The Difference Between Traditional and Online Schooling on the Romanian Higher Education System During the COVID-19 Pandemic. Case Study: Bucharest University of Economic Studies Students' Perception Regarding the Effects of Online Education

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Abstract

The COVID-19 pandemic forced universities around the world to close their campuses indefinitely and shift their educational activities to online platforms. The pandemic forced various organizations to suddenly change their operations and adopt new technologies. In most of the cases, these organizations did not have enough time to think about how to implement the new strategies and associated technologies and integrate them into their existing structures. Universities around the world were no exception. We conducted a survey asking students from the Bucharest University of Economic Studies for their opinions on various aspects of online education during the ongoing pandemic. We received responses from 1952 students. However, students felt that online instruction is stressful and impacts their health and social life. This pandemic has led to widespread adoption of online education and the lessons we are learning now will be helpful in the future.

Keywords

Covid-19 pandemic, distance learning, effects of online education, stress, online education system

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Introduction

COVID-19 was discovered in China in December 2019, spread worldwide within a few months, and declared a pandemic by the World Health Organization on March 11th, 2020. Universities around the world were forced to close their campuses and move all academic programs online in spring 2020 (Bao, 2020). Universities were not prepared for such a transition from face-to-face teaching to fully online education. As any other organizations, most universities initially lacked not only infrastructure but also leadership and strategies (Săseanu et al., 2014; Săseanu et al., 2020; Zhang et al., 2020). Due to the COVID-19 pandemic, higher education institutions worldwide switched to emergency distance learning in early 2020. The less structured environment of distance learning forced students to manage their learning and motivation more independently. The COVID-19 pandemic has been accompanied by strict isolation measures that have resulted in students and professors being confined to their homes; a disruptive social life and learning in isolation has made it stressful for students and professors. The very essence of group learning, the shared

activities in the classroom, were missed by both parties and all of this has led to both students and professors experiencing stress. This paper is structured as follows: chapter 1 shows a short review of the scientific literature regarding the transition from traditional to online education and its characteristics; the 2nd chapter presents the methodology and the main objectives of the present research; section 3 presents the main results of the analysis performed, subordinate to each present objective, and last but not least, the 4th chapter sums up the main conclusions of this research.

1. Review of the scientific literature

With the closing of academic institutions, there has been a massive change in teaching and learning methods around the world. Universities, colleges, and other higher education institutions moved to online teaching methods (Amita, 2020). The universities and faculties have embraced various technology platforms where students can actively participate in learning, but the hands-on sessions that require a lab environment were not easy to manage.

A growing number of students today are opting for online courses. The traditional mode of instruction is restrictive, inflexible, and impractical. In this age of technological advancement, universities can now offer effective instruction via the Internet. This change in pedagogical medium forced academic institutions to rethink the way they wanted to deliver their course content (Paul and Jefferson, 2019). They found out that there was no significant difference in student performance between online and face-to-face students overall, in terms of gender, or in terms of class rank. The Covid-19 pandemic has challenged education systems around the world, forcing professors to shift overnight to an online mode of instruction. Many academic institutions that had previously been reluctant to change their traditional pedagogical approach had no choice but to switch completely to online teaching and learning. Online learning was a panacea during the COVID -19 pandemic (Dhawan, 2020). Similarly, Yang and Cornelius (2004) found that flexibility, cost effectiveness, availability of electronic research, easy connection to the Internet, and well-designed instructional interface were the positive experiences of students.

2. The characteristics of online education during Covid-19 pandemic

The Coronavirus outbreak has negatively impacted educational activities worldwide. The coronavirus pandemic affected educational systems worldwide and led to widespread school closures. It resulted in severe disruptions to academic activities and career plans. As part of global efforts to combat COVID-19, many countries around the world have closed schools and universities trying to contain the coronavirus pandemic. There is no doubt that unplanned school closings can cause serious problems for students, educators, professors, and society in general. They could negatively impact student academic interest and achievement. If students are not productively engaged, it could lead to idleness, which in turn could cause youth to become involved in crime, lose interest in learning, and perform poorly in school. The U.S. Centre for Disease Prevention and Control (CDC) also expressed concern about the impact of school closures. According to the CDC, "*Prolonged closures can lead to more students congregating outside of schools."*

According to UNESCO, some of the harmful effects of school and university closures due to coronavirus are as follows:

- *Disrupted learning*: schools and universities represent an important place of learning, and when they closed, students were deprived of the opportunity to grow and develop;
- *Nutrition*: many children and adolescents rely on free or reduced-price meals in schools to eat healthy. This is affected by the closure of schools due to the coronavirus;
- *Unequal access to digital learning portals*: Lack of access to technology or good internet connections to continue learning during school closures;
- *Increased pressure on schools and school systems that remain open*: Local school closures put a strain on schools as parents tend to divert their children to open schools;
- *Social isolation*: given that educational institutions are hubs of social activity and human interaction, school closures can deprive youth and children of some of the social communications and socialization that are essential for learning, development, and creativity.

Technology is a key component of education in the 21st century. The increasing use of technology in education has changed teachers' and professors' methods away from the traditional approach where they often act as knowledge brokers to a more flexible approach where they act more as facilitators, mentors,

and motivators to get students to participate and learn (Onyema and Deborah, 2019). Technology enables distance learning, distance education, virtual learning, blended learning, mobile learning, distributed learning, machine learning, pervasive learning, deep learning, cooperative learning, and collaborative learning. Most aspects of education are going digital, and education stakeholders, including students, face the challenge of making the transition to online education. The use of appropriate educational technologies increases accessibility to learning resources such as Massive Open Online Courses (MOOCs) and multiple approaches to learning to meet the needs of diverse learners (Onyema, 2020).

Online education is a general concept of teaching and learning on the Internet using technological tools and platforms. The success of online education depends on factors such as a good internet connection, educational software, digital skills, availability, and access to technology. Online education platforms are important tools that support inclusive education and online learning. Given the high penetration of the Internet and mobile technologies around the world, online education platforms can be optimally used to fill educational gaps and thus reduce the rate of global illiteracy. There is a wide range of online education tools/platforms that facilitate online education, especially in times of outbreaks such as the coronavirus pandemic, among which we mention: Skype.com; Google Classroom/Open Online education (edu.google.com); schoology (schoology.com); openculture.com; MOOC.org; easyclass.com; coursera.org and GoToMeeting.com. The use of educational technology facilitates online instruction, student-professor interaction, connection, and relationships. It enhances the teaching and learning experience, content creation, course sharing, assessments, and feedback. Professors can reach and interact with their students from anywhere, and lectures can be delivered at any time. Educators and students can make the most of these technologies to supplement classroom instruction and improve their digital skills in line with emerging trends in education. In addition, knowledge of technology increases the interest, competence, confidence, creativity, employability, and output of professors and students and prepares them for the future.

According to Education Task (2020), the majority of university students still prefer to study from the comfort of their own homes because learners have everything at their disposal without having to leave their chairs. However, the fact that formal education is delivered from home could be a major challenge for many professors and students, especially in developing countries where the accessibility, availability, and use of technology in education is not widespread. Apart from the cost of accessing online education, many other factors such as network issues, poor power supply, distractions, lack of digital literacy, accessibility and availability can also hinder smooth learning from home. Aside from the cost of accessing online learning, many other factors such as network issues, poor power supply, distractions, lack of digital skills, lack of accessibility, and availability issues can hinder smooth learning from home.

In addition, there is the problem of time to learn new technologies that may be required for learning from home, and noise, internal or external, from neighbors and neighborhoods. With unequal access to technology another serious problem in many countries, prolonged school closures could deny millions of students access to education, especially in third world countries, rural areas, and among people with special needs. UNESCO understands these challenges and has made efforts to help educators and students in affected countries teach and learn online from home by providing free software that facilitates distance learning. Coronavirus-related universities closures to improve their digital learning skills and study habits at home. The challenges posed by the coronavirus could be used by learners as an opportunity to improve their problem-solving and digital literacy skills.

During the pandemic period e-learning was commonly used as the main method to teach at the level of university institutions. The success of e-learning depends on many factors, including accessibility, usage of appropriate methods, course content, and assessment criteria. The advantages of e-learning are diverse and multiple: from epidemiological benefits to reduction of costs and air pollution. Moreover, the access to resources is possible regardless of the location and time. But there are also some limitations regarding problems with internet access, poor internet connection quality, and insufficient digital skills in some cases. Time flexibility could be a benefit for some students and a limitation for others, depending on their capacity of self-discipline (Bączek et al., 2021).

