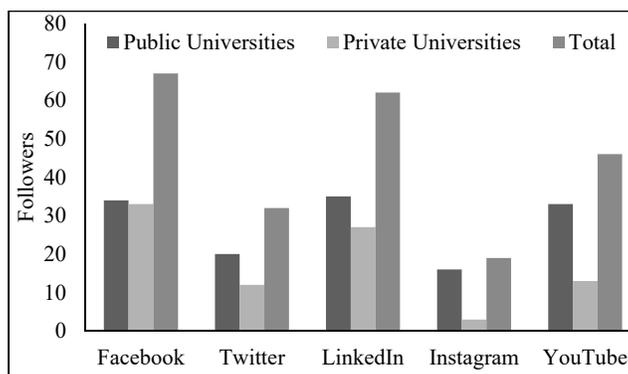


Figure no. 11. Universities in Romania on the main social networks

Source: Authors, by using uniRank, 2021

Although private universities are more flexible and can manage funds more easily, their presence on social networks is lower than publicly funded institutions.

According to the Annual Digital Report worldwide and manafu.ro, quoted by AdSociety (2021), the top of social networks in Romania according to the number of monthly users is dominated by Facebook (12,040,000; source: Napoleoncat) and Youtube (12,000,000; source: Youtube Romania), followed by TikTok (5,364,860; source: TikTok), Instagram (5,053,000; source: Napoleoncat), LinkedIn (3,014,000; source: Napoleoncat), Snapchat (2,354,700; source: Datareportal), Pinterest (1,309,000; source: Datareportal), Twitter: 668,000; source: Datareportal). Romanians give the highest number of likes on Facebook, 18 times a month on the average, while the global average is 11 likes.

Conclusions

A high number of Romanian universities have aligned to the international trend in transmitting educational information and promoting their image by using social networks. The study was based mainly on the information provided by the international university ranking system uniRank, 2021 edition. A share of universities between 22% and 78% of all accredited educational institutions has opened at least one promotion page on a social network. About 80% of local universities are present on FB, 70% on LinkedIn and about 50% on YouTube, the least used Instagram, where we find less than 20% of universities. There is a gap between the presence of local universities on social networks and the preferences of Romanian consumers for socialization services. Romanian institutions should assess in advance the impact of paid promotions on social networks, in order to address the targeted consumer segment and to obtain the best results.

Acknowledgements

This work is supported by the project ANTREPRENORDOC, in the framework of Human Resources Development Operational Programme 2014-2020, financed from the European Social Fund under the contract number 36355/23.05.2019HRD OP /380/6/13 -SMIS Code: 123847.

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Innovation Matters Everywhere

Ioana Maria Popescu (Iacobescu)¹

¹⁾*The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: popescuim@yahoo.com

Please cite this paper as:

Popescu (Iacobescu), I., 2021. Innovation matters everywhere. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 939-945
DOI: 10.24818/BASIQ/2021/07/117

Abstract

Innovation, the driving force of important economies, matters everywhere. No matter the type (product, process, organization or marketing), it can be the differentiating point between a well running business and a business driven by inertia. Besides the product launches, the processes are also important. Moreover, starting with 2018, according to OSLO Manual, the evaluation of process innovation includes the organization and marketing innovations.

In this paper, we would like to investigate the national innovations data, in order to find encouraging and positive aspects related to innovation indicators.

Romania is a modest innovator, with a National Innovation System underdeveloped (Adams, 2014) and a small share of innovative companies. Our objective is to exploit the existing data in order to show that the innovative companies hold a consistent share in total companies' turnover development.

For that, we have conducted an empirical study on the existing data from the National Statistical Institute, by interrogating the existing databases related to innovation.

After analyzing the data, we can conclude, that for any company type, by size, the innovative companies are more dynamic than the non-innovative companies are, and that a consistent part of the turnover growth is coming from the innovative companies.

The share of innovative companies in the total number of Romanian companies is less than 15%, but the number of innovative companies is growing. This could be encouraging, and most probably, with the proper education on innovations management, promoting the positive impact of innovation on businesses and measurement methods, the share of innovative companies and their contribution to growth could increase significant in the next years.

Keywords

Innovation, product innovation, process innovations, turnover growth, business development.

DOI: 10.24818/BASIQ/2021/07/117

Introduction

Innovation matters! No matter the time, the place or the context. Since the beginning of 20th century, the literature offers the confirmation that innovations are the driving factor for economic growth (Schumpeter, 1934, 1942). During time, many authors tried to find methods of evaluation. One of them detailed by Alfred Kleinknecht and Donald Bain (1993), supposed to make an evaluation of innovations using a special technique by scanning all commercial and technical magazines. Now, at the beginning of 21st century, the OSLO Manual, published by the Organization for Economic Cooperation and Development (OECD) offer a framework for innovation Management and create comparable KPIs

(Becheikh, et al., 2006). Still there is no precise recipe for success when it comes to innovations and the way this could be achieved. You could count many unnecessary parameters as you could also face the situation that some useful ones cannot be counted (Kylliäinen, 2018).

According to OSLO Manual, before 2018 the types of innovation were: 1) product innovation; 2) process innovation; 3) marketing innovation; 4) organizational innovation (OECD, 2005). After 2018, the OSLO manual classified innovation in two types: 1) product innovation; 2) process innovation (OECD, 2018). Process innovations covers the process, organizational and marketing innovation from the old manual. We will consider for the present article, the product and process innovation.

Taking into consideration the importance of innovation in organizations is important to monitor and measure the innovation impact on businesses, the evolution of innovative companies, and their impact in the total companies' turnover. At Global level, for measuring innovation, exists the GII (Global Innovation Index) and at European level, the European Innovation Scoreboard is used. In Romania, the National Statistical Institute creates an Innovation Report every two years, based on the "Community Innovation Survey" (CIS) 2016-2018, used by all members of European Union.

Even if Romania is one of the European modest innovators (Adams, 2014), innovations matters and what is more important, the turnover from the innovative companies contribute the most at the growth of the total companies' turnover.

We have structured the paper into three sections. We started with the review of literature and the research methodology description. In the second part, we have presented an overview of European countries according to European innovation scoreboard and we have analyzed the data from Romania, going deeper on: the typologies of innovators and the evolution of innovative companies and successful innovative companies, next to the share of innovative companies in the total turnover splitted by size and economic sector. In the last part, we draw the conclusion by processing the companies' turnover data, analyzing their evolution and calculating the innovative companies' contribution to growth.

Literature review

Many recent books and studies confirm that global enterprises that are facing big growth challenges identified innovation as one possible growth key driver for value creation (Takács, 2018) and confirmed the importance of a strategy for the innovation management. The innovation management strategy should be part of the organization development strategy and correct implemented (Lafley and Martin, 2013). For the execution of the innovation management, a system for motivations and reasons for improvement should be considered. (Dobbs and Koller, 2015). For measuring and monitor the performance of companies in order to achieve the correct execution, a system for the Innovation Management should be implemented. The following aspects could be considered: monitoring, control, improvement, coordination and motivation (Lohman, et al., 2004).

At national level, exist companies that are using new management methods, focusing on innovation management, for driving future growth (Mateescu, et al., 2015). Most probably, the number of companies that are considering innovation an important factor for development is on a positive evolution in Romania. We are confident that in the future, the share of innovative companies will grow and more businesses will achieve positive results by trying „to get better every day” (Kylliäinen, 2018).

Research methodology

Innovation is important and the dynamic of the innovative companies is better than the non-innovative ones. Starting from the published data of Romanian Statistic Institute from 28 July 2020, regarding innovation in enterprises, during 2016-2018, we wanted to interrogate the existing databases, to verify the following hypothesis:

H1. A consistent part of turnover growth is coming from the innovative companies.

The research objective is to calculate the contribution to growth of innovative companies. For that, we have conducted an empirical study on the existing National Statistical Institute data, by interrogating the existing databases related to innovation.

The researched enterprises are small, middle-size and large, with more than nine employees, from the entire industry and active at the moment of data collection. The data were collected in the period: 18.06.2019-16.08.2019 and the unweighted response rate was 91.0%. The maximum permissible error of the estimates is $\pm 3\%$.

Results and discussions

Romania is one of the European modest innovators, according to European innovation scoreboard. This somehow is expected, considering the economic environment, the lack of education for innovation, the small investments in Research and Development or the lack of governmental programs for innovation development in companies.

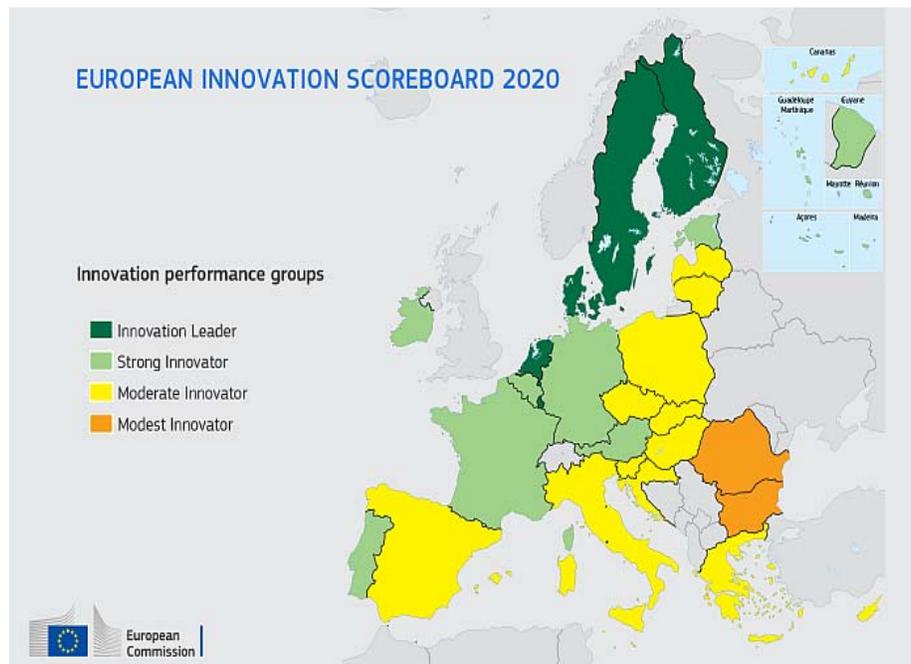


Figure no. 1. European innovation scoreboard

Source: Official website of the European Union, 2021

The following findings are based on INS (National Statistical Institute) databases (DB) interrogations.

The share of innovative companies in the total number of companies from Romania, in the last analyzed period, 2016-2018 is 14.6%, with positive evolution, +4.4 percentage points versus the previous period 2014-2016.

Going deeper with the understanding of figures, even the percentage of innovative companies in the entire industry is rather small 14.6% the number of innovative companies increase by 43.5% and the number of successful innovative companies increase with 47.5%, as show in table 1.

Table no. 1. Typologies of innovators and evolution

Innovators Types and evolution	2016 (number)	2018 (number)	Evolution 2018 vs. 2016 (%)	Share in total 2016 (%)	Share in total 2018 (%)	Evolution of share (pp)
TOTAL number of companies	28809	28776	-0,1%	100%	100%	
Innovative companies	2925	4198	43,5%	10,2%	14,6%	4,4
Successful innovative companies	2795	4124	47,5%	9,7%	14,3%	4,6
Companies with product innovations only	430	1836	327,0%	1,5%	6,4%	4,9
Companies with process innovations only	478	1281	168,0%	1,7%	4,5%	2,8
Companies with product and process innovations only	518	1007	94,4%	1,8%	3,5%	1,7
Not innovative companies	25884	24578	-5,0%	89,8%	85,4%	-4,4

Source: Data processed based on INS DB

Regarding the typologies of innovation (table 2), in the category of successful innovative companies, in the last period 44.5% had only product innovations, 31.1% had only process innovation and 24.4% had product and process innovations, so we can conclude that almost 70% (68.9%) from the successful innovative companies launched new products in the last 2 years.

Table no. 2. Importance and evolution of innovative companies

Importance and evolution of innovative companies	2016 (number)	2018 (number)	Share in total 2016	Share in total 2018	Evolution of share pp
Successful innovative companies	2795	4124	100%	100%	
Companies with product innovations only	430	1836	15,4%	44,5%	29,1
Companies with process innovations only	478	1281	17,1%	31,1%	14,0
Companies with product and process innovations only	518	1007	18,5%	24,4%	5,9

Source: Data processed based on INS DB

The business size classification are the following: Microenterprises, companies with 1 to 9 employees, Small enterprises, companies with 10 to 49 employees, Medium-sized enterprises, companies with 50 to 249 employees, and Large enterprises, companies with 250 employees or more.

From the total Romanian innovative companies, the large companies are the most innovative, 28% from them implemented in the last 2 years activities related to innovation (table 3).

