

MANAGEMENT OF THE CHANGES GENERATED BY THE TRANSITION FROM CLASSICAL EDUCATION TO E- LEARNING

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ABSTRACT

Higher education underwent significant changes during the pandemic COVID 19 and the research conducted aims to find out how those involved in the process managed to adapt to the new conditions and what problems arose between March 2020 and May 2020 The research conducted aims to find out how higher education teachers and students adapted to the transition from face-to-face to online teaching.

KEYWORDS: *education, online learning, students, teachers, technological impact.*

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1. INTRODUCTION

The educational process has served to facilitate the accumulation of information, skills, values, beliefs, and customs, and to pass on a cultural heritage to future generations for over 2000 years. In light of the COVID 19 pandemic, online education has gained popularity among students as they see immense benefits in the autonomy and flexibility that this type of course offers. The contribution of virtual learning to the achievement of the European Union's educational policy objectives has been highlighted by some experts through the analysis of educational programs with an ICT component: i) access to education; ii) better opportunities for graduates in the labor market; iii) personal development and citizenship; iv) internationalization of education and training; v) organizational change; vi) innovation at the level of education and training systems.

A study by Khan and Setiawan indicates that e-learning can be conducted in an interesting and easy-to-understand way and the level of accumulated information can be assessed periodically through short tests, but it all depends on the students' motivation to learn (Khan & Satiawan, 2019). The study of the impact and effectiveness of e-learning on teaching and learning could show that it can be an effective tool to improve the delivery of information to students and motivate them to learn independently and study their courses with more responsibility (Encarnacion et al., 2021).

As a social institution, the university must align its goals with the interests of communication, that is, it must be stimulated to educate citizens with high intellectual capacity through innovation and reflection (Zolocheskaya et al., 2021). For this reason, the role of the university is to adopt the strategies that meet the interests of companies and students, using all the necessary methods to develop the competencies required to integrate graduates into the labour market. If the market's need is to train specialists in the blended learning model, then the university must adapt its policies to the requirements and facilitate access to the classroom, both for students who want to learn face-to-face on campus and for those who, for various reasons, require that some courses take place

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online. From an economic point of view, the introduction of e-learning can help to reduce the inefficiency of the use of financial resources.

E-learning has recently become an important element, and many universities are exploring the possibility of creating offline and online hybrid programs. Most of the studies conducted in terms of impact on didactic activities investigate three directions: i) the benefits of the program, i.e. they refer to the benefits of the applied e-learning method and intensively compare which variant has a better performance. In our opinion, the method that manages to motivate and attract the student to the didactic activity can be considered beneficial for achieving the learning objective; ii) the cost-effectiveness, defined as the value that the particular program brings to the budget, since online education is much cheaper in certain situations from many points of view, such as e.g., the use of the teaching space, the payment of the non-paid services of the invited teaching staff (transportation, accommodation, meals), etc.; iii) the student's satisfaction, if after the impact studies it turns out that he/she is satisfied with the information and skills provided, then it could be an effective learning method. The experience of the last years shows us that the transition from the classical to the online system had a strong impact on the didactic activity, teachers and students had to adapt, and in many cases the adaptation was so great that many did not want to return to the face-to-face form.

Competence refers to a state of being well qualified to perform an activity, task, or function and that has been recognized and verified by a community of professionals (Spector & Teja, 2001). Queiroz believes that the constant changes in information and communication technologies require a continuous process of developing teachers' competencies in online education and acquiring lifelong professional development programs and individualized pedagogical training (Queiroz, 2010). The activity in the online environment has a number of specific characteristics, therefore, the teaching staff must develop new ways, not only through the use of technologies, but also through the knowledge and application of these practices, to create an environment suitable for the group to work, discuss and reflect together. Yuksel states that there are four relevant directions: a) pedagogical, the use of resources that allow a logical transition from premises to conclusions to facilitate the educational process; b) social, the stimulation of interpersonal relationships between group members; c) administrative, the establishment of general procedures in terms of how activities are discussed and carried out; d) technological, the transparency of technology for an appropriate relationship between the system, the software, and the selected interface (Yuksel, 2009).