In order to explore the effectiveness of online learning among the Romanian students during Covid-19 pandemic period it was designed a survey by distributing an online questionnaire to students in Bucharest University of Economic Studies. Data gathered from the survey were analyzed with IBM SPSS statistical software. The research questions formulated for the study are as follows:

R_{Q1}: *How are the opinions of the students regarding online mode of learning related to the year of study and the domain of study?*

R_{Q2}: *How are the opinions of the students regarding online mode of learning related to the internet infrastructure for online learning and digital skills of students and teachers?*

R_{Q3}: *Is there any association between the year of study and the perception on the efficiency of online-education?*

3. Research methodology

In order to study the students' perception regarding the effects of online education, survey research was carried out among students from the Academy of Economic Studies in Bucharest, from all 11 faculties, from all educational cycles (bachelor's, master's) and from all study years (in total five years of study). The research was conducted in October 2021, by distributing and completing the online survey questionnaire, on a sample of 1952 respondents. Of the total students in the sample, 20% were from the Faculty of Accounting and Management Informatics, 14.8% from the Faculty of Cybernetics, Statistics and Economic Informatics, 13.5% from the Faculty of International Economic Relations, 13% from the Faculty of Public Administration, 12% from the Faculty of Finance, Banking, Insurance and Stock Exchanges, 11% from the Faculty of Management, etc. Because less than 2% of respondents came from the Faculty of Business Administration (in Foreign Languages) and the Faculty of Agri-food and Environmental Economics (7 students in total from both faculties), they were removed from the database (Figure no. 1).

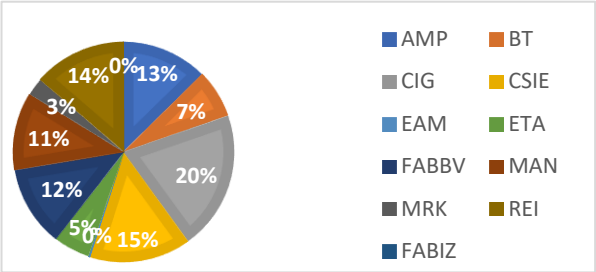

Figure no. 1. Share of respondents by the domain of study (faculty)

In addition to the questions regarding the faculty that the student attends, the educational cycle and the year of study, the questionnaire was structured in three parts, as follows:

- General evaluation of the digital teaching process and the degree of accessibility of students to digital teaching activities (electronic devices, Internet connection, etc.) - six questions;
- Assessment of the digital competences of the participants in the online educational process and the need for additional training in the field - six questions;
- The quality of the electronic platforms made available to the actors participating in the online learning process by the university, as well as the identification of difficulties encountered in accessing and using these electronic resources, or in communicating with teachers and administrative structures of the university / faculty -seven questions.

In order to achieve the established objectives, non-parametric methods were used in the paper, like Kruskall Wallis test, Chi-square test, contingency coefficients and multiple correspondence analysis.

4. Results and discussions

R_{Q1}: *How are the opinions of the students regarding online mode of learning related to the year of study and the domain of study?*

In order to study the opinion of students regarding online mode of learning three variables were selected from the questionnaire:

- *What do you think about the development of online teaching activities as a whole?* (1 = Not good at all, 2 = Less good, 3 = Not at all, 4 = Good, 5 = Very good);
- *Learning is the same when the activities are carried out with physical presence and when they are carried out online.* (5 = totally agree with the statement, 1 = totally disagree with the statement);

- *How stressful is the conduct of online teaching activities caused by the COVID-19 pandemic?* (5 = Not at all stressful / 4 = Slightly stressful / 3 = Stressful / 2 = Very stressful / 1 = Extremely stressful).

By applying Kruskal Wallis test to test if there are differences in the opinions of the students regarding online mode of learning by years of study, it could be observed that with a 5% significance level there are significant differences. The positive perception of students increases significantly with the year of study. The higher the level of education, the more satisfied students are with online education and the more they agree with the statement that online learning is similar to physical learning. Moreover, the higher is the level of study the lower the level of stress associated with online learning (Table no. 1).