Table no. 3. The share of innovative companies in total companies, by size classes and activity sectors, in the period 2016-2018

Company type	Total	Industry	Services
Total	14,6	16,3	12,9
Small	13,5	15,1	12,3
Medium-sized	15,9	17,0	14,2
Large	28,0	28,4	27,2

Source: Press release INSSE No 195/28 July 2020

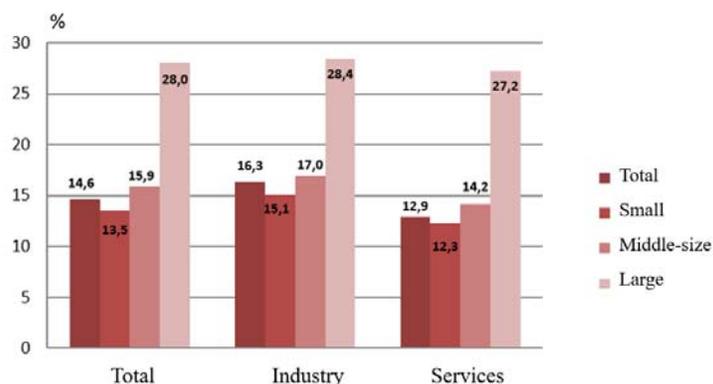


Figure no. 1. The share of innovative companies in total companies, by size classes and activity sectors, in the period 2016-2018

Source: Press release INSSE No 195/28 July 2020

The innovative companies generate 29% from the total turnover.

Analyzing the results in value (table 4), we have a total growth of +12% for the total companies' turnover and +42% growth for the innovative companies. Regarding the contribution to growth (table 5), the innovative companies contribute with 82% at the total turnover development / growth and large innovative companies contribute with 50% at the total turnover growth.

Table no. 4. Turnover evolution 2018 vs. 2017

	2016 (RON)	2018 (RON)	Turnover evolution 2018 vs. 2016 (RON)	Turnover evolution 2018 vs. 2017 (%)
Total companies turnover by size	864.765.522	967.479.082	102.713.560	12%
Small	161.085.528	191.520.184	30.434.656	19%
Medium	207.376.105	245.690.937	38.314.832	18%
Large	496.303.889	530.267.961	33.964.072	7%
Total innovative companies turnover by size	200.181.377	284.229.491	84.048.114	42%
Small	14.140.590	25.024.068	10.883.478	77%
Medium	28.590.287	50.482.889	21.892.602	77%
Large	157.450.500	208.722.534	51.272.034	33%
Total not innovative companies turnover	664.584.145	683.249.591	18.665.446	3%

Source: Data processed based on INS DB

Table no. 5. Share of turnover evolution in the total growth

	2016 (RON)	2018 (RON)	Turnover evolution 2018 vs. 2016 (RON)	Share of turnover evolution in the total growth
Total companies turnover by size	864.765.522	967.479.082	102.713.560	100%
Small	161.085.528	191.520.184	30.434.656	30%
Medium	207.376.105	245.690.937	38.314.832	37%
Large	496.303.889	530.267.961	33.964.072	33%
Total innovative companies turnover by size	200.181.377	284.229.491	84.048.114	82%
Small	14.140.590	25.024.068	10.883.478	11%
Medium	28.590.287	50.482.889	21.892.602	21%
Large	157.450.500	208.722.534	51.272.034	50%
Total not innovative companies turnover	664.584.145	683.249.591	18.665.446	18%

Source: Data processed based on INS DB

Conclusions

The main objective of the article was to show that positive and encouraging aspects related to innovation could be found in the national data of a modest innovator country. We have analyzed the existing data and showed that the innovative companies hold a consistent share in the total companies' turnover development, so our hypothesis H1: A consistent part of turnover growth (82%) is coming from the innovative companies, is confirmed.

Romania scored weak in RandD system, with less than the average patents application, but well at exporting technologically sophisticated services or products. One of the explanations could be the foreign direct investments and their exports (Adams, 2014).

In the future, besides the measurement of past innovation related activities, projects for promoting the importance of innovation in businesses should be developed, next to a model with innovation related activities planning, an on-going business impact measure and improvement methods for the Romanian entrepreneurs.

Another aspect that should be in our priority is the security of innovations against competitors and encouraging more patents application (Kim and Mauborgne, 2005). Together with this, the philosophy "high class with low cost" could be promoted, by optimizing the processes, the production costs and achieving products with good quality and accessible price. This could be a good way for securing the innovations and local businesses, keeping always in mind, that execution matters most (Doerr, 2018)

The development of an Innovation Management Model based on the country particularities, shared and aligned with the main country innovators could help more companies to have successful innovations, no matter if these are product, process or product and processes.

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Sustainable Development of Regional Tourism

Abdo Kataya¹ and Awatef Ali Abdallah²

¹⁾²⁾ *Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: boudyatayaa@hotmail.com; E-mail: awatef_abdallah@hotmail.com

Please cite this paper as:

Kataya, A. and Ali Abdallah, A., 2021. Sustainable Development of Regional Tourism. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 946-954 DOI: 10.24818/BASIQ/2021/07/118

Abstract

Economic development is a major objective of contemporary society which, transposed to the rural area, makes it a factor of production. Regional tourism represents for many countries an alternative to economic development, but it needs a well-developed strategy for a long-term sustainability of this field of activity. Providing regional tourism must be done with special responsibility without omitting the importance of motivation in choosing a certain destination. This empirical research makes a foray into the literature on the sustainability of regional tourism and, using the observation method, presents practical ways of action in this field from several European countries and Lebanon. The main findings reside in the fact that regional tourism can be sustainable if it highlights a sum of intrinsic characteristics that are perpetuated without negatively influencing the environmental, social, economic or cultural dimensions of the considered area.

Keywords: Regional tourism, rural tourism, sustainable development, Lebanon.

DOI: 10.24818/BASIQ/2021/07/118

Introduction

Tourism can make a significant contribution to the conservation and maintenance of biological diversity and the sustainable use of natural resources. Regulatory measures, controlling the number of tourist activities and the movement of visitors to protected areas can limit the impact on the ecosystem and can help maintain the integrity and vitality of the site. Other measures related to the planning and controlled management of tourism development and which can lead to minimizing the negative impact of tourism on the environment are: the use of non-polluting building materials, energy saving systems and its production from renewable sources, promoting energy policies. reduction of pollution caused by tourist transports, ecological education policies for tourists, etc.

The analysis of the pressure of regional tourism determined by the magnitude of the relationship between supply and demand, the interdependence of tourism demand indicators and the absorption capacity of the region highlights a number of negative influences on environmental protection and quality, economic growth and population welfare. We understand that tourism activities in various forms can cause negative effects related to air pollution, land use, availability and quality of water resources, and biodiversity. It is clear that between the impact of tourism and sustainability on the ecosystems of a given area there is a direct relationship (Tigu, et al., 2020). Based on this argument, the sustainable development of long-term tourism can only be achieved by eliminating the negative impact on the ecosystem.

The close relationship between tourism and the environment is based on:

- the physical-geographical elements of the environment considered to be tourist attractions;
- tourist facilities and infrastructure belonging to the artificial environment;
- the impact on the environment generated by the development of tourism and the tourist utilization of the regions.

Sustainable development is an important concept and increasingly present in the literature, designed to determine an economic development subordinated to the environment adapted to any field of activity including tourism in general (Hall, 2019), but especially recreational rural areas, in particular (Saarinen, 2020). Thus, sustainability becomes the objective and dominant principle of any policy, regardless of the level of tourism development (Kataya, 2020). The idea of sustainability attached to tourism involves the introduction into the economic circuit of capitalizing on natural resources (for recreational purposes and not only), so that it can be perpetuated for a long time at the same parameters using existing resources and environmentally friendly procedures to protect resources and environmental biodiversity.

Taking into account the need to ensure the sustainability of tourism activities, there is the necessity to interconnect tourism with the environment in its two forms: the reduced form and the extended form. The reduced form includes two directions: environmentally sensitive tourism and environmentally dependent tourism. Environmentally sensitive tourism aims at pollution reduction, nature conservation and protection of the built environment, and environmentally dependent tourism refers to the "Green Sector" area, namely, the tourism industry that offers an experience in nature. The broad form includes the emergence of tourism events in the context of local culture and improving the economic profitability of the tourism industry.

Review of the Scientific Literature

In the last decades, we are witnessing an accelerated tourism development that tends to affect the balance between meeting tourism demand and its ability to be absorbed by the environment (Kostić, et al., 2018). The existence of a pressure that affects the tourist resources or the component of the tourist potential (natural and anthropogenic) is highlighted (Wearing and Neil, 2009); respectively the social component, namely the impact on the resident population in those areas. Basically, exceeding the maximum visiting capacity (by direct tourist pressure on the landscape or other tourist attractions by incorrect capitalization of tourist attractions) leads to a series of negative effects, starting with tourist attractions and tourist satisfaction and ending with the perception of residents competing with those who temporarily visit the city (tourists, visitors, commuters, migrant workers) to use the space and services (Coccosis and Mexa, 2017). Competition is intensified especially when buildings are used, due to the increasing demand for non-residential use. As there is excess demand, it generates higher prices in the real estate and product markets, which increases the cost of living. The use of tourism can help to improve the economic and social conditions of some of the inhabitants (Gretzel, et al., 2015), but it can also cause an increase in environmental problems (Postma and Schmuecker, 2017). In addition, they make it difficult for residents to access public transport. The negative impact is highlighted by the degradation of the environment, water, air, noise, visual pollution, waste, ecological risk, the impact on architectural or historical sites, as well as the damage resulting from the use of the land as a whole.

Currently, there is an intense concern for capitalizing on the landscape resources of rural areas, so that a new form of tourism called rural tourism is emerging (Adamov, et al., 2020). Rural tourism consists of tourist accommodation and dining services located in rural areas (Guzman-Parra, et al., 2015). The infrastructure is specific of small dimensions, with a specific architecture oriented towards the rustic, traditional style. The gastronomy is specific to each area and is served in specific tourist structures run primarily by a family member or family in general.

Economic development is a major objective of contemporary society which, transposed to the rural area, makes it a factor of production. At the same time, the rural area benefits from other resources whose capitalization contributes to the diversification of the rural economy which, on the background of an economic performance, determined the rural area to be promoted as a consumer good, being assigned a new vocation, becoming a residential space, respectively recreational space. Once the

interest for the rural area has been expressed as a consumer good, there is a reversal of values, in the sense that areas without agricultural vocation, with zero sales value, register, if they fulfill a residential function, a significantly higher price compared to the price of the useful agricultural area. The promotion of rural space as a consumer good is directly dependent on the quality of the environment, which is not easy to ensure in the conditions of the contemporary economy (Kachniewska, 2015).

World Tourism Organization defines rural tourism as an alternative to spending free time by tourism consumers attracted by the rural area, developed in an organized way and led by the rural population, in order to capitalize on the tourist potential and local tourist structures. Rural tourism is associated with all forms of eco-tourism complemented by outdoor tourism activities, respectively the discovery of nature, culture and gastronomy (Martinez, et al., 2019). Other specialists define rural tourism as the sum of all recreational experiences, ie visits to rural areas for activities, events or attractions in the urban area (Huang, et al., 2016).

Providing rural tourist products must be done with special responsibility without omitting the importance of motivation in choosing a certain destination. The tourist village is a picturesque area, in general, well represented in terms of economy, urban and cultural heritage, unpolluted and conservative of some cultural-traditional models (Streifeneder, 2016). There are many advanced classifications of specialists focused on the functionality of these villages, and highlights the following categories (Akbarian Ronizi et al., 2016; Jordan et al., 2016):

- landscape and climatic villages,
- tourist villages for winter sports,
- seaside villages,
- pastoral tourist villages,
- villages with historical, art and architectural monuments,
- tourist villages of artistic and artisanal creation,
- tree-vine tourist villages.

The analysis of the internal and external environment of rural tourism shows the influence of the specific component elements on the development and diversification of tourism and at the same time an interpenetration of them whose intensity is given by the experience offered to the consumer of rural tourism product. Thus, we can speak of the following types of rural tourism (Martínez, et al., 2019; Fang, 2020):

- Rural tourism itself - in the sense that the emphasis is on the experience in the rural household (tourist boarding house) and relaxation in a recreational (rural) landscape that allows the visualization of the daily activities of the hosts and the community;
- Agrotourism - in the sense that the emphasis is on the experience in the agricultural household with direct involvement of the tourist in the specific agricultural activities;
- Ecotourism - in the sense that the emphasis is on the experience of various activities carried out in nature (hiking, etc.), but may also include cultural or educational activities, respectively nature conservation activities;
- Cultural tourism - in the sense that the emphasis is on direct access to all cultural aspects offered by the rural environment: annual fairs, traditional customs, cultural and religious monuments, etc.
- Educational tourism - in the sense that the emphasis is on activities for educational purposes carried out in rural / agricultural households, respectively at the level of the rural community (equestrian tourism, speleological tourism, etc.).