2. RESEARCH

2.1 Methodology

At the beginning of the study, a pilot analysis was conducted with the aim of evaluating the constructs. This study included 20 professionals from the fields of education, computer science, students, researchers, and university decision makers. Reliability tests were used to assess the reliability of the constructs in order to identify deficiencies, both technical and from an educational science perspective, during the period March 2020 - April 2020. The instrument included the following constructs: Accessibility, Quality of Information, Teacher Interaction, Usefulness, Academic Achievement, Student Satisfaction. The application of the instrument took place during the months of April 2020 - May 2020, when most universities had to conduct their activities online due to the conditions created by the onset of the pandemic SARS-COV 19. The data were collected from students from three Romanian universities: the Gheorghe Asachi Technical University in Iasi, Al.I. Cuza University in Iași, Lucian Blaga University in Sibiu, where a uniform number of responses were received, and Aurel Vlaicu University in Arad, the University of Medicine and Pharmacy in Iași, and West University in Timisoara, with only one response each. More than 1500 messages were sent through e-mail addresses with the help of teachers and decision makers of certain faculties, to which 766 responses were received due to the corresponding period in which

many were unknown to the students. The effect was positive, as the need for a study of student opinion on online learning was identified during this period.

Most of the respondents were women, 60.7%, men being in a percentage of 39.3%, and their distribution by Universities was: Alexandru Ioan Cuza University from Iasi, 43.6%, Technical University Gh. Asachi from Iasi 47%, Lucian Blaga University from Sibiu, 9%.

Table 1. Sample distribution (n = 766)

Variable	Frequency	Percent	Cumulative Percentage
Gender			
Female	465	60,7	60,7
Male	301	39,3	100.00
Total	766	100.00	
University			
Alexandru Ioan Cuza University from Iasi	334	43,6	43,6
Aurel Vlaicu University from Arad	1	0,1	43,7
West University from Timisoara	1	0,1	43,9
University of Medicine and Pharmacy from Iasi	1	0,1	44,0
Lucian Blaga University from Sibiu	69	9,0	53
Technical University "Gheorghe Asachi" Iasi	360	47,0	100
Total	766	100.00	

2.2 Results

In the first part, we wanted to find out how students managed to adapt to the new form of education and how they overcame technological barriers related to connection devices, technical problems with the Internet or access to LMS or video conferencing platforms.

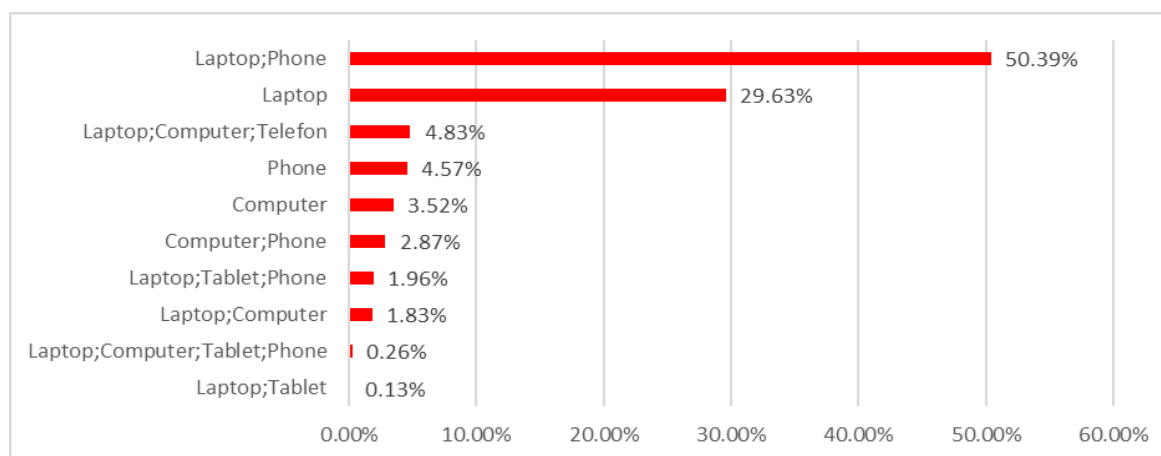


Figure 1. The distribution of students' answers regarding the methods of connecting to online education

Source: own data

Figure 1 shows that more than 80% of students mainly use laptops and smartphones, while only 3.52% use computers. This can be an important explanation for the fact that in the university environment, the transition from the traditional form to online study was made quickly and without many problems related to the lack of technology.