Table no. 1. Kruskal Wallis Test

	Year_of_studies	N	Mean Rank	Chi square	Asympt.sig.
Overall opinion on online teaching activity	1st year Bachelor's studies	631	807.55	140.299	0.000
	2nd year Bachelor's studies	613	967.55		
	3rd year Bachelor's studies	436	1054.26		
	1st year Master's studies	150	1225.36		
	2 nd year Master's studies	115	1272.63		
	Total	**1945**			
Learning is the same online and physically	1st year Bachelor's studies	631	773.10	177.413	0.000
	2 nd year Bachelor's studies	613	976.46		
	3rd year Bachelor's studies	436	1091.71		
	1st year Master's studies	150	1169.47		
	2 nd year Master's studies	115	1345.10		
	Total	**1945**			
The level of stress generated by online learning activities	1st year Bachelor's studies	631	831.96	111.182	0.000
	2nd year Bachelor's studies	613	971.84		
	3rd year Bachelor's studies	436	1016.42		
	1st year Master's studies	150	1198.82		
	2nd year Master's studies	115	1293.88		
	Total	**1945**			

By applying Kruskal Wallis test to test if there are differences in the opinions of the students regarding online mode of learning by domain of study, it could be observed that with a 5% significance level there are significant differences. The students from the Faculty of Business and Tourism, the Faculty of Marketing and the faculty of Public Administration have a better perception about the online teaching activities as a whole, and about the statement "*Learning is the same when the activities are carried out with physical presence and when they are carried out online*" than those from the other faculties. The worst perception about online teaching activities is found among the students from the Faculty of Cybernetics, Statistics and Economic Informatics. But regarding the stress generated by online learning activities, among the students from the Faculty of Business and Tourism, the Faculty of Marketing, the Faculty of Management and The Faculty of International Business and Economics is less perceived the stress compared to other students (Table no. 2).

Table no. 2. Kruskall Wallis Test

	Faculty	N	Mean Rank	Chi square	Asympt.sig.
Overall opinion on online teaching activity	AMP	246	1071.45	38.130	0.000
	BT	138	1092.42		
	CIG	398	979.81		
	CSIE	289	860.56		
	ETA	105	931.52		
	FABBV	231	933.58		
	MAN	223	940.87		
	MRK	51	1175.37		
	REI	264	970.69		
	Total	**1945**			
Learning is the same online and physically	AMP	246	1023.38	27.519	0.001
	BT	138	1081.68		
	CIG	398	993.85		
	CSIE	289	889.02		
	ETA	105	905.46		
	FABBV	231	897.61		
	MAN	223	962.71		

	Faculty	N	Mean Rank	Chi square	Asympt.sig.
	MRK	51	1162.35		
	REI	264	994.68		
	Total	**1945**			
The stress generated by online learning activities	AMP	246	955.23	37.328	0.000
	BT	138	1078.32		
	CIG	398	962.38		
	CSIE	289	877.76		
	ETA	105	962.85		
	FABBV	231	898.40		
	MAN	223	1010.08		
	MRK	51	1253.86		
	REI	264	1038.51		
	Total	**1945**			

RQ2: *How are the opinions of the students regarding the online mode of learning related to the internet infrastructure for online learning and digital skills of students and teachers?*

In order to analyse the association between the opinions of the students regarding online mode of learning and the internet infrastructure for online learning and digital skills of students and teachers, the Chi square test was applied and the contingency coefficient was computed. The results show that there is no significant association between the device used and the opinion regarding online mode of learning. But the digital skills and the internet connectivity are associated significantly with the opinion regarding online mode of learning and the stress associated with it. Moreover, the variables the stress generated by online learning activities is strongly associated with the overall opinion on online teaching and on the fact that learning is the same online and physically. The students who have a good opinion about online education do not even consider it a source of stress (Table no. 3).

Table no. 3. Chi square tests and the contingency coefficient

	Device used to participate in online teaching activities		**Adequate internet access**		**I have the necessary digital skills**		**The stress generated by online learning activities**	
	Chi-square	Contingency coefficient	Chi-square	Contingency coefficient	Chi-square	Contingency coefficient	Chi-square	Contingency coefficient
Overall opinion on online teaching activity	16.971 (0.151)	0.093	94.456 (0.000)	0.215	106.724 (0.000)	0.228	1058.862 (0.000)	0.594
Learning is the same online and physically	12.309 (0.421)	0.079	86.237 (0.000)	0.206	144.676 (0.000)	0.263	921.587 (0.000)	0.567
The stress generated by online learning activities	17.702 (0.125)	0.095	77.375 (0.000)	0.196	107.568 (0.000)	0.229		