From a lack of skilled manpower to exploitation of the rural climate, insufficient physical facilities, and language barriers to a lack of business knowledge, rural tourism faces numerous challenges (Ramakumar and Shinde, 2008). Molera and Albaladejo (2007) described five types of tourists who wanted different things out of their vacation in a rural environment. Just two of these segments were attracted

by events, while four of them valued nature, climate, and peace. The remaining group consisted of people whose sole motivation was to spend time with their families. Other studies attempted to connect visitors to the type of accommodation they stayed in, in addition to the purpose of their trips. Similar groups of visitors with different needs prefer different types of lodging. Pricing is another aspect that influences consumers' decisions on which products or services to use (Mattila, 2004; Deac, et al., 2016).

Research Methodology

This paper uses observation and case study as a research methodology as it has proven in numerous studies and projects of utility and relevance. The methodology consisted of analyzing relevant literature: reports, strategies, studies, monographs.

Observation is a qualitative method and is defined as an additional method used in field research, which can bring more knowledge due to the fact that the researcher can study the phenomenon in its natural environment. The method contributes to obtaining richer information on the phenomena and processes studied, given that there is a risk that only through interviews we cannot obtain all the information relevant for research.

The case study is the method that allows a complex and in-depth approach to a problem in situations where there is not enough information and it is necessary to conduct an exploratory study. It is a method of holistic analysis applicable to complex situations and fully depicts a given situation, in order to obtain an accurate picture of current phenomena and to understand the causes that determined them. The case study is an analysis that is based on multiple data sources (interviews, time observations, statistics and factual information).

Rural Tourism in Several European Countries

Rural tourism, as usual, has its own history. As precursors of this activity, we mention: trips, visits, feasts, etc. In other localities and even distant countries determined by traditional holidays in connection with the main activity carried out in rural areas - agriculture, as well as by religious motivations (church feasts, pilgrimages, etc.). Currently, rural tourism has reached impressive levels of tourist attraction in rural areas and has developed real models of capitalization of the elements that give tourist specificity of a certain area.

Austria, as a result of a program entitled "Green Plan" and launched by the Ministry of Agriculture and Trade in Tyrol, has succeeded in fulfilling a corollary to promote this form of tourism, such as catalyze the founding of non-governmental institutions to solve specific problems: "Rural Tourism Organizations and Management Centers" (Quendler, et al., 2020). The promotion of the Austrian rural tourism product is achieved through multiple institutions, among which we mention the Chamber of Foreign Trade, Cultural Institutions, etc.

Germany stands out by starting a large project in 1980 entitled "From the North Sea to the Alps" whose result is the training of 2/3 of the German rural area in the practice of rural tourism (Retallack, 2018). The basic feature is the accompaniment of the rural tourist product by multiple support elements (services): cycle-tourist routes, horseback riding and / or cart rides, etc.; introduction to crafts through visits to specific workshops; stays for naturalists, walks, hikes, pilgrimages, etc. Testimony in this regard are the tourism activities carried out in recognized regions such as Schwantwald and Messen.

Denmark illustrates a number of peculiarities regarding the activity of rural tourism starting with its promotion under a specific name: active holidays (Zhang, et al., 2007). Tourist services are provided with the support of the Landsforeningen for Landboturisme in Skandenborg in 22 settlements with about 3,000 beds.

Finland (the land of fjords, but also of Santa Claus), considered a paradise for nature lovers and pure, cool and fresh air, has an infrastructure of tourist equipment detached as if from the world of stories representing over 50,000 approved establishments offering over 10,000 beds.

Ireland adopts rural tourism and develops its specific activities in about 500 agricultural enterprises that have as specific - bed and breakfast - (bed and breakfast), completed on request with half board, respectively full board.

Italy stands out in terms of this form of tourism by promoting the concept - green holidays - whose main component is agrotourism comprising about 15,000 structures (farms, renovated archaic houses, rest homes, guesthouses, traditional houses, modern villas, castles and fortifications).

Portugal offers 800 km of coastline, 12 islands and a passion for the mist of time for the ocean that are crucial elements in promoting rural tourism. It has been regulated for a very long time (1986) being practiced by families of farmers or people from urban areas who own residences that are of interest either from a particular, historical or architectural point of view. Numerically, rural tourism groups over 100 facilities that offer about 1500 beds.

Regarding the consumer population of rural tourism, the elements that influence the characteristics of rural tourism are generally given by the purpose of the trip. It is oriented towards: the relationship with the physical environment, with the lifestyle and cultural traditions or towards their integration. Thus, the following types of national and foreign consumers result.

The types of tourism consumers are:

- traditionalist tourist - also comes from an urban environment and prefers to spend his legal holidays in a rural, traditional environment; traveling with family or friends;
- the high-income tourist - resides in the urban area and chooses the weekend party or the holiday in the rural area in order to discover the specificity of the country, he travels with his family or friends; manifests a series of requirements, such as: superior accommodation conditions, varied and traditional local gastronomy, the hosts to be at his disposal and to satisfy his needs, although traditionalist seeks urban comfort (cable television, parking, etc.); is willing to pay to have access to his vision of accommodation and meals; moves on its own; is attentive to special offers (e.g.: holidays) and generally book your location online or by phone; generally prefers tourist areas with high natural and anthropic resources but which offer something interesting or important to visit in their free time (monuments, religious objectives, etc. known); can be retained by pensions that meet its quality requirements;
- the middle-income tourist - residing in the urban area wants to spend his vacation in an environment accessible from the budget point of view, so as to ensure the optimum between satisfaction and costs; travels with family or friends;
- low-income tourist - resides in the urban or rural area who wants to spend his free time / vacation in an environment accessible from the budget point of view; it generally chooses off-season offers that have low prices and allow for an extended stay; travels alone, with family or with organized groups (pensioners, budgeters, etc.);
- weekend tourist - he resides in the urban area, he is integrated in the labor market with stressful and tiring effects on him, fact for which he chooses to retire for the weekend in the framework offered by the rural space in a pension, for relaxation and recreation being accompanied by family or friends.
- The types of tourism consumers of foreign nationality attracted by rural tourism according to the little information available describe the following types of consumers:
 - European foreign tourist - is distinguished by the fact that he is a family man; eager for new cultural experiences; adventure spirit; follower of holidays in rural specifics, traditionalist; knows basic elements about the country, having direct or indirect relations with local people, reason for which it appeals to the choice of locations based on their recommendations or friends and less based on advertisements; he moves on the basis of a very clearly established route and chooses known locations or where other of his compatriots have been; knowledgeable about the infrastructure situation, which is why he chooses more accessible transport routes; prefers transport on its own and will not go very deep into the country; wants to know the rural experience we mentioned before, the cultural and religious customs, gastronomy, crafts and local handicrafts, etc.

- Eastern foreign tourist - is distinguished by having information about the rural tourist offer, focused on important areas; destinations are very well chosen, they usually strictly respect this choice; generally prefers areas close to the border; travels with family, friends or the group being oriented towards visiting some tourist objectives; it is accommodated in high capacity pensions, from resorts of tourist interest; the choice of the visit is made according to the price and offer; they can be loyal especially during the traditional holidays.

This typology is very important in highlighting the characteristics of the rural tourism product because it highlights a series of correlations between certain factors that substantially influence rural tourism: mentality, hospitality, customs, folklore, culture, politics, economy.

Rural Tourism in Lebanon

Since one of the core concepts and values of sustainable tourism is to protect the environment and its resources in rural areas, many tourism policies and regulations in rural areas in Lebanon, particularly in large areas such as nature reserves, promote or even forbid visiting the area alone without a local guide as a practice to help local people in these areas.

The preference for self-organizing a journey, exploring the region without a local guide, and driving one's own car rather than taking an organized tour are all indicators of the Lebanese's lack of trust in the services offered by tourism stakeholders, demonstrating that visitors' culture has a significant influence on their decisions and behaviors. (Ghadban, et al., 2017) Tourism stakeholders should enhance and increase the quality of services, establish strong customer relationships, and improve the skills of local guides in rural areas.

Due to Lebanese customs and practices, as well as their history, most people tend to visit rural areas during the summer. Rural regions must maintain a positive picture of themselves and the services they offer, as well as improve customer relations, by creating efficient and interactive websites that provide visitors with important information prior to visiting the region. Tourism research centers should provide more information and take advantage of the internet and social media, perform more rural tourism studies, and share the findings with stakeholders and tourists. (Ghadban, et al., 2017)

Regional tourism in Lebanon is facing various challenges as a result of unbalanced post-war development policies, causing a change in living habits, as demonstrated by the decline of the agricultural sector and the deterioration of the environmental and historical landscapes. This generated an increase in rural exodus, with young people migrating to cities in search of better jobs and living conditions. In relation to tourism, Lebanon's domestic and international tourism markets are seeing a change in demand. People are turning to rural areas in search of unique experiences and idyllic landscapes. (Ghadban, et al., 2017)

As a result, if tourism in rural areas is not well planned and handled, it can have a detrimental effect on the natural and cultural heritage. Hence, the solution is to develop a combination for regional tourism and sustainable landscape management that will support the rural population by providing extra income sources. Moreover, the Syrian crisis has had a significant impact on the Lebanese tourism industry, particularly international arrivals. Lebanon has suffered from ongoing internal political conflicts, security incidents, and a large influx of Syrian refugees over the last years.

Tourism stakeholders that have direct contact with tourists must raise their understanding of the importance of adhering to sustainable tourism standards and guiding principles. Visiting rural communities and living in a luxury hotel or dining at a fusion restaurant does not imply that tourists engaged in rural tourism or acted in a sustainable manner. The ideas of guest rooms, eco-lodges, or other types of ecologically sustainable accommodation must be conveyed to possible customers more effectively. Researchers have investigated tourism demand to better understand tourist wants and requirements and to stimulate them to discover more rural regions, although it is critical to strike a balance between welcoming tourists and preserving the environment and natural resources.

Results and Discussion

The sustainability of rural tourism means its continuity and involves investments in projects that capitalize on landscape, material and human resources without altering them and for the benefit of the consumer of such services and the environment. Rural tourism can be sustainable if it highlights a sum of intrinsic characteristics that are perpetuated without negatively influencing the environmental, social, economic or cultural dimensions of the considered area. Sustainable tourism development is a concern of the local community that seeks to optimize the benefits of tourism for all stakeholders, but adapted to local needs. Based on these preliminary observations, the development of rural tourism, but especially its sustainable development, must start from individual-consumer but also supplier/producer to national/transnational policies being absolutely necessary to take into account what it has, maybe, he wants and knows how to offer the local community.

The sustainable development of rural tourism is done only if we take into account the particularities of the communities, their own development policies, which will then be framed in national/transnational structures of a political, economic or social nature. On the other hand, the sustainability of rural tourism is dependent on the way in which man, taken in his individuality, and the local community, as a whole, are able to preserve the natural environment, which must and can be used with one condition: to be maintained and to produce at the same stable level. In the absence of a balance between quantity, quality and productivity provided by human and natural resources in rural areas, adapted to economic dynamics, variable and often difficult to anticipate, sustainability cannot exist in fact. Making a synthesis of the elements of sustainability, Sillignakis (2001) observes that ensuring sustainability requires the following conditions to be met: a maximum number of tourists that do not affect the natural environment or the quality of the tourist experience; the quality of the natural environment and the quality of the recreational experience; the physical and social capacity of the rural space to support the activities and the tourist development; the ability of local communities to economically, socially and culturally support tourism development.

Some authors highlight that tourism, as an economic activity, is a vehicle of development, emphasizing the fact that rural tourism is an alternative to mass tourism, demanding and requested, which, however, has its advantages and disadvantages (Briedenhann and Wickens, 2004). Beyond the strengths of developing a community through tourism, be it even recreational rural tourism, sustainability remains a controversial term and state of affairs, but many authors and specialists leave no room for controversy regarding their choice on this topic: any form of tourism should, in itself, be environmentally sustainable and able to lead indefinitely to the achievement of sustainable development policies and objectives.

Conclusions

In some parts of the world, recreational rural tourism has proved to be an alternative to economic development, but, beyond the obvious benefits that could be perceived as conditions for rural development, the chaotic approach to business in the field of rural tourism, respectively the business trend to develop in an ad hoc manner prove that, in fact, recreational rural tourism develops without any strategy, which generates a reduction of any medium and long-term sustainability of this field of activity.