In the next phase, we were interested in finding out if students encountered any technical difficulties, such as applications/video conferencing systems that needed to be installed did not work on the devices used (computer/phone/tablet); the results presented in Figure 2 show that 51.4% disagreed with the question at all, i.e., the respondents believe that the laptops or smartphones used allowed the installation of the applications recommended by the teachers without any problems. 20.8% disagreed, believing that there were minor problems but they could be fixed, and very few, 5.7%, fully agreed, meaning that some of the students had problems with the applications that had to be installed and used.

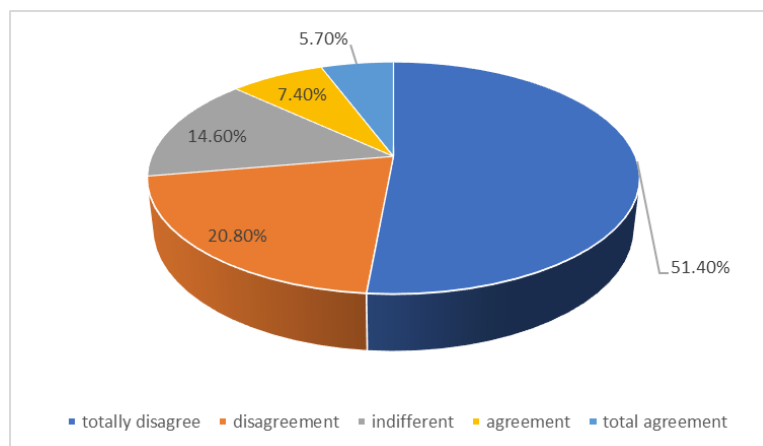


Figure 2. The distribution of answers regarding the capacity of the systems used to allow the installation of the applications recommended by the teaching staff

Source: own data

The connection to the platforms, in the form of a question on whether there were technical problems with the connection to the platform to which the teachers guided the students, the results show that 52.6% answered "do not agree at all" and 21.4% disagreed with the existence of problems with LMS or video conferencing platforms, which means that there were no problems and what the teachers recommended worked without problems (Figure 3).

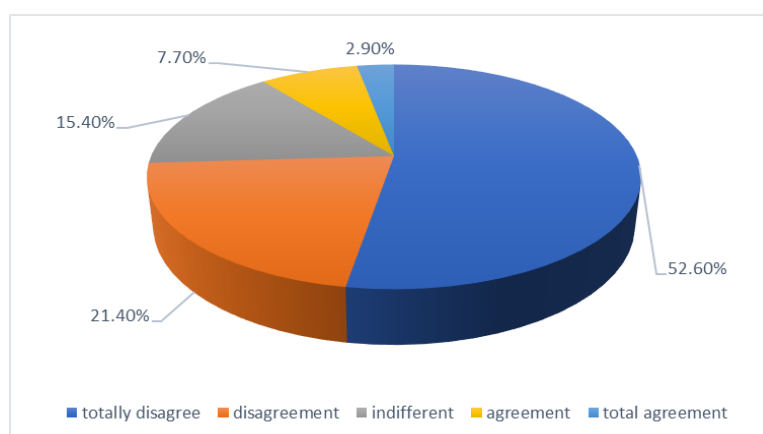


Figure 3. Distribution of answers regarding connection problems to the LMS or video conference platforms recommended by teachers

Source: own data

The ability to perform didactic activities in the online environment is highly dependent on the quality of the Internet connection. In response to the question "Did you have limited access to the Internet during the scheduled lessons?" there were relatively evenly distributed responses between

the 5 answer choices, although 35.2% of students did not affirm these problems at all. From the distribution of responses in Figure 4, it can be seen that there were minor problems for some of you, and 14.9%, or 114 of 767 students, had major problems with the Internet at the beginning of the pandemic.

