

# Digitization of Sustainable Economic Development in the Actual European Condition

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## Abstract

In the current conditions of economic development, and of an unprecedented global experience of the COVID-19 pandemic crisis, many activities have changed, both economic and educational, medical, administrative. A special place, played by the accelerated digitization process that has taken place in recent years. In this study, we set out to focus this article we aim to focus on digitizing sustainable economic development in the current conditions of the whole of Europe. We reviewed the current state of sustainable development in the EU and the evolution of the digitization process. We discussed the issue of building a digital model of sustainable development. We reviewed the bibliographic study in the field; We came up with methodological proposals for the construction of the digital model of sustainable development.

## Keywords

Digitalization, sustainable development, sustainable economy

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## Introduction

For the next strategic cycle of the Strategic Agenda UE 2019-2024 digitalization and sustainability must go hand in hand, capitalizing on digital technologies as important factors for sustainability, ensuring sustainable digitalization (Popescu et al., 2021). Digital technologies are leading to increased energy efficiency, overall reduction in greenhouse gas emissions and material efficiency (Burlacu et al., 2021).

The concept of Sustainable Digitization emphasizes medium-and long-term synergistic partnerships between digital SMEs and traditional innovations, which aim at the long-term direction of the investment and digitization effort (Bodislav et al., 2021). Investments need focused on building European industry, capacity in strategic areas and supporting the long-term transition of digital business models (Balu et al., 2021). Artificial intelligence systems can successfully applied in the precise management of information and data to the digitization of products with the help of intelligent sensors. Sustainable digitization emphasizes long-term synergistic partnerships between innovative digital and traditional SMEs, aiming at long-term guidance in digitization efforts and investments. Investments need to focus on building European industry, capacity in strategic areas, supporting the long-term transition to digital business models, rather than supporting, purchasing digital off-the-shelf solutions. Digitization is promising for support in combating climate change, improving environmental sustainability, through digitization to address some of the issues of sustainability but also of a social nature (Radulescu et al., 2021). Climate change and digitalization are two global mega-trends that will in the long run shape EU policy in the long run (Radulescu et al., 2020). The European Green Pact and the Von der Leyen Commission have introduced policy changes in the EU in these areas, the two being more explicitly linked at the political level.

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In this article we aim to review the evolution of digitalization in EU countries, but also the evolution of sustainable development in the EU. Digitization will be an excellent support in sustainable management and economics, in support of digitized technologies and engineers. Decision-makers need to pay close attention to the effects of digitization in different sectors and policy areas, to prevent unwanted consequences. For example, in mobility policy, digitization can lead to a more efficient flow of traffic and help consumers share resources and find sustainable options. It can also lead to potential private actors to attract consumers to high profit but less sustainable options, such as taxis and public transport, while neglecting more sustainable but less profitable options, such as transportation. public transport or non-motorized transport. Integrated tickets risk putting public sector actors aside if the right legislative conditions are not set. Policy makers should ensure that sustainable options are not marginalized. In this article, we aim to review the evolution of digitalization in EU countries, but also the evolution of sustainable development in the EU. Digitization will be an excellent support in sustainable management and economics, in support of digitized technologies and engineers.

## 1. Review of the scientific literature

The digital economy is characterized by the following characteristic features (Ciobanu, Pană and Diaconu, 2015): 1. The infrastructure of the digital economy. 2. Electronic markets. with features: new agents, new types of products and services, new business relationships, new models of communication and organization. 3. Products based on information and knowledge. Most products on the electronic marketplace are intangible products. 4. Agents present on the markets: consumers, intermediaries. 5. Macroeconomic transformations and globalization processes. 6. The progressive and aggressive penetration of the digital economy in the economic and social development of the society.

In the opinion of the authors (Negrea et al., 2019): “currently, the information society is facing a number of key issues, which characterized by a good level of training of specialists in the field. Given the gap in economic development in the regions of economic development.” The authors are of the opinion that an important issue is the provision of regional information through digitization, only in this way can we lay the foundations for the construction of society and the knowledge economy. We can ensure regional development if we can build networks. Another problem for Romania is the severe gap in digital skills (Profiroiu et al., 2020).