In order to increase the sustainability of regional tourism, it is necessary to take into account some essential aspects, themes and key issues: impact on the environment; concern for a balance between supply and demand; competition between suppliers from the same geographical area, but also between different rural areas; aspects related to marketing; cooperation between various providers and the network they should form.

Rural tourism, beyond the inconveniences of a human activity, can be considered, along with other forms of tourism, but also with other forms of human activity of an economic nature, an option and an alternative for sustainable economic development. The study of the issue of sustainable development through rural tourism highlights an awareness of the importance of rural tourism in the rural economy and beyond; there are numerous initiatives for the valorization of rural tourism but without taking shape and examples of success in the development of rural tourism but on a small scale.

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Digital Skills Levels in 8 EU Ex-Communist Countries

Florina Bran¹, Victor Marian Dumitrache², Amelia Diaconu³ and Victor Adrian Troacă⁴

¹⁾²⁾³⁾⁴⁾ *The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: florinabran@yahoo.com; E-mail: victor.dumitrache@gmail.com

E-mail: diaconu.amelia@gmail.com; E-mail: adrian.troaca@gmail.com

Please cite this paper as:

Bran, F., Dumitrache, V.M., Diaconu, A. and Troacă, V.A., 2021. Digital Skills Levels in 8 EU Ex-Communist. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 955-962 DOI: 10.24818/BASIQ/2021/07/119

Abstract

Even if they had a similar characteristic before 1990, the countries from the communist bloc from Central and Eastern Europe have begun to differentiate one from another in terms of development after the fall of communism. Today there are many differences among them regarding their economic competitiveness. Measurements done by the European Commission through the Digital Economy and Society Index give us the chance to compare the progress registered by ex-communist countries in the last 30 years and their capacity and readiness to be competitive in the near future considering the changed brought by the rapid changes in technology and business models – the digital economy.

The purpose of this paper is to point out the major differences between 8 EU ex-communist countries in terms of digital skills.

We will perform a comparative analysis of the indicators aggregated under Human capital (digital skills) dimension of the Digital Economy and Society Index, among 8 EU ex-communist countries: Czech Republic, Slovenia, Slovakia, Poland, Hungary, Romania, Croatia, Bulgaria.

This article may add value by increasing the awareness regarding the importance of digital skills, especially in the context of COVID-19 crisis that made many sectors partially or totally dependent on technology, where both staff of the private and public organizations and the citizens and consumers need digital skills to provide or to consume goods and services.

Keywords: digital skills, digital economy, ex-communist countries in Europe, DESI Index.

DOI: 10.24818/BASIQ/2021/07/119

Introduction

The dynamic of the economic growth has changed in the last two decades and economic theories crystalized in the 20th century fail to come up with complete explanations (van Ark, 2016). The reason is that the new, digital economy, is totally different from the traditional economy. It is oligopolistic, global, amorphous, knowledge-driven, intangible, and very dynamic (Chohan, 2020).

The concept of Digital Economy consists of 3 main components, identified by Mesenbourg (2001):

- E-business infrastructure (software, hardware, human capital, networks, telecom, etc.).
- E-business (the way businesses are conducted, any process that is mediated by a computer and/or a network in an organization).
- E-commerce (online sales).

The digital economy has several key features that makes it different from the traditional economy of the 20th century: mobility of intangibles, mobility of business functions (remote work, remote access to markets, remote coordination of operations) (OECD, 2014), reliance on data, network effect, multi-side market, tendency to oligopoly and monopoly formation (Ciriani, 2017).

While in the academic world there are significant efforts to develop new economic theories and models to explain and predict the digital economy, governments and international organizations are focused on how to measure the performance of the digital economy and how to stimulate it.

Since 2015, the European Commission has measured the digital economy through Digital Economy and Society Index (DESI). The most recent report was published in 2020 and it is based on 2019 data that assess the status of the EU digital economy and society prior to COVID-19.

DESI aims to monitor Europe's overall digital performance and tracks the progress of EU countries regarding their digital competitiveness (EC, 2020). Measuring and tracking progress is crucial since the Commission wants a European Society powered by digital solutions that work for people and respect the EU core values, as stated in the *Shaping Europe's digital future* communication. (EC, 2020).

DESI is an aggregated indicator having 5 dimensions:

- Connectivity referring to: fixed broadband coverage, fixed broadband take-up, mobile broadband and broadband prices
- Human capital (digital skills) referring to: internet user skills and advanced skills
- Use of internet referring to: Citizens' use of internet services and online transactions
- Integration of digital technology referring to: Business digitisation and e-commerce
- Digital public services: e-Government

In the ranking presented in Figure no. 1 we can see that Finland, Sweden and Denmark are the most advanced digital economies in the EU while Romania, Greece and Bulgaria are the least developed. Also, all the 8 ex-communist countries included on our analysis in this paper, are below the EU average: Slovenia having the highest score among the 8, followed by Czech Republic, Croatia, Hungary, Slovakia, Poland, Romania, and Bulgaria.

Digital skills are considered the backbone of the digital economy and society. They give people the capacity to engage in basic online activities and to use digital services. The need for digital skills was strongly emphasized by the COVID-19 crisis. To various degrees, many sectors became dependent on technology. Commerce, education, healthcare, public services, and others could not be possible without technology being used by both providers and consumers. Basic and advanced digital skills need to be strengthened in the school curricula and academic offers in EU countries. As DESI 2020 report (EC, 2020) states, schools' curricula and academic offers need to give more importance to basic and advanced digital skills.

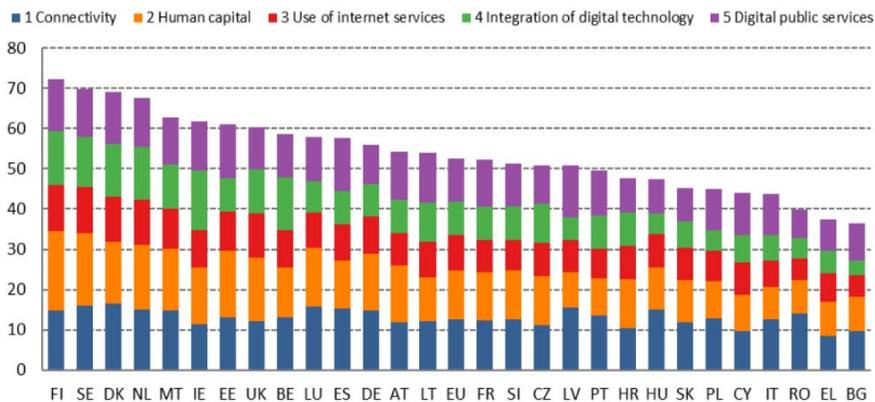


Figure no. 1. Digital Economy and Society Index, 2020

Source: DESI 2020, European Commission, p. 14

Considering these aspects, our analysis is focused on the human capital (digital skills) dimension based on DESI 2020 data. As following, the next section of the article gives as an in depth understanding of the digital skills concept.

Review of the scientific literature

Having digital products and services developed by technology companies is not enough to develop the EU digital economy. Having skilled digital consumers is equally important for the digital economy development as innovation and technology. A digital consumer can be defined as somebody searching for and buying products and services on the Internet, consuming online content, willing to simplify the decisions they have to make and, generally, being aware of their needs (Tkaczyk, et al., 2016). The contemporary society is not characterized only by technological advancements, but also by globalization and accelerated accumulation of knowledge (van de Oudeweetering, et al., 2018).

In the work context, nonroutine, remote and interactive tasks have become more important than the manual, repetitive tasks which are being replaced through automation. (Neubert, et al., 2015).

In the digital economy, according to van Laar (et al., 2019) people (either in a domestic or work environment) use information communication technologies to access and spread information, to interact and exchange experiences with experts in learning communities, and to generate and refine their ideas. van Laar (et al., 2017) identified six generic digital skills for work setting, that are equally important for the digital consumers nowadays in the context of COVID-19 crisis. The skills are information, communication, collaboration, critical-thinking, creativity, and problem-solving skills. In the scientific literature, these generic skills have been defined as following:

- Information digital skills: skills to manage digital information, to search and to evaluate it: 1) Information searching skills: the use of search engines effectively and efficiently essential (Ananiadou, et al., 2008); 2) Information evaluation skills: the ability to sort and analyse information by criteria of relevance, reliability, and usefulness, defined as information evaluation (Hatlevik, et al., 2018); 3) Information management skills: the persons capacity to manage their email, files, documents, and other forms of digital information (Hwang et al, 2017), not only in a work setting, but also as a consumer especially since the beginning of COVID-19 outbreak.

- Communication digital skills: the ability to transmit information online and to use the best digital approach to present information to a particular audience (Ananiadou, et al., 2008). It consists of: 1) Communication expressiveness skills: the ability to create a specific impression through a digital interaction, that generates predictable outcomes (Mishra, et al., 2011); 2) Communication contact building skills: getting in contact with new people by using online channels (van Deursen, et al., 2014); 3) Communication networking skills: the ability to achieve a specific goal (such as selling products or brand awareness) by mobilizing online contacts (Wolff, et al., 2010); 4) Communication content-sharing skills: the ability to share content in the online environment, from media content to status updates, comments, blogging and vlogging. (Lee, et al., 2015)

- Critical-thinking digital skills refers to the use of evidence and reflection to make judgements about communication and information (Petrucco, et al., 2017).

- Creative digital skills: the ability to create online content by appropriately using online tools and software.

- Problem-solving digital skills: the ability to use ICTs to investigate a problem and apply knowledge in solving the problem. (Greiff, et al., 2017)

Research methodology

The current analysis that compares the 8 EU ex-communist countries is based on Digital Economy and Society Index 2020 (DESI, 2020) raw data that can be found on <https://digital-agenda-data.eu/datasets/desi/visualizations>. The charts are generated using the advanced data visualization tool on the platform.

Digital skills range from basic usage skills that allow individuals to actively participate in the digital society and consume digital goods and services, up to advanced skills that qualifies the workforce to develop new digital goods and services (EU, 2020) or to deliver online/digital services. This is the reason why each indicator that builds the human capital (digital skills) dimension of DESI has two dimensions: *internet user skills* and *advances skills and development*. The indicators aggregated in the human capital dimension of DESI are: 1) Individuals with above basic level of digital skills in Information domain, 2) Individuals with at least basic digital skills in Information domain, 3) Individuals with above basic level of digital skills in Communication domain, 4) Individuals with at least basic digital skills in Communication domain, 5) Individuals with above basic level of digital skills in Problem solving domain, 6) Individuals with at least basic digital skills in Problem solving domain, 7) Individuals with above basic level of digital skills in Software domain, 8) Individuals with at least basic digital skills in Software domain, 9) Science and technology graduates. We made a comparative analysis among the 8 EU ex-communist countries, based on 5 of these indicators, at least one from each domain.

The first 8 domain-based indicators further aggregated in 3 indicators: a) Individuals with above basic level of digital skills, b) Individuals with at least basic digital skills and c) Individuals with low level of digital skills (missing some type of basic skills). These 3 together with indicator no. 9 create the human capital aggregated indicator of DESI.

Results and discussion

Figure no. 2 presents the percentage of individuals (age 16-74) with above basic level of digital skills. They reach above basic skills level in all the four digital skills domains: information, communication, content-creation and problem-solving. Croatia (35.3%) is the only EU ex-communist country among the 8 that is above the EU average (33.3%). Romania (10.3%) and Bulgaria (11.3%) are the countries with the lowest percentage of individuals with above basic level of digital skills.

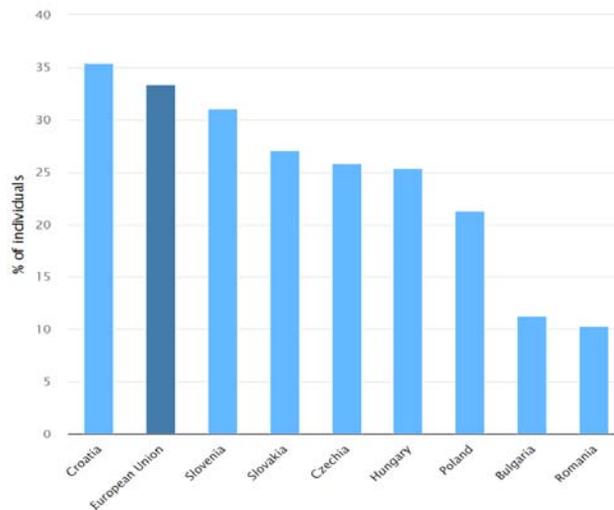


Figure no. 2. Individuals with above basic level of digital skills in 2019

Source: data visualization tool on www.digital-agenda-data.eu

In Figure no. 3 we can see that Czech Republic (75.2%) has the highest percentage of Individuals with above basic level of digital skills in Information domain in 2019, followed by Croatia (72.1%). The countries with the lowest scores are Romania (49.1%) and Bulgaria (44.9%). In the case of Romania, it means that only half of the population (age 16-74) has performed at least two of the following tasks in the last 3 months: 1) Copied or moved files or folders, 2) Saved files on Internet storage space, 3)

Obtained information from public authorities/services' websites, 4) Finding information about goods or service, 5) Seeking health-related information.