R_{Q3}: *Is there any association between the year of study and the perception on the efficiency of online-education?*

In order to obtain a clearer picture of the association between the year of study and the variables regarding the effectiveness of online education, an analysis of multiple correspondences was performed. The results show that students pursuing master's degree programs in first or second year of study, consider that online learning is very good, extremely efficient, feeling totally comfortable with the online communication and having the necessary digital skills. The students from the first year of study in bachelor degree, consider that the online education is less efficient that traditional education and the communication online is not always good with teachers and they are not feeling always comfortable with this kind of communication. Moreover, those that are dissatisfied with online education, are dissatisfied with the online communication,

do not have the necessary digital skills and consider that the online teaching is not efficient (Figures no. 2,3,4).

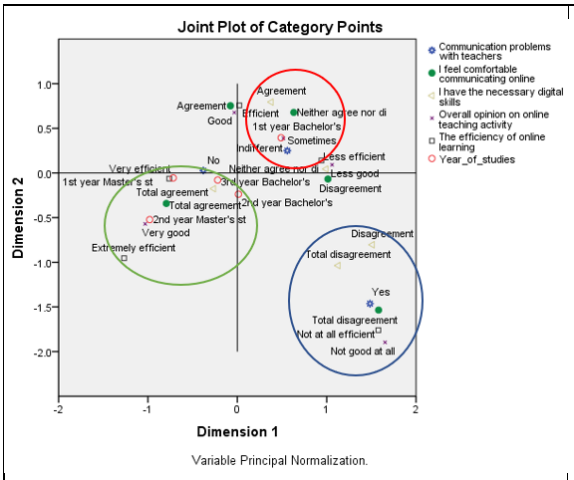

Figure no. 2. Multiple correspondence analysis results

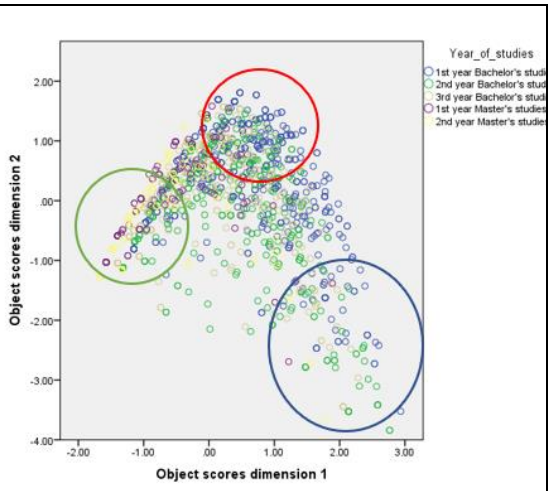

Figure no. 3. Multiple correspondence analysis results

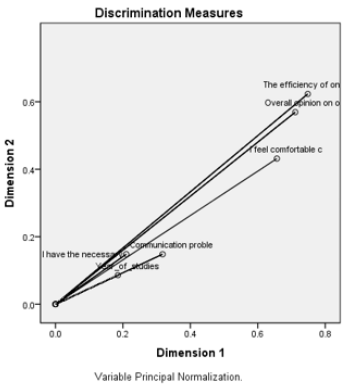

Figure no. 4. Multiple correspondence analysis results

Conclusions

While online learning has a lot of potential, it is more effective when students and professors have the time to prepare for it and get used to it, and universities have had the time to test its implementation. Unfortunately, in many cases this has not been the case, as Covid -19 forced all educational institutions to make a sudden shift to online learning. The results of our study reveal a significant difference in the students' perception on the online teaching activity depending on the domain of study (faculty). Thus, students from domains like business and tourism, marketing or public administration have a higher overall opinion than students from other domains on the online teaching activity and on the similarity of learning process when the activities are carried out with physical presence and online. The online teaching activities are perceived as less stressful by the students of the faculties of Business and Tourism, Marketing, Management and International Business and Economics. The opinion regarding the online mode of learning and the stress associated with it are significantly associated with digital skills and the internet connectivity. The students who have a good opinion about online education do not consider it a source of stress. Master students have a better opinion on the online teaching activity than bachelor students, considering it highly efficient and feeling more comfortable with the online communication. The students in the first year of study in bachelor degree programs are less satisfied with the efficiency of the online teaching activity, with the online communication process and feel less comfortable about it and have to a lesser extent the necessary digital skills.

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