According to the authors (Burlacu et al., 2021) E-government has started from the opportunities of new technologies, by providing electronic services to citizens, and has expanded in many areas, including communication, budget management, macroeconomic forecasts, etc. Given the definition: "E-Government is the applicability of information technologies for the provision of administrative services, information exchange, communication transactions, integration of various electronic systems and autonomous services between government and citizen (G2C), government and business environment (G2B), government - government (G2G), for processes, the interaction of administrative staff in the administration infrastructure, through e-government, government services are available to citizens in a convenient, efficient and transparent way. If we consider the objectives of the Europe 2020 Strategy are embedded in three mutually reinforcing priorities - Smart Growth, Sustainable Growth, Inclusive Growth. Online commerce is on the rise in both the horizontal expansion of big players and emag.ro, and by the emergence and consolidation of new niche stores (Bodislav et al., 2020). Author considers: "IBM research, companies looking for opportunities in the era of permanent connectivity with customers, focus on complementary activities: reshaping value propositions for customers and transforming operations, using digital technologies for customer interaction and collaboration. "The author asks some research questions: (1) How, have digital transformations (DT) evolved in business and management development? 2. What directions have studied in the profile literature (existing business and management) regarding digital transformation? The study divided into two parts: (1) mapping the thematic evolution of DT research in the fields of business and management; (2) Based on the findings of the first part, the synergistic framework linking the existing research in DT with the fields of business and management is proposed.

For the construction of a functional digital economy a fundamental role of the economy of the production of high-quality complex software products, which are based on the traditional principles and methods of the economy of development of complex technical systems (Lipaev, 2011).

The creation of software products associated with high costs determines the need for strict planning, formalization and standardization of their production processes, as well as economic control and maintenance, similar to those used in the production of other large industrial products (Negescu et al., 2020). The processes of creating the digital economy at the regional level are described with a greater number of indicators than at the national level (Gorlov et al., 2021). This is because, for the comparison of

countries in the world economy, universal indicators of expert analysis are used - which are similar for all countries, of which the best known and most used: IMD Digital Competitiveness Ranking (2020). Unacceptability of the large number of absolute indicators - due to differences in national statistical accounting systems. At the regional level, generalized / relative indices provide surface data, instead the absolute indicators of basic statistics are used.

In the current business and living conditions, everyone seems to be involved in the process of digital transformation. If you are interested in digital transformation, then you may have heard a lot of noise about it. One of the goals of digital transformation is to eliminate the need for a physical office, to eliminate the needs of a large number of full-time employees, to substantiate fewer suppliers for services or materials. The goal of digital transformation - a high level of automation, the delegation of a larger number of external people and the profitable preservation of processes that can be carried out anywhere in the world. Many organizations are eager to develop a digital platform (Androniceanu et al., 2017). However, it is not clear how to achieve this ambition, especially for large companies with existing complex structures. This study demonstrates how the growing trend of "Internal Source" (adopting internal open-source / crowdsourcing practices in large organizations) can help companies become more platform-based (Panwar, Pinkse and De Marchi, 2022). Supply chain disruptions caused by the COVID-19 pandemic are unparalleled due to a confluence of circumstances: a sharp increase in demand for some products, unforeseen changes in demand points, supply shortages, a logistical crisis and a recovery. unprecedented rapid growth in major economies. This article outlines the changes that will take place in supply chain planning and management in a post-COVID-19 world.

Rapid changes in technology - including advances in augmented and artificial intelligence, machine learning and mobile - pave the way for significant changes not only in the channels through which education is delivered, but also in the way education itself is structured. This article identifies eight ways in which educational technology can change the way learning is facilitated and who will facilitate that learning (Lyons, 2017). Today's managers are under tremendous pressure to discover the factors that influence customer attitudes and behavior. Unfortunately, traditional methods suffer from well-known limitations and have remained largely unchanged since their introduction decades ago. As a result, there is a growing interest in brain-based approaches, which can allow managers to directly investigate customers' basic thoughts, feelings, and intentions (Hsu, 2017).

The main purpose of this study is to evaluate an advanced feature selection technique, the artificial bee colony (ABC) algorithm; to reduce the number of auxiliary variables derived from a digital elevation model (DEM) and remote data (e.g. Landsat images). A combination of depth functions and miner data methods (artificial neural network: ANN and support vector regression: SVR) were applied for three-dimensional mapping of soil organic matter (SOM) in the basin (Taghizadeh-Mehrjardi et al., 2017).