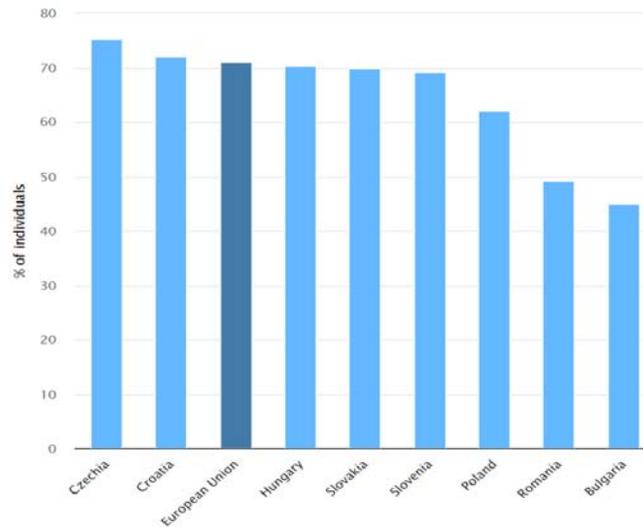


Figure no. 3. Individuals with above basic level of digital skills in Information domain

Source: data visualization tool on www.digital-agenda-data.eu

In Figure no. 4 we can see that Hungary (71.1%) has the highest percentage of individuals with above basic level of digital skills in Communication domain in 2019. The countries with the lowest scores are Romania (55.1%) and Bulgaria (54.2%). In the case of Bulgaria, it means that slightly more than half of the individuals aged 16 to 74 has performed at least two of the following tasks in the last 3 months: 1) Sending/receiving emails, 2) Participating in social networks, 3) Telephoning/video calls over the internet, 4) Uploading self-created content to any website to be shared.

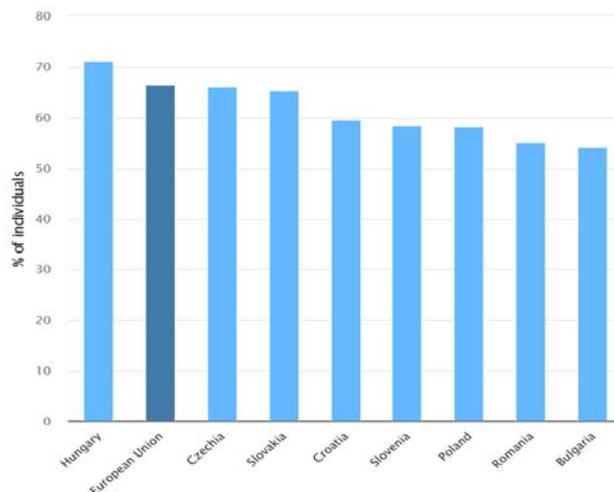


Figure no. 4. Individuals with above basic level of digital skills in Communication domain

Source: data visualization tool on www.digital-agenda-data.eu

In Figure no. 5 we can see that Czech Republic (63.4%) has the highest percentage of individuals with above basic level of digital skills in Problem solving domain in 2019.

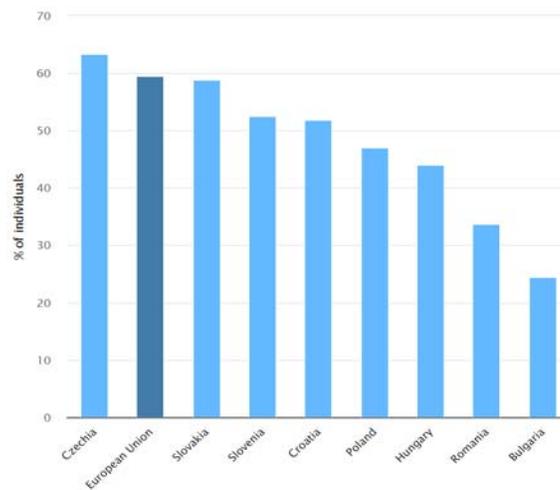


Figure no. 5. Individuals with above basic level of digital skills in Problem solving domain

Source: data visualization tool on www.digital-agenda-data.eu

The countries with the lowest scores are Romania (33.6%) and Bulgaria (24.6%). In the case of Bulgaria, it means that only a quarter of the individuals aged 16 to 74 has performed at least one task from category a) and one from category b) in the last 3 months: a) Transferring files between computers or other devices; Installing software and applications (apps); Changing settings of any software and b) Online purchases (in the last 12 months); Selling online; Used online learning resources; Internet banking.

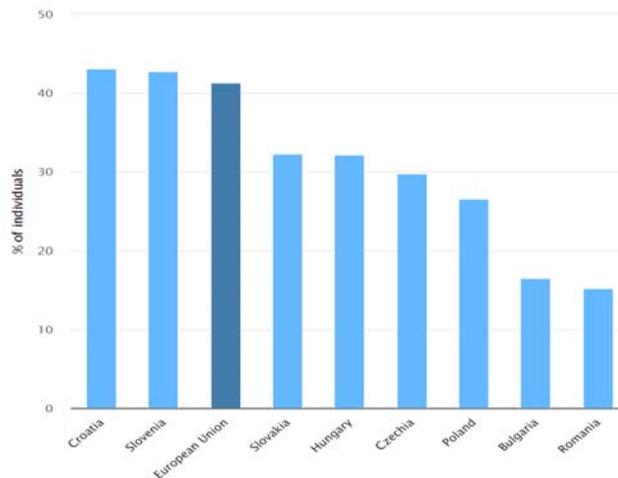


Figure no. 6. Individuals with above basic level of digital skills in Software domain

Source: data visualization tool on www.digital-agenda-data.eu

In Figure no. 6 we can see that Croatia (43.1%) has the highest percentage of individuals with above basic level of digital skills in Software domain in 2019. The countries with the lowest scores are Bulgaria (16.5%) and Romania (15.2%). In the case of Romania, only 1 in 15 individuals aged 16 to 74 has performed in the last 3 months at least two of the following tasks: 1) Created presentation or document integrating text, pictures, tables or charts, 2) Used advanced functions of spreadsheet to organise and analyse data (sorting, filtering, using formulas, creating charts), 3) Have written a code in a programming language.

These 5 indicators can give us a clue about the capacity and readiness of these 8 countries to be competitive in the near future. More in-depth analysis is needed.

Conclusions

In the context of digital global economy, the digital skills of the consumers are as important as innovation and the use of technology in industry and services. All the digital goods and services require digital skills to be consumed.

As the human capital (digital skills) dimension of DESI shows us, with some exceptions, all of the 8 EU ex-communist countries are below the EU average in all of the four domains of the digital skills: information, communication, problem solving and software. Aggregating all the four domains, only Croatia, with 35.3% of the individuals aged 16 to 74 having above average digital skills, is above the EU average (33.3%).

Among all, Romania and Bulgaria have the lowest scores in all the 4 domains, indicating that their economic competitiveness is in danger not only because the lack of digital skills triggers the lack of technology use in industry and the lack of innovation, but also because the population cannot take advantage of technology as consumers of education, healthcare, public services, commerce, and others that depend on digital solution in the context of COVID-19 outbreak.

The main limitation of this paper stays in its level of generalization. The data refer to individuals aged 16 to 74. Further research may generate more detailed interpretations and predictions by analysing data breakdowns based on age groups, education level, employment status.

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The Influence of Pandemics on Students' Online Activities

Irina Mairescu¹, Mihaela Bucur², Daniel Moise³ and Bogdan Georgescu⁴

¹⁾²⁾³⁾*The Bucharest University of Economic Studies, Bucharest, Romania.*

E-mail: irina.mairescu@com.ase.ro; E-mail: mihaela.bucur@com.ase.ro;

E-mail: moisedaniel@gmail.com; E-mail: bogdan.georgescu@mk.ase.ro

Please cite this paper as:

Mairescu, I., Bucur, M., Moise, D. and Georgescu, B. 2021. The Influence of Pandemic on Students' Online Activities. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021. *7th BASIQ International Conference on New Trends in Sustainable Business and Consumption*. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 963-969
DOI: 10.24818/BASIQ/2021/07/120

Abstract

The 2020 – 2021 COVID-19 pandemics shifted the educational and social behavioral patterns of mankind, because of the safety regulation taken by authorities across the globe. People and businesses had to rethink their activities, the online environment being the main support for social, business and academic communication. The current paper aims to analyze the way higher education students changed their behavior about online activities, during pandemics. As such, an online quantitative research was deployed at the end of May 2020, after 2 months of national lockdown and severe restrictions of social face-to-face interaction, on 193 students from Bucharest University of Economic Studies. The results indicate that the pandemics generated increased online activities, in general. In particular, it was found that the gender of respondents and the year of study are associated with the increased amount of time spent for certain online activities, such as getting informed for a potential future business, online shopping and getting informed to be prepared for university courses and projects. The research contributes to a better understanding of students' online behavioral patterns in a prolonged global lockdown situation generated by pandemics and offers useful insights for potential future changes in higher education based on online activities.

Keywords

Online environment, pandemics, COVID 19, behavior, higher education, students, gender

DOI: 10.24818/BASIQ/2021/07/120

Introduction

Information and communication technologies develop at an incredible fast pace and people – especially younger generations, depend more and more on using these, in every aspect of their living (Ogan, Ozakca and Groshek, 2008; Cai, Fan and Du, 2017). The spectacular growth of e-commerce (Chaffey, 2021), of online learning (Koksal, 2020) and social media (Tankovska, 2021) shows the extent of immersion in the virtual environment our society has. However, studies show that too much spending time online on computers, or mobile devices, leads to health and social issues on the long run, especially with young people (Nalwa and Anand, 2003; Twenge, 2013; Jiang, 2014).

COVID 19 pandemics generated states of emergency and states of alert in most of the countries, with severe restrictions of social interaction and travelling. Many areas of activity were affected by these measures, the education sector making no exception from it here. On campus activities were suspended - aiming at reducing social interaction and, hence, disease spreading (Bakshi, et al., 2021). Learning and education were suddenly transferred in the online environment and children, teenagers and young people were thus forced to spend their usual on campus learning time in front of computers, or other mobile devices connected to internet.

The current paper analyzes the way higher education students changed their behavior in online environment during pandemics in terms of time spent and activities performed online. It starts from an analysis of the scientific literature about online activities of students and the effects the pandemics has brought upon society and education, which is presented in the first section. Our paper continues next with discussing the design and results of the quantitative research we deployed at the end of Romanian national emergency state in May 2020, with the purpose of identifying the impact of pandemics on students online activities. Conclusions with future directions of research are presented in the last part of the paper, which contributes thus to deepening the understanding of pandemics lockdown effects on human behavior.

Review of the scientific literature

In the beginning of 2020, the World Health Organization (WHO) declared COVID-19 a health emergency (WHO, 2020). As a result of virus spread, countries across the globe introduced lockdown measures, trying to minimize social interactions and to reduce group exposure. In this context, schools and universities had to rapidly move their courses in the online environment, billions of students experiencing these sudden changes (Sukendro. et al., 2020). Academic staff and students quickly had to adapt to the specificity of online learning, without any previous special preparation (Aguilera-Hermida. et al, 2021).

The online environment provides rapid and easy access to information; hence this unexpected shift to e-learning might not be considered a problem. However, leaving aside the issue of infrastructure, which requires that students belonging to poor families have access to technology, in order to attend the online classes, there is a question about the health consequences of prolonged staying in front of a screen for young people (House of Commons, 2019).

Even before pandemics, students spent much time online, but the lockdown forced students to spend their on-campus time in front of a screen. For instance, the percent of Polish students who spent over six hours on online activities daily, during weekdays, increased by 42% compared to the time before pandemics (Wanat, 2021). In Romania, there were reported between four and eight hours of online staying, during the emergency lockdown. At the same time, nearly one out of ten people was spending up to 12 hours on the internet (Sava, 2021). Taking into consideration the social isolation and the uncertainties of the future, it is only natural that students should want to be connected to their social circles and to the latest news.

While being online, students spend indeed a certain time for learning, for solving tasks and making projects; however, social media, online leisure times (gaming, listening to music, streaming, video watching etc), business/work activities increase the time students stay connected to the internet (Educase, 2021). As a matter of fact, a study on British students revealed that, out of the average of 55 hours spent online in a week, only 14 hours were dedicated to university work (Hughes, 2019).