Due to rapid urbanization and growing energy consumption, human society is putting increasing pressure on the surrounding ecosystems on which it depends (Lin et al., 2016).. As a result, the assessment of urban development should look at cities as complex ecosystems, including human and natural elements (Pricop et al., 2016). This paper establishes a carbon balance index (CBI) for an urban ecosystem based on its socio-economic development and land use change and land cover in Xiamen, a rapidly urbanizing coastal city in southeast China Bank, L. C., Thompson, and McCarthy (2011). The aim of the research described in this article is to improve the measurement, prediction and optimization of the performance of sustainable construction materials by integrating a decision-making framework for the sustainable selection of construction materials with a construction information modeling tool (BIM). The integration of a BIM model with a decision-making tool and the selection of sustainable materials addresses the difficulties of decision-making earlier in the design / construction process and allows for specific sustainability compromise analyzes, using current building conditions and characteristics (Ionita and Burlacu, 2009).

The dynamic development of the Fourth Industrial Revolution, focused on the implementation of Industry 4.0 technologies, has raised concerns among governments and society about the dehumanization of industry in the future (Saniuk, Grabowska and Straka, 2022). At present, sustainable development and the crucial role of man in the future development of industry need to be taken into account. Concerns about the implementation of the technology of the fourth industrial revolution have become the basis for building the assumptions of Industry 5.0 (Pricop et al., 2016). The article aims to identify the social and economic expectations of the development of the Fourth Industrial Revolution in the context of developing the sustainability, humanization and resilience of Industry 4.0.

The circular economy, as a guiding model for business processes, attracts interest because of its potential to align business and societal goals, as it offers companies the opportunity to simultaneously focus on creating economic value and mitigating environmental damage. It is becoming increasingly clear that digital

technologies are an essential component of this model, as they enable transparency and efficiency in closing material and energy cycles (Langley, 2022).

Baranauskas and Raišienė (2022) states that the recent results of the Digital Economy and Society Index (52, 45%) and the European Digital Entrepreneurship Systems Index (EIDES) (48%) illustrate the improved level of digital performance in EU countries, and significant progress in unlocking productivity. co-creation of digital value and collaborative networks.

The rapid digitalization of the economy, the approach to digital entrepreneurship, supports the transition from traditional business models to business models with integrated digital and networked platforms.

Despite the well-known benefits of digital entrepreneurship and the digital business ecosystem, the application of emerging technologies and modern business models also brings inevitable challenges to sustainable management. The main negative results are disruption, exposure of vulnerabilities in collaborative organizational and social networks, additional socio-technical pressure for both network and incumbent supervisors, and asymmetry of information and digital resources, etc.

## 2. Current situation in the field of sustainability in the EU

The objectives of developing (Commissioner Gentiloni's statement on the 2021 report on sustainability) all our policies, including the European Environment Pact, the Digital Strategy and the Action Plan for the European Pillar of Social Rights. The reforms and investments supported by Next Generation EU will also make a major contribution to achieving the SDGs in the EU. Eurostat Report on the Sustainable Development Goals 2021 it gives us reliable data and statistics that we need to track progress towards achieving the SDGs in the EU. The number of young people aged 15 and 29 who are unemployed and not even in work, education and training has increased from 12.6% in 2019 to 13.7% in 2020. Part-time work schemes, supported by the SURE program, have helped to mitigate the impact of COVID-19 on the labor market, with unemployment rising by only 0.4 percentage points in 2020 compared to 2019. Electricity consumption has fallen by more than 4 percentage points. % in 2020 compared to 2019. The decrease in energy consumption reflected in carbon dioxide emissions from fossil fuels, which fell by about 10% between 2019 and 2020. The share of the EU population reporting crimes, violence, vandalism in neighborhoods fell by 13.6% in 2014 to 11.0% in 2019. Public spending on EU courts increased by about 16%. "Clean and affordable energy", energy consumption increased slightly between 2014 and 2019, indicating that the EU needs to do more to meet its 2030 target of increasing energy efficiency by at least 32.5% (Europe Sustainable Development Report 2021).

**Table no. 1. People at risk of poverty or social exclusion by age and sex (Cumulative difference from 2008, in thousands)**

	2011	2013	2015	2017	2019	2020
European Union - 28 (2013-2020)	3,467	5,461	1,847	-4,474	-10,898	:
European Union - 27 (from 2020)	3,493	3,944	919	-4,729	-11,952	-6,549
<b>Romania</b>	<b>-849</b>	<b>-723</b>	<b>-1,680</b>	<b>-2,074</b>	<b>-3,041</b>	<b>-3,242</b>

Source: [www.eurostat.eu](http://www.eurostat.eu)

The last decades have brought a new dimension to the attention of public opinion and decision makers - the ecological dimension. This new dimension has become important because of situations of environmental imbalance, which have led to dramatic effects, with multiple economic and social costs.

Thus, the concept of "Green Economy" debated, initially, in specialized media with reference to environmental economics, has increasingly penetrated the international issue of sustainable development and political discourses on environment and development.

## 3. Recovery and resilience of EU Member States in the field of digitization

Under this mechanism, EU Member States have allocated at least 20% of the national allocations under the recovery and resilience plan to the digital sector; In terms of digital skills, 56% of people in the EU have basic digital skills. A slight increase in the number of IT specialists in the field of employment: in 2020, EU countries had 8.4 million IT specialists, compared to 7.8 million as against to 2019. 55 % of companies reported difficulties in recruiting IT specialists in 2020, lack of employees with advanced digital skills, a factor in slowing down the digital transformation of companies in many EU Member States. The digital

decade for skills, which predicts that 80% of the population will have basic digital skills, and the fact that there are 20 million IT specialists.

Significant improvements are expected in the coming years due the fact that 17% of digital investment in recovery and resilience plans. Connectivity data show that "high-capacity networks" (HCVs), which are available in 59% of households in the EU. Networks in 2021 were 50% available, far from universal coverage with gigabit networks, given the goals of the digital decade for 2030). Rural HCV coverage has increased from 22% in 2019 to 28% in 2020. In 2021, 25 EU Member States allocated in the 5G spectrum, compared to last year's allocations, for 16 EU Member States. 5G technology has launched commercially in 13 EU member states, covering urban areas.

The integration of digital technologies has increased the use of cloud technologies (from 16% of enterprises in 2018 to 26% in 2020). Large companies have used digital technologies to a fairly, high degree: Electronic exchange of information through enterprise resource planning (ERP) systems and software in the *cloud* (80% vs. 35% for ERP and 48% vs. 25% for *cloud* technologies). Very few companies use advanced digital technologies (14% use large volumes of data, 25% - AI and 26% - cloud technologies). The goals of the digital agenda are still far from being, achieved: the EU's 2030 targets are for 90% of SMEs to have at least a core level of digital intensity, compared to the 60% target in 2020, and at least 75% of enterprises to use advanced digital technologies by 2030. The use of large volumes of data used by a small number of enterprises, compared to the target of 75%. Approximately 15% of the digital investments in the recovery and resilience plans provided by the Council, of which almost EUR 18 billion out of EUR 117 billion, were for digital capabilities and research in the development of the digital sector. The development of e-government services not reflected in the data of digital public services. The pandemic has contributed to accelerating the development of the digitization of these services. 37% of digitization investments in recovery and resilience plans adopted by the Council (approximately EUR 43 billion out of a total of EUR 117 billion) dedicated to digital public services, it is expected to make significant improvements in the coming years. The budget of EUR 723.8 billion for the recovery and resilience mechanism, adopted in February 2021 - the largest program in the Next Generation EU instrument.

**Table no. 2. Level of internet access**

Households - level of internet access [isoc_ci_in_h] (%)						
	2012	2014	2016	2018	2020	2021
EU- 27 (from 2020)	75	80	84	88	91	92
EU - 28 (2013-2020)	76	81	85	89	:	:
Euro area	76	81	85	89	92	92
Romania	54	61	72	81	86	89

Source: [www.eurostat.eu](http://www.eurostat.eu)

**Table no. 3. Households - level of internet access, Percentage of households**

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EU 27	75	77	80	81	84	86	88	90	91	92
EU 28	76	79	81	83	85	87	89	90	:	:
Romania	54	58	61	68	72	76	81	84	86	89

Source: [www.eurostat.eu](http://www.eurostat.eu)

**Table 4. E-commerce sales, Enterprises with e-commerce sales, Percentage of enterprises,**

GEO/TIME	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EU 27	16	16	17	19	20	20	19	20	21	22
EU 28	16	17	18	19	20	20	20	21	:	:
Romania	5	10	8	8	7	8	9	12	19	13

Source: [www.eurostat.eu](http://www.eurostat.eu)