Among various online activities, social media is one of the most popular, the Social Media Generation expecting “instantaneous communication and feedback, engaging content, and accessibility” (Reid and Prudchenko, 2014). While studies report that there are differences in the online behavior of people (Seock and Bailey, 2008; Ye, et al., 2018), according to their gender, their results may be contradictory. Thus, and Jones, et al. (2009), point to the fact that female students spend more time communicating online, while a study of Alnjadat, et al. (2019) reveals that male respondents were more addicted to Social Media than female respondents. Regardless of these, it has come to a common opinion that people, especially young ones, spend too much time online, in various activities.

Research methodology

Starting from the issues identified through the analysis of the scientific literature, we conducted a quantitative research aimed at analyzing the way pandemics lockdown in Romania, during March – May 2020, influenced the online behavior of students, in terms of time spent on various activities.

We considered that it was important that students had at least one year of normal on campus academic activity, in order to be able to compare their online behaviors - among which university related ones,

during pandemics versus before pandemics. Consequently, we aimed at investigating students enrolled in the 2nd and 3rd year of bachelor studies, as well as those enrolled in the master programs.

The quantitative research was based on an online questionnaire, designed on Google Docs platform, distributed in May 2020, just at the end of the national state of emergency, to 268 students belonging to Marketing Faculty and Business and Tourism Faculty from Bucharest University of Economic Studies. The sampling was non-probabilistic, with a total of 193 complete and valid questionnaire responses. There were 123 female and 70 male respondents, 92 of them being bachelor students enrolled in the 2nd and 3rd year and 101 being master students.

Data retrieved from Google Docs platform hosting our questionnaire composed of 19 questions were first processed with Microsoft Excel and then analyzed with the statistical software Minitab 16.

Results and discussion

Our analysis focused first on assessing the time students spent online during lockdown, as compared to before lockdown, when they had to go on campus for attending their courses and seminars. The results presented in Figure no.1, indicate that almost 80% of students declare they spend more time online than they did before pandemics.

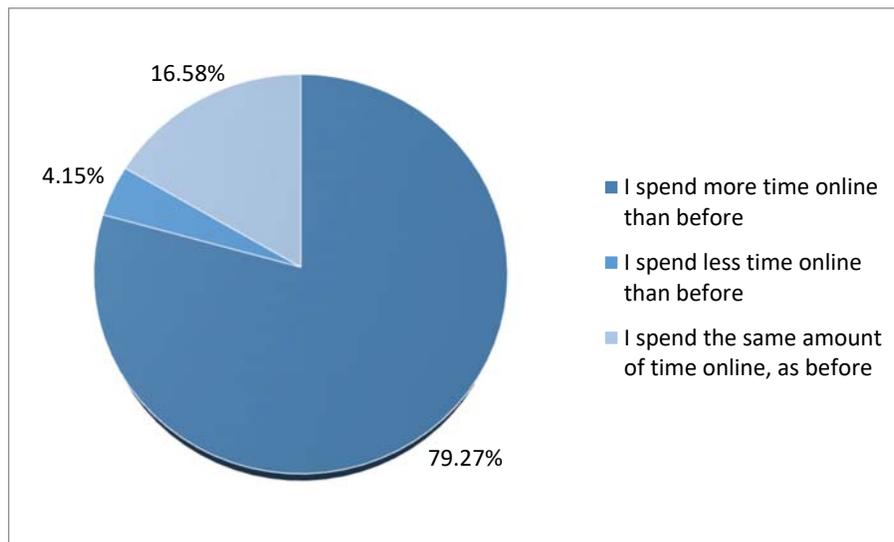


Figure no.1. The distribution of answers regarding online time spent during pandemics versus before pandemics

Given the fact that studies generally suggest that students even in a normal life, without social interaction restrictions, spend more time in front of the computer, than it would be healthy for their physical and mental wellbeing, these results raise worrying questions about the overall benefic effects of on campus studying ban.

Next, respondents were asked to point out those online activities where they spent more time during pandemics lockdown, than before. We listed various types of activities, ranging from Social Media where we included two of the most popular ones for social purposes - Facebook and Instagram (Tankovska, 2021), and for professional networking - Linked In, online shopping, hobbies and leisure activities and looking for future business opportunities. The results are presented in Table no.1.

Table no. 1. Online activities where respondents spent more time than before pandemics

Online activities	% of respondents
Instagram	72,02%
Online shopping	63,21%
Information for school courses and projects	60,10%
News	53,89%
Information about hobbies, leisure activities	53,37%
Facebook	48,19%
Information for a potential business	27,46%
LinkedIn	7,77%
Other activities - business related	1,04%

An interesting fact to remark is that students did not use their time at home more than usual to prepare their future business careers, but they rather looked more for the “normality” they lacked: variation of images and news about the world. Online shopping activity can be explained by the fact that the restrictions made quite difficult the physical shopping process of various articles which were not considered by authorities as vital; hence, this high number of more active than before online shoppers.

Next we were interested in identifying whether there is an association between the various online activities, where respondents declared that they had spent more time than before pandemics, and gender, respectively year of study. Pearson Chi Square test of association was performed, its results being presented in table no.2.

Table no.2. Pearson Chi Square Test of association between variables “online activities” and “gender”, respectively “year of study”

Online activities	Cross Tabulation with:	
	Gender	Year of study
Online shopping	<i>Pearson Chi-Square = 3.764; DF = 1; P-Value = 0.052*</i>	Pearson Chi-Square = 0.975; DF = 2; P-Value = 0.614
Facebook	Pearson Chi-Square = 0.048; DF = 1; P-Value = 0.827	Pearson Chi-Square = 2.713; DF = 2; P-Value = 0.258
LinkedIn	Pearson Chi-Square = 0.649; DF = 1; P-Value = 0.421	Pearson Chi-Square = 4.999; DF = 2; P-Value = 0.082
News	Pearson Chi-Square = 2.010; DF = 1; P-Value = 0.156	Pearson Chi-Square = 1.256; DF = 2; P-Value = 0.534
Instagram	Pearson Chi-Square = 3.261; DF = 1; P-Value = 0.071	Pearson Chi-Square = 3.022; DF = 2; P-Value = 0.221
Information for university courses and projects	Pearson Chi-Square = 3.447; DF = 1; P-Value = 0.063	<i>Pearson Chi-Square = 9.998; DF = 2; P-Value = 0.007*</i>
Information for a potential future business	<i>Pearson Chi-Square = 8.669; DF = 1; P-Value = 0.003*</i>	Pearson Chi-Square = 4.692; DF = 2; P-Value = 0.096
Information about hobbies/leisure activities	Pearson Chi-Square = 0.145; DF = 1; P-Value = 0.704	Pearson Chi-Square = 1.089; DF = 2; P-Value = 0.580

*significance level for p-value: 0.05

As it can be seen in table no.2 there is an association between the year of study and spending more time to get informed for university projects and courses, p-value being of 0.007. The distribution of answers indicates that bachelor students from the 2nd and 3rd year of study spent more time than before pandemics for getting informed for courses and projects, as compared to master programs students. This result does not necessarily imply that master students were not as serious during lockdown as bachelor students; it rather shows that master students, who are almost all employed and are attending tiring courses at the end of their work program, look for additional online information in order to keep up with courses requirements, before and after pandemics.

Also, it can be noticed, right above the cut off value (p-value is 0.052), that there is an association between spending more time for online shopping and gender (see table no.2). The analysis of answers distribution shows that female respondents stated in a higher proportion than male respondents that they had spent more time for online shopping in pandemics than before.

Another association was revealed, between gender and the preoccupation for getting informed for a potential business (p-value is 0.003). The cross tabulation between these variables indicates that male respondents declared in a higher proportion than female respondents an increased spending of time to get informed about opportunities for a potential business.

There were found no other associations between the other online activities and gender, respectively year of study.

Conclusions

The restrictions generated by the pandemics from 2020-2021 resulted in disruptions of the social and educational patterns of students. The immediate result of the emergency lockdown which took place in Romania, as well as in many countries across globe, at the beginning of pandemics, was a massive shift of the social and educational activities in the online environment.

Even before pandemics, there were concerns about the time young people spend in front of computers or mobile devices, connected online for various activities. Social isolation and online education, during this period, are premises for even more increased times spent online and for generating addictive habits and health issues. As such, the current paper, aimed to investigate the new patterns of online behavior in higher education students, as induced by the pandemics lockdown.

The results of the quantitative research deployed at the end of lockdown period, confirmed other research in the area, stating that students have increased their time spent online during lockdown. Social media and news were activities where students spent more time than before pandemics; on the other hand, career(Linked In) and prospecting information for potential businesses were hardly given more time than before pandemics. There was found an association between gender and getting informed about potential businesses, meaning that a higher percentage of male students spent more time in pandemics, than before it, higher percentage than female respondents prospecting for a future business. Also, a higher percentage of female respondents spent more time for online shopping, as compared to male respondents.

The research has *limitations* induced by sample specificity. Nonetheless, its results confirm the influence of pandemics on students'online activities, the purpose of our paper. A further direction of research will consist in measuring the change of students'online behavior along pandemics stages, as well as after its ending. It is important to assess in time the effects of such a major event, so that better social and educational policies could be issued, in case of facing similar future challenges.

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Coming Together or Falling Apart? An Analysis of Real Convergence in the Euro Area

Dumitru Miron¹, Ana-Maria Holobiuc² and Radu-Cezar Cojocariu³

¹⁾²⁾³⁾ Bucharest University of Economic Studies, Romania.

E-mail: dimitru.miron@rei.ase.ro; anamaria_holobiuc@yahoo.com;
radu.cojocariu@rei.ase.ro

Please cite this paper as:

Miron, D., Holobiuc, A.M. and Cojocariu, R.C., 2021. Coming Together or Falling Apart? An Analysis of Real Convergence in the Euro Area. In: R. Pamfilie, V. Dinu, L. Tăchiciu, D. Pleșea, C. Vasiliu eds. 2021.7th BASIQ International Conference on New Trends in Sustainable Business and Consumption. Foggia, Italy, 3-5 June 2021. Bucharest: ASE, pp. 970-979
DOI:10.24818/BASIQ/2021/7/121

Abstract

The advancement of the regional integration process from customs union to economic and monetary union has generated multiple benefits, but also complex challenges. In spite of the strict preconditions to join the Euro Area, one of the threats to the stability of the regional group is determined by the heterogeneous economic performances of its members. The aim of this paper is to study real convergence in the Euro Area between 2000 and 2019 by focusing on absolute and conditional β - and σ -convergence. Moreover, we have tried to conduct comparative analyses between European Union and Euro Area on the one side and the early adopters of the common currency and the new members on the other side. We have found evidence in favor of absolute β -convergence for Eurozone (19) and European Union, based on the inverse relationship between the initial level of GDP per capita and the average growth rates, but we have rejected the hypothesis for the early adopters of the euro. The average catching-up speed in the Eurozone (19) was 2.3% between 2000 and 2019, while the new members experienced higher growth rates, exceeding 4%. Moreover, we have accepted the hypothesis of conditional β -convergence, also illustrating that investment, trade, domestic credit provided to private sector and real labor productivity have positively influenced the GDP per capita growth rates both in the European Union and Eurozone. Finally, σ -convergence suggested that income gaps diminished within European Union and Eurozone (19) between 2000 and 2019, this trend being determined by the progress achieved by the new members.

Keywords

Real convergence, Economic growth, Euro Area, European Union, β -convergence, σ -convergence

DOI:10.24818/BASIQ/2021/7/121

Introduction

After seven decades since the first initiatives of regional integration on the European continent, the historical evolution of the European Union continues to be largely debated. Although the subsequent waves of enlargement enhanced the power of the European Union and strengthened its status in the global economic and political landscape, they also created diverse and complex challenges. One of the most pressing goal associated with the advancement of the integration process aims the economic, social and territorial cohesion. In this respect, even since the first stages of expansion of the European Economic Community, the decision-makers became aware of the threat of the persisting development gaps on the Community's stability and adopted policies to reduce the divergences between regions and subsequently between countries. In spite of the ambitious objectives established by the European Union in primary legislation and other strategic documents, such as the Five Presidents' Report, achieving a long-term convergence of economic performance proved to be a difficult objective.

The main purpose of this paper is to study real convergence in Eurozone between 2000 and 2019, by focusing on two key-concepts: (absolute and conditional) β -convergence and σ -convergence, developed by Barro and Sala-Martin (1992). We have used these instruments in order to conduct comparative analyses between five groups of countries: 1) European Union - comprising all the twenty-eight-member states; b) Eurozone (19); Eurozone (12) or early adopters - comprising the eleven countries that initially joined Eurozone and Greece; euro new member states – Slovenia, Slovakia, Estonia, Latvia and Lithuania; e) non-euro new member states – Bulgaria, Croatia, Czech Republic, Hungary, Romania and Poland.