#### 4. Building the digital model of sustainable development

Sustainable renewal covering all relevant contexts - individual, organizational, local-regional and global. It should support humanity to realize the future of the evolution of society, economy and ecology, to united in an evolutionary process based on multiple symbiosis. Opportunity development of the integrated concept

of sustainable renewal, based on Beer's Viable System Model (VSM). The core of the concept is the recursive structure, which organizes the tasks necessary for such a renewal. In order to build a digital model of sustainability, it is important to consider the following principles: (1) Building the infrastructure of the sustainable digital economy; (2) Sustainable electronic markets for green products and services; (3) Products based on information and knowledge for sustainable development. (4) Agents present in the markets: consumers, business people, intermediaries. Sustainable Digital Marketing (5) Macroeconomic transformations and globalization processes (6) The progressive and aggressive penetration of the digital economy in the economic and social life of modern society.

The large number of converging groups of information spaces, the entropy inside them is constantly decreasing. The authors reveal the content of the digital concept, define the general principles, the criteria of sustainable development indicators.

The model includes sustainable development, organizational, economic, institutional mechanisms, used for measurement, implementation efficiency at the time of transfer to the digital economy (e-neural network). Digitization provides access to the integrated network of untapped and untapped big data, with benefits for society and the environment. Technologies are designed as tools that change the rules of the game, whereby integration will benefit the three key elements of the food-water-energy link: (i) sustainable food production; (ii) access to clean and safe drinking water; and (iii) the generation and use of green energy. The author (Schwaninger, M., 2015) argues: "The strongest approach is to choose the model that targets viability, and allow efforts for sustainability in this search for viability. Organize sustainability measures in such a way as to increase the viability of a system. A social body is viable if it has a structure of regulatory units whose functions and interrelationships are specified in theory, reflected by the generic structure of the model. System 1: It is the ability to regulate the largely autonomous and mutually adaptive basic operational units, tasked with optimizing the business in progress. System 2: It is the coordination function, which reduces oscillations and improves self-regulation. System 3: In a company we would have corporate executive management here. 4: represents the long-term orientation towards the future and the general environment.

The digitalization process of the sustainable economy will bring a positive and efficient impact in the functioning of the mechanisms of sustainable development. We aim to focus on digitizing sustainable economic development in the current conditions of the whole of Europe. We reviewed the current state of sustainable development in the EU and the evolution of the digitization process. We discussed the issue of building a digital model of sustainable development.

## Conclusions

Following the study carried out for the development of a sustainable digital economy, it is necessary to consider the following aspects. Factors that determine the economy of technology for the creation of software components and complexes, the main modern methods for predicting work intensity, duration and the number of specialists needed to design and produce high quality software products, considering their characteristics and resource constraints, are presented.

The existing scientific, methodological approach to the study of the digital economy does not allow the use of the described opportunities, because it aims to determine the current level, in the dynamics and competitiveness of the regional digital economy. The values of the indicators are studied, the contribution to the general process of digitalization of the region's economy is not determined. The contribution determined by the institutional approach developed in the study of the digital economy. The goal of digital transformation - a high level of automation, the delegation of a larger number of external people and the profitable preservation of processes that can be carried out anywhere in the world.

Digital transformation requires different things depending on the business. The digital transformation looked different for each company and enterprise taken separately. It is important to understand that DT is not just about changing processes. Digital platforms will be everywhere and will operate in interconnected ecosystems. Every organization will need a digital platform strategy. Not every organization should take the lead in a business ecosystem; every organization needs a digital platform strategy. For the characteristic of sustainable development, a series of indicators are used, considered by different hierarchical levels: global, national, regional, local, industry-specific indicators.