One of the main objectives of the study was to identify if Euro Area can guarantee economic growth and convergence among its members. In order to respond to this question, we have initially studied the convergence patterns in the five groups, especially focusing on Eurozone, using absolute β -convergence. In the second part of our paper, we have tried to study conditional β -convergence and the main determinants of growth in the Euro Zone. In contrast with absolute β -convergence, that studies the relationship between the initial level of income and the subsequent growth rates, the conditional framework allows for controlling the differences between economies by including other explanatory variables. Absolute and conditional β -convergence was complemented by the analysis of σ -convergence, which suggested that the income differentials across the Eurozone members, particularly the early adopters, increased after 2009, as a result of the global financial crisis. Overall, we have captured two opposite patterns in the Eurozone (19). On the one side, the new members experienced important progress in terms of income convergence between 2000 and 2019. On the other side, the catching-up process in the Eurozone (12) has been significantly hampered by the financial and sovereign debt crises, the member states still facing difficulties to recover.

Literature review

Although the analysts have not reached so far, a consensus regarding the scope, definition, indicators or the main determinants of convergence, almost all empirical studies focused on European Union and/or Eurozone are based on the economic growth theories. The first pillar of the economic growth theories is the neoclassical model, developed in the twentieth century. The exponents of this theory (Ramsey, 1928(1989) and Lucas (1988) that tried to explain the economic growth process based on endogenously determined factors. The new theory, known as endogenous growth model, brought to the forefront the role of human capital, know-how and R&D. In contrast with the neoclassical growth model, which assume that less developed economies experience higher growth rates than the developed economies as a result of the decreasing returns to capital, the new theories include the possibility that the former group remain poor, while the latter continue their growth path and exceed their state of equilibrium.

Recently, the empirical studies aiming the binomial economic growth-convergence have significantly expanded, researchers being interested to study the possibility of the European Union to assure prosperity and cohesion between its members. In this respect, more and more studies were dedicated to European Union, analysts also trying to capture the performances of the newcomers from Central and Eastern Europe. Rapacki and Próchniak (2009) and Rapacki and Próchniak (2019) examined real convergence in the European Union, also taking into consideration the evolutions that took place in Central and Eastern Europe. By studying absolute β -convergence, the analysts identified a universal speed of convergence around 2% per year in the European Union. Absolute β -convergence has been usually accompanied by the study of conditional β -convergence. Stanišić, (2012) and Rapacki and Próchniak (2019) empirically demonstrated that the member states outside the Eurozone and those that adopted the common currency after 2002 experienced better economic performances than the early adopters. At the same time, experts illustrated that the Eurozone has not made significant progress in terms of real convergence out that during the 1999-2016, some countries even experiencing increases of income gaps compared to the Community's average. Diaz del Hoyo et al. identified a temporary convergence process until 2007 among the early adopters which was negatively affected by the global financial crisis. Diaz del Hoyo et al. concluded that the adoption of the euro was not a determining factor in achieving superior economic performance, especially in the case of the new members from Central and Eastern European. Similarly, Gros (2018) studied real convergence in the euro and non-

euro countries, trying to answer the question if the adoption to the single currency has contributed to the widening of development gaps. Gros considers that this hypothesis is not supported by practical evidence, as the new member states have continued their convergence process since joining the Eurozone. In the same line with Diaz del Hoyo et al. noted that the progress achieved by the new members was not influenced by the Eurozone membership.

In contrast, Franks et al. (2018) illustrated that despite the modest growth rates of old members, real convergence was higher in the Euro Zone compared to the EU (28) between 1993-2015. According to Franks et al. (2018) illustrated that lower-income countries recorded higher growth rates than the developed ones between 1960 and 1992. At the same time, β -convergence was accompanied by σ -convergence, so that divergences between the Eurozone (12) decreased at a steady pace until 1992. In contrast, analysts noted that the convergence speed slowed down after the adoption of the Maastricht Treaty, identifying even divergent trends. At the same time, analysts note that the new member states that joined the Eurozone have made significant progress, so that divergences have considerably narrowed.

In the same line, Marelli et al. (2019) identified divergences in the Eurozone between 1995 and 2016, the β coefficient being positive. Extending the sample by taking into consideration the European Union, Marelli et. Al identified a convergence rate of around 4%, mainly reflecting the high performance of the group of new member states. According to analysts, membership in the Eurozone did not influence the results of the study. Moreover, analysts identified asymmetric trends in the Eurozone by sub-period, concluding that convergence rates between component states have declined mainly since 2008, given the negative effects of the financial and sovereign debt crises, which have affected especially the peripheral members of the group. Similarly, Boltho (2020) illustrated that the new members from Central and Eastern Europe achieved remarkable progress both in the field of income convergence, gradually catching-up to the level of Western developed countries, and also in the field of competitiveness and institutional quality.

According to Christodoulakis (2009) emphasize the need to implement structural reforms in order to catalyze real convergence, especially in the Eurozone. According to the study conducted by Monfort et al considers that the enlargement of the Eurozone through the accession of the Central and Eastern European countries will amplify the structural disparities, negatively affecting the stability of the economic and monetary union.

From the perspective of Magnus (2013) noted that the European family has not achieved remarkable achievements since the launch of the common currency, despite the strategies adopted at the supranational level to increase the completeness and well-being of European citizens.

To sum up, the empirical studies aiming the topic of real convergence is vast and complex, taking into consideration different timespans, indicators, methodologies, geographical areas and subgroups of countries. Although a consensus between researchers is difficult to reach, the recent studies seem to reach a consensus regarding the advancement of the new member states. By contrast, some voices argue that the progress of the new members was accompanied by modest economic performances across the old member state, and particularly in the Eurozone.

Methodological aspects

In order to capture the economic landscape of the Eurozone, we have used the methodology proposed by Barro and Sala-i-Martin (1992) noted that “ β -convergence is a necessary, but not a sufficient condition for sigma convergence”.

In order to capture the European economic landscape, β - and σ -convergence were computed for five sets of countries: a) European Union (28); b) Euro Zone (19) (comprising the early adopters, Cyprus, Estonia, Latvia, Lithuania, Malta, Slovakia and Slovenia); c) Euro Zone (12); d) the new Euro Area members from Central and Eastern Europe (Estonia, Latvia, Lithuania, Slovakia and Slovenia) and e) the non-euro new member states (Bulgaria, Czech Republic, Croatia, Hungary, Poland and Romania). The main purpose of the comparative analysis was to identify if the adoption of the single currency enhanced the catching-up process by looking both at the evolution that occurred among the early

adopters and the new members. The data was obtained from Eurostat and World Bank databases and aimed the timespan 2000 and 2019.

In the first section of the paper, we have tried to study absolute β -convergence in European Union and Eurozone by employing cross-sectional regressions. The independent variable was represented by the initial level of income of the sample of economies, while the explained variable aimed the average growth rate between 2000 and 2019. If $\alpha_1 < 1$, we may conclude that the initially poorer economies experienced higher growth rates than the developed countries:

$$\frac{1}{T} \ln \left[\frac{y_{i,T}}{y_{i,0}} \right] = a + \alpha_1 \ln(y_{i,0}) + \varepsilon_i \quad (1)$$

y_i = GDP per capita of economy “i” in 2000; T = time interval; ε_i = error term

The speed of convergence was computed as follows:

$$\beta = -\frac{1}{T} \ln(1 + \alpha_1 T) \quad (2)$$

In order to determine the number of years that are necessary in order to reach the halfway towards state of equilibrium, we have used the equation below:

$$t^* = \frac{\ln 0.5}{\beta} \quad (3)$$

The analysis of absolute β -convergence was complemented by the conditional framework. In order to capture the main determinants of growth in the European Union and Euro Zone between 2000 and 2019, we have estimated two models, which include, beside the lagged value of GDP per capita macroeconomic, social and governance-related variables. The equations were estimated based on panel data and using seeming unrelated regression in order to account for heteroscedasticity and correlations between errors. The first model comprises as explanatory variables the gross fixed capital formation (% of GDP), the volume of trade (sum of exports and imports as % of GDP), the real labor productivity, the percentage of early leavers from education and training and an indicator referring to voice and accountability. The regression was computed as follows:

$$\Delta \ln y_{i,t} = a + \alpha_1 \ln(y_{i,t-1}) + \alpha_2(GFCF) + \alpha_3(Trade) + \alpha_4(RLP) + \alpha_5(Early\ leavers) + \alpha_6(Voice) + \varepsilon_{i,t} \quad (4)$$

The second model also takes into consideration the influence of macroeconomic, financial, labor market and governance-related variables:

$$\Delta \ln y_{i,t} = a + \alpha_1 \ln(y_{i,t-1}) + \alpha_2(GCF) + \alpha_3(Exports) + \alpha_4(Domestic\ credit) + \alpha_5(LFAE) + \alpha_6(Political\ stability) + \varepsilon_{i,t} \quad (5)$$

σ -convergence has been calculated taking into consideration the standard deviation of the data sets. The indicator has been computed as follows:

$$\sigma_t = \sqrt{\frac{1}{N} \sum_{i=1}^N [\log(y_{i,t}) - \log(\mu_t)]^2} \quad (6)$$

$y_{i,t}$ = GDP per capita of economy “i”; μ_t = the average GDP per capita in European Union

Table 1 presents the variables included in the first empirical model. In order to control the differences between economies, we have included two macroeconomic variables (gross fixed capital formation and trade), indicators related to the performances of the labor market (real labor productivity), the level of education (early leavers from education and training – part of the Europe 2020 Strategy) and related to the governance framework (voice and accountability, which is part of the Worldwide Governance Indicators). The expected influence of the explanatory variable is also presented in table 1

Table 1. Variables, definitions, and sources (model 1)

Variable	Definition	Source	Expected sign
GDP per capita	GDP per capita at market prices (PPS per capita)	Eurostat	The lagged value - negative
GFCF	Gross fixed capital formation (% GDP)	World Bank	Positive
Trade	Sum of exports and imports of goods and services (% of GDP)	World Bank	Positive
Real labor productivity	Real labor productivity per person employed (2010=100)	Eurostat	Positive
Early leavers	Early leavers from education and training (% of population aged 19 to 24 years)	Eurostat	Negative
Voice and accountability	Part of the Worldwide Governance Indicators	World Bank	Positive

Source: Author's presentation

Comparing descriptive statistics between the five groupings of EU countries, it can be noted that the average values suggest the existence of divergences between European Union and Euro Zone. However, the maximum and minimum values confirm that the composing countries of each group are not homogenous in terms of macroeconomic performances and social environment. For example, there are significant differences in terms of the GDP per capita growth rates between Eurozone, where the average values reached 2.2% and the new adopters of the euro currency that recorded values exceeding 5%. Moreover, the average value of GDP per capita remained higher among the early adopters, compared to Eurozone (19) and the European Union. Consequently, we expect to identify different trajectories in the field of convergence between European Union and Euro Zone on the one hand and the early adopters of the euro and the new members on the other hand. Although the new Euro Area members are still lagging behind the early adopters in terms of income per capita, the group experienced better performance in the field of investment, trade and the percentage of early leavers from education.

In order to capture the economic growth determinants in the European Union and to study the main determinants of economic growth, we have estimated a second model, which similarly includes macroeconomic social and governance-related variables. In this respect, table 2 presents the definition of the independent variables, as well as the expected sign:

Table 2. Variables, definitions, and sources (model 2)

Variable	Definition	Source	Expected sign
GDP per capita	GDP per capita at market prices (PPS per capita)	Eurostat	The lagged value - negative
GCF	Gross capital formation (% GDP)	World Bank	Positive
Exports	Exports of goods and services (% of GDP)	World Bank	Positive
Domestic credit	Domestic credit to private sector (% of GDP)	Eurostat	Positive
Labor force with advanced education	Labor force with advanced education (% of total working-age population with advanced education)	Eurostat	Negative
Political stability	Political Stability and Absence of Violence/Terrorism – part of the Worldwide Governance Indicators	World Bank	Positive

Source: Author's presentation

Variables included in the second model to study conditional β -convergence show, as already suggested by the former analysis, that the European Union and the Euro Area members are not homogenous in terms of macroeconomic, social, and institutional-related variables. Particularly, the new euro members experienced better performances than Eurozone (12) in the field of gross capital formation, exports, and the level of education. By contrast, the Central and Eastern European countries (both euro and non-euro) experienced modest performances compared with the European Union's average in the field of domestic credit to private sector and political stability.