## References

- Androniceanu, A., Burlacu, S., Drăgulănescu, I.V. and Nicolae, E.E., 2017. New trends of businesses digitalization in Romania and the behaviour young consumers. In: *BASIQ International Conference: New Trends in Sustainable Business and Consumption*. Graz, 31 May-2 June. Bucharest: ASE, pp.27-35.
- Balu, F.O., Rădulescu, C.V., Bodislav, D.A., Gole, I., Buzoianu, O.C.A., Burlacu, S. and Balu, P.E., 2021. Cost Modeling and Computation in the Healthcare Industry. Case Study on a Swiss Medical Care Organization. *Economic Computation and Economic Cybernetics Studies and Research*, 55(1/2021), pp.73–88. <https://doi.org/10.24818/18423264/55.1.21.05>.
- Bank, L.C., Thompson, B.P., and McCarthy, M., 2011. Decision-making tools for evaluating the impact of materials selection on the carbon footprint of buildings. *Carbon Management*, 2(4), pp.431-441.
- Baranauskas, G. and Raišienė, A.G., 2022. Transition to Digital Entrepreneurship with a Quest of Sustainability: Development of a New Conceptual Framework. *Sustainability*, 14(3), 1104. <https://doi.org/10.3390/su14031104> - 19 Jan 2022.
- 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
- Bodislav, D.A., Buzoianu, O.A.C., Burlacu, S. and Rădulescu, C.V., 2020. Analysis of companies in Romania from the perspective of risk perception and the management needs thereof. *Theoretical and Applied Economics*. XXVII (Special Issue), pp.341-349.
- Burlacu, S., Patarlageanu, S.R., Diaconu, A. and Ciobanu, G., 2021. E-government in the Era of Globalization and the Health Crisis caused by the Covid-19 Pandemic, between Standards and Innovation. *SHS Web of Conferences*, 92, p.08004. <https://doi.org/10.1051/shsconf/20219208004>.
- Burlacu, S., Popescu, M.L., Diaconu, A. and Sârbu, A., 2021. Digital Public Administration for Sustainable Development. *European Journal of Sustainable Development*, 10(4), pp.33-40. Doi: 10.14207/ejsd.2021.v10n4p33
- Călin, A.M., Ciobanu, G. and Iovițu, M., 2017. The access of the population to information and communications technology-an opportunity for development of the digital economy. *Quality-Access to Success*, 18(S2), pp.107-113.
- Ciobanu, G., Pană, A. and Diaconu, A., 2015. Digital economy-growth factor in job creation in romania. *Quality-Access to Success*, 16(S1), pp.430-440.
- Clark, S., MacLachlan, M., Marshall, K., Morahan, N., Carroll, C., Hand, K., ... and O'Sullivan, K., 2022. Including Digital Connection in the United Nations Sustainable Development Goals: A Systems Thinking Approach for Achieving the SDGs. *Sustainability*, 14(3), 1883. <https://doi.org/10.3390/su14031883> - 07 Feb 2022.
- Commissioner Paolo Gentiloni, 2021. *HEARING WITH THE OIREACHTAS COMMITTEE ON EUROPEAN UNION AFFAIRS 21 September 2021*, [online] Available at: <[https://data.oireachtas.ie/ie/oireachtas/committee/dail/33/joint\\_committee\\_on\\_european\\_union\\_affairs/submissions/2021/2021-09-20\\_opening-statement-paolo-gentiloni](https://data.oireachtas.ie/ie/oireachtas/committee/dail/33/joint_committee_on_european_union_affairs/submissions/2021/2021-09-20_opening-statement-paolo-gentiloni)> [Accessed 4 March 2022].
- Derave, T., Princes Sales, T., Gailly, F. and Poels, G., 2022. Sharing Platform Ontology Development: Proof-of-Concept. *Sustainability*, 14(4), 2076. <https://doi.org/10.3390/su14042076> - 11 Feb 2022.
- Gorlov, V.V., Kurnosova, N.S., Pochestnev, A.A. and Belous, N.M., 2021. 12 The Institutional Model of the Digital Economy Creation in a Modern Region. *The Institutional Foundations of the Digital Economy in the 21st Century*, 3, 107. <https://doi.org/10.1515/9783110651768-012>
- Hsu, M., 2017. Neuromarketing: inside the mind of the consumer. *California management review*, 59(4), pp.5-22.
- Ionita, F. and Burlacu, S., 2009. Public administration from romania in the knowledge society and e-learning. In *Proceedings of the Fifth "Administration and Public Management" International Conference: "Public Institutions' Capacity to Implement the Administrative Reform Process"*, Bucharest, June 23-24, 2009. No. 25.