Results

1. Absolute β -convergence

Figure 1 illustrates the results of absolute β -convergence for the Eurozone (19) between 2000 and 2019. The negative relationship between variables, reflected by the negative slope of the trend line, confirms the neoclassical growth model hypothesis, which suppose that the initially poorer economies experience higher GDP per capita growth rates than the developed ones. The main winners of the catching-up process were the Baltic States, which experienced average growth rates above 5.5%. In the group of the new members, the lowest growth rate was experienced by Cyprus between 2000 and 2019, reaching 2%. Similarly, the early adopters of the euro registered growth rates that reach on average 2%, with the exception of Ireland and Luxembourg. The two developed economies are calling into question the neoclassical growth model assumptions, experiencing growth rates above Euro Zone's average (Ireland 4.1% and Luxembourg 2.7%). At the end of the ranking were placed Greece and Italy, with average GDP per capita growth rates around 2%.

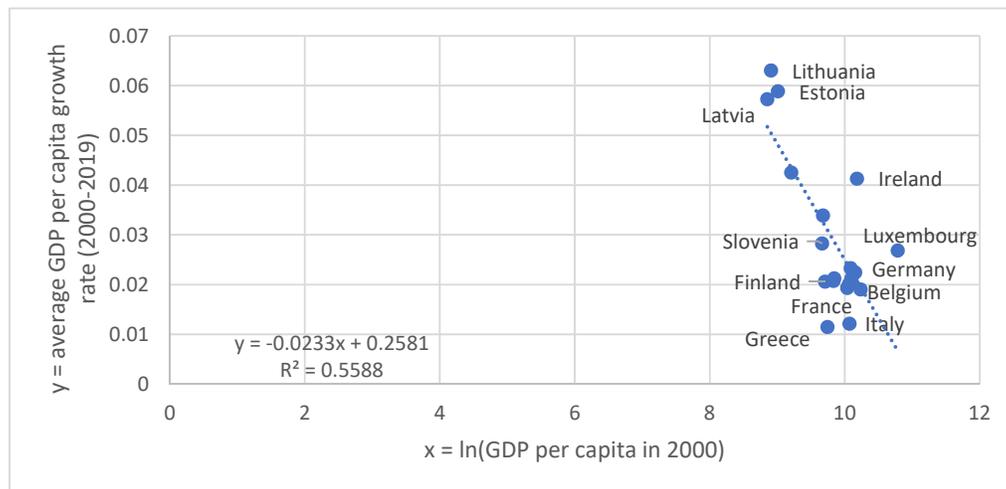


Figure 1. (Absolute) β -convergence in Eurozone (19). Authors' computation

In order to study to answer to the question if the Euro Area can guarantee economic growth and prosperity for its members, we have also studied the relationship between the initial income and the subsequent growth rates among the early adopters of the common currency. In this respect, figure 2 illustrates the results of absolute β -convergence, calculated on the basis of equation 1. In contrast with previous estimation, the positive slope of the trend line suggest divergence among the early adopters of euro. Consequently, the relationship between variables is positive, although the value of coefficient of variation is small (0.16). Also in this case, Ireland act as an outlier, with a high level of initial GDP per capita and an average growth rate reaching 4% (a double value compared the subgroup's average – 2.1%). Given the trends that were capture in figures 1 and 2, we may conclude that the convergence process identified in the Euro Zone (19) was mainly determined by the advancement of the new members.

The graphical representations are complemented by the comparative analysis of the results obtained by applying cross-sectional regressions for five groups of counties: European Union (28), Eurozone (19), Eurozone (12), euro and non-euro new member states from Central and Eastern Europe.

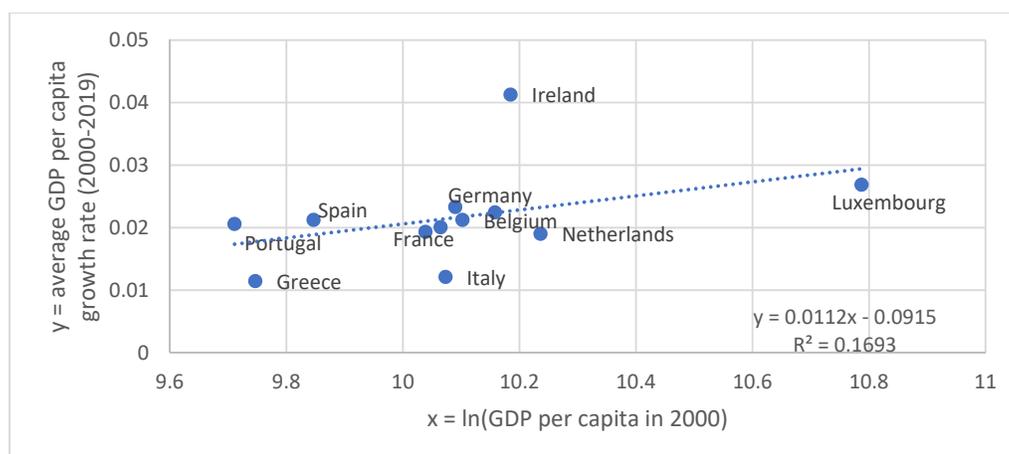


Figure 2. (Absolute) β -convergence in Eurozone (12). Authors' computation

The dependent variable was the average growth rate and the independent one the natural logarithm of the initial GDP per capita, as presented in equation 1. The convergence speed (β) and the number of years that are necessary in order to reach the half towards equilibrium are also presented in table 3.

Table 3. Absolute β -convergence

Dependent variable: Average GDP per capita growth rate (2000-2019)					
Method: Ordinary least squares (OLS)					
Group	European Union	Eurozone (19)	Eurozone (12)	Euro NMS	Non-euro NMS
No. obs.	28	19	12	5	6
α	0.2720* (0.0318) (8.5517)	0.2580* (0.0493) (5.2278)	-0.0914 (0.0791) (-1.1547)	0.4327* (0.0648) (9.5347)	0.3448* (0.0685) (5.0281)
GDP per capita in 2000	-0.0247* (0.0032) (-7.5469)	-0.0233* (0.0050) (-4.6330)	0.0112 (0.0078) (1.4276)	-0.0419* (0.0070) (-8.6958)	-0.0328** (0.0075) (-4.3331)
R ²	0.6865	0.5580	0.1643	0.9208	0.8243
Adjusted R ²	0.6745	0.5320	0.0862	0.8944	0.7804
β (convergence speed)	2.5%	2.3%	N/A	4.2%	3.3%
t*	27.7	29.4	N/A	16.2	20.8

Source: Authors' computation in EViews

Note: standard errors and t-statistics in parentheses. * - p-value < 1%, ** - p-value < 5%

At a first sight, the β -convergence hypothesis is confirmed for both European Union (28) and extended Eurozone (19), the convergence speed reaching 2.5% in case of the former and 2.3% for the latter. Based on these percentages, the European Union need almost 28 years to reach the halfway towards equilibrium, while Eurozone (19) 29 years. These results are in line with the previous studies, which confirm the 2% law of convergence (Barro and Sala-i-Martin, 1992). By contrast, as the graphical representation suggested, the relationship between variables was positive in Eurozone (12). By looking at the new member states, we identified higher convergence rates compared to the European Union's average: 4.2% for the euro members and 3.2% for the non-euro economies from Central and Eastern Europe. Similar conclusions were reached by Diaz del Hoyo et al. (2017) [15], Gros (2018) and Boltho

(2020) [20], who concluded that the new members of the Euro Area experience superior performances compared to the early adopters.

2. Conditional β -convergence

With the purpose to study the economic growth determinants in the European Union and Eurozone, absolute β -convergence has been complemented by the analysis of the conditional framework. As already mentioned, conditional β -convergence takes into consideration the structural differences between economies under the assumption that, they will not necessarily reach the same level of equilibrium. In order to study the convergence patterns, the differences between economies are controlled by including macroeconomic, social and institutional determinants. We have used the seemingly unrelated regressions in order to manage the heteroscedasticity and correlation between errors, which are frequent in the empirical studies of economic growth based on panel regressions. The hypothesis of convergence is confirmed for all the groups, given the negative relationship between the lagged values of GDP per capita and the annual growth rates. In spite of the results obtained under the absolute framework, which suggested rather divergence among the early adopters, the estimation of conditional β -convergence led us to different conclusions. Consequently, the empirical analysis confirms the importance of a stable macroeconomic and social environment in promoting economic growth and convergence. All the explanatory variables have the expected sign, illustrating that investment and trade catalyzed the economic growth rates in the European Union and Euro Area. The results suggest that the increase of income was mainly determined by the improvements of the real labor productivity. Although not statistically significant in all the estimations, the first model confirms the positive influence of the governance indicators (in this case, voice and accountability, related to the participations of citizens in the political selections and the freedom of expression) and the negative impact of the early leaving from education. The values of the coefficient of determination suggest that the model explains in a proportion of around 70% the variation of the dependent variable in the case of Eurozone (19) and non-euro new member states. In contrast, the coefficient of determination is around 0.50 for the estimates conducted for the European Union, Eurozone (12) and euro new member states. Moreover, the values of Durbin-Watson test, which is around 2 (with the exception of the estimation conducted for the euro new member states) suggest that there is no first order correlation between errors. Based on the coefficients of the lagged value of GDP per capita, we have estimated the convergence speed for each group of countries. With the exception of the non-euro members, for the rest of the groups, the convergence speed is higher under the conditional framework compared to the absolute model. The highest catching-up speed was experienced by the euro member states, reaching 14%, while for the European Union and Eurozone, the rate was around 7%.

We have also estimated a second model, which takes into consideration the level of investments, exports, education, the performance of the financial market and the governance framework, as illustrated in equation 5. The model confirms the hypothesis of income convergence, given the inverse relationship between the lagged value of GDP per capita and the annual growth rates. Similar with the first estimated model, the convergence speed is significant higher for the euro new member states, compared to the other groups. All the variables have the expected sign, suggesting that economic growth was enhanced by investment, exports of goods and services and domestic credit to private sector. Furthermore, the empirical analysis illustrates that the increase of labor force's education, as well as the political stability enhanced prosperity in both the European Union and Eurozone. The values of the coefficient of determination suggest that the model explains in a proportion that varies from 0.38 (non-euro new member states) to 0.74 (Eurozone (12)) the variation of the dependent variable. Moreover, the values of Durbin Watson Test, close to 2, confirms that there is no first order serial correlation between residuals.

Conclusions

Convergence of economic performance remain a challenging objective for the European Union. Even though the regional group has successfully promoted peace and collaboration across the European continent, the recent economic, financial, social and sanitary challenges has called into question its capacity to maintain prosperity and cohesion between its members. Particularly, these goals have proved difficult to achieve in the Euro Area that has been severely affected by the global financial crisis and subsequently by the sovereign debt crisis. Moreover, strong nationalist movements in some of the European countries, collaborated with the reluctance of some of the new members to become part of the Euro family in the near future are threatening the credibility of the Economic and Monetary Union. Consequently, the European Union and particularly the Euro Area has to prove during these challenging times that are capable to accomplish their objectives, and to assure prosperity and stability for its Members. The aim of this paper was to study real convergence in the Eurozone, by looking at the evolution of GDP per capita between 2000 and 2019.

The results of empirical study have a number of policy implications. First of all, it emphasizes the role of investment and trade in promoting economic growth both in the European Union and Eurozone. Moreover, the development of the financial market reflected by the percentage of domestic credit provided to private sector is an important contributor in generating prosperity. In the field of labor market, the study suggests that European decision-makers should take measures to increase the productivity and the level of education of employees. Moreover, the empirical study confirms that the efforts of the European Community to reduce the early school leaving, as part of the Europe 2020 Strategy, were also reflected in the GDP per capita growth rates. Finally, the empirical model captures the beneficial influence of a stable institutional framework and promotion of economic freedom. The analysis of absolute and conditional β -convergence has been complemented by σ -convergence. The evolution of the standard deviation suggests that β -convergence has been accompanied by a reduction of income gaps in both the European Union and the euro and non-euro new member states. Although the Eurozone (12) members experienced a decrease of income differentials in the second half of the interval, the financial and sovereign debt crises have severely hampered the convergence process. Consequently, the overall favorable evolution identified in the enlarged Eurozone is mainly attributed to the progress achieved by the new members. Overall, the paper captures the economic growth and convergence patterns in the Eurozone. Given the complexity of the process, the main limitations of the study aim the short period of time under review and the limited set of variables taken into consideration in the study of conditional β -convergence. Moreover, another vulnerability is determined by the limited number of observations in the panel estimations conducted for euro and non-euro new member states. Consequently, in order to validate the results, the empirical study may be extended by taking into consideration the influence of another set of explanatory variables under the conditional framework.

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ISSN 2457-483X
ISSN-L 2457-483X



Editura ASE

Piața Romană nr. 6, sector 1, București, cod 010374
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