- Kurniawan, T.A., Liang, X., O'Callaghan, E., Goh, H., Othman, M. H. D., Avtar, R. and Kusworo, T.D., 2022. Transformation of Solid Waste Management in China: Moving towards Sustainability through Digitalization-Based Circular Economy. *Sustainability*, 14(4), 2374. <https://doi.org/10.3390/su14042374> - 18 Feb 2022
- Langley, D. J., 2022. Digital Product-Service Systems: The Role of Data in the Transition to Servitization Business Models. *Sustainability*, 14(3), 1303. <https://doi.org/10.3390/su14031303> - 24 Jan 2022
- Lin, T., Ge, R., Zhao, Q., Zhang, G., Li, X., Ye, H., ... and Yin, K., 2016. Dynamic changes of a city's carbon balance and its influencing factors: a case study in Xiamen, China. *Carbon Management*, 7(3-4), pp.149-160.
- Липаев, V.V., 2011. Экономика производства программных продуктов. Издание второе. *Виртуальный компьютерный музей, М.:(2014-).* – Режим доступа URL: <http://www.is-pras.ru/lipaev/books/Economy%20of%20production%20of%20software%20products.pdf> (дата обращения: 15.01. 2019
- Lyons, R.K., 2017. Economics of the ed tech revolution. *California Management Review*, 59(4), pp.49-55.
- Morgan, L., Gleasure, R., Baiyere, A. and Dang, H.P., 2021. Share and Share Alike: How Inner Source Can Help Create New Digital Platforms. *California Management Review*, 64(1), pp.90-112.
- Negescu, M.D., Burlacu, S., Mitriță, M. and Buzoianu, O.C.A., 2020. Managerial Analysis of Factoring at the International Level. In: *Challenges of the Contemporary Society*. Proceedings; Cluj-Napoca, Vol. 13, Iss. 1. Cluj-Napoca: Babes Bolyai University, 99-102.
- Negrea, A., Ciobanu, G., Dobrea, C. and Burcea, S., 2019. Priority aspects in the evolution of the digital economy for building new development policies. *Calitatea – acces la success – Quality – Access to Success*, 20(S2), pp.416-421.
- Panwar, R., Pinkse, J. and De Marchi, V., 2022. The Future of Global Supply Chains in a Post-COVID-19 World. *California Management Review*, 64(2), pp.5–23. <https://doi.org/10.1177/00081256211073355>.
- Popescu, M.L., Platagea Gombos, S., Burlacu, S. and Mair, A., 2021. The impact of the COVID-19 pandemic on digital globalization. *SHS Web of Conferences*, [online] 129, p.06008. <https://doi.org/10.1051/shsconf/202112906008>.
- Pricop, L.C., Burlacu, S. and Demeter, M.L., 2016. Managing violence in health sector through BI solutions. In: *Proceedings of the International Management Conference*. Vol. 10, No. 1, Faculty of Management, Academy of Economic Studies. Bucharest: ASE, pp. 512-519.
- Profiroiu, M.C., Radulescu, C.V., Burlacu, S. and Guțu, C., 2020. Changes and trends in the development of the world economy. In: *Competitivitatea și inovarea în economia cunoașterii*, pp. 324-330.
- Rădulescu, C.V., Burlacu, S., Bodislav, D.A. and Bran, F., 2020. Entrepreneurial Education in the Context of the Imperative Development of Sustainable Business. *European Journal of Sustainable Development*, 9(4), pp.93-93.
- Radulescu, C.V., Ladaru, G.-R., Burlacu, S., Constantin, F., Ioanăș, C. and Petre, I.L., 2020. Impact of the COVID-19 Pandemic on the Romanian Labor Market. *Sustainability*, 13(1), p.271. <https://doi.org/10.3390/su13010271>.
- Rhee, T., Wood, J. and Kim, J., 2022. Digital Transformation as a Demographic and Economic Integrated Policy for Southeast Asian Developing Countries. *Sustainability*, 14(5), 2857.
- Saniuk, S., Grabowska, S. and Straka, M., 2022. Identification of Social and Economic Expectations: Contextual Reasons for the Transformation Process of Industry 4.0 into the Industry 5.0 Concept. *Sustainability*, 14(3), 1391. <https://doi.org/10.3390/su14031391> - 26 ianuarie 2022
- Schwanninger, M., 2015. Organizing for sustainability: a cybernetic concept for sustainable renewal. *Kybernetes*. 44(6/7), pp.935-954. DOI: 10.1108/K-01-2015-0008.
- Taghizadeh-Mehrjardi, R., Neupane, R., Sood, K. and Kumar, S., 2017. Artificial bee colony feature selection algorithm combined with machine learning algorithms to predict vertical and lateral distribution of soil organic matter in South Dakota, USA. *Carbon Management*, 8(3), pp.277-291.