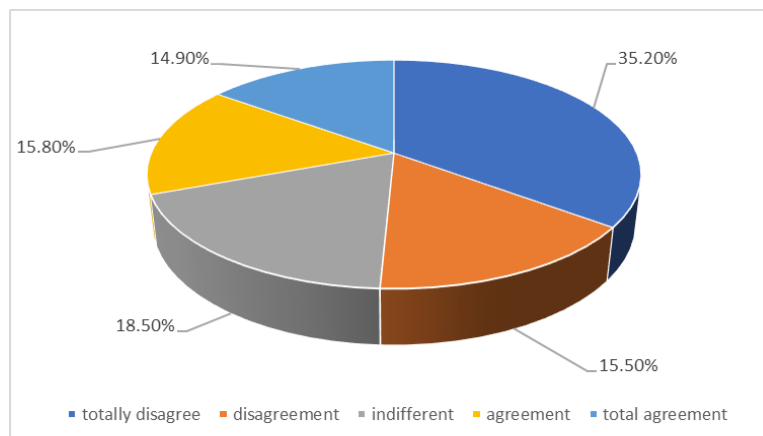


Figure 4. Distribution of answers regarding problems related to the Internet connection

Source: own data

When the Internet connection allows access to an application installed on a remote server, the functioning of this software product in terms of audio/video signal quality and content loading time are elements that must be considered when evaluating functionality. For this reason, the respondents were asked if they had difficulties in not seeing, reading or hearing the teachers' messages due to technical reasons.

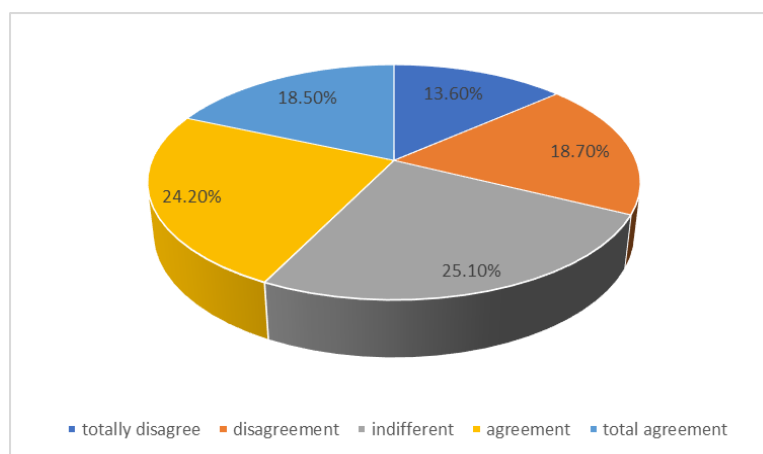


Figure 5. Distribution of responses regarding interruptions (sound, video, content) of the platforms

Source: own data

Figure 5 shows that there were more or less relevant problems. 25.1% of the answers fell in the range of indifference, which can mean that there were situations when the message was not heard or the presentation was interrupted, but 24.2% agreed and 18.5% fully agreed with the proposed statement, which means that the congestion of the Internet networks caused many problems from March to June 2020. Romania has a great advantage in this regard, as the Internet networks in our country were equipped with the latest generation technologies at the time of their development, which is a great delay compared to the Western European countries.

We wanted to know from the students from whom they received support in case of technical problems. The responses received are highlighted in Figure 5.8. It can be seen that the majority of respondents considered colleagues (35%) or teachers/colleagues (31%) as the main supporters when

they had problems. Probably, the existence of communication groups at subject/group level in social networks (Facebook, Instagram) or WhatsApp has allowed them to receive advice in real time.

An interesting analysis is presented in Figure 6, which contains the answers to the question of which software applications were used for discussions between teachers and students and between students. We believe that the picture is a good x-ray of the situation at that time, when teachers recognised and used all kinds of methods to communicate with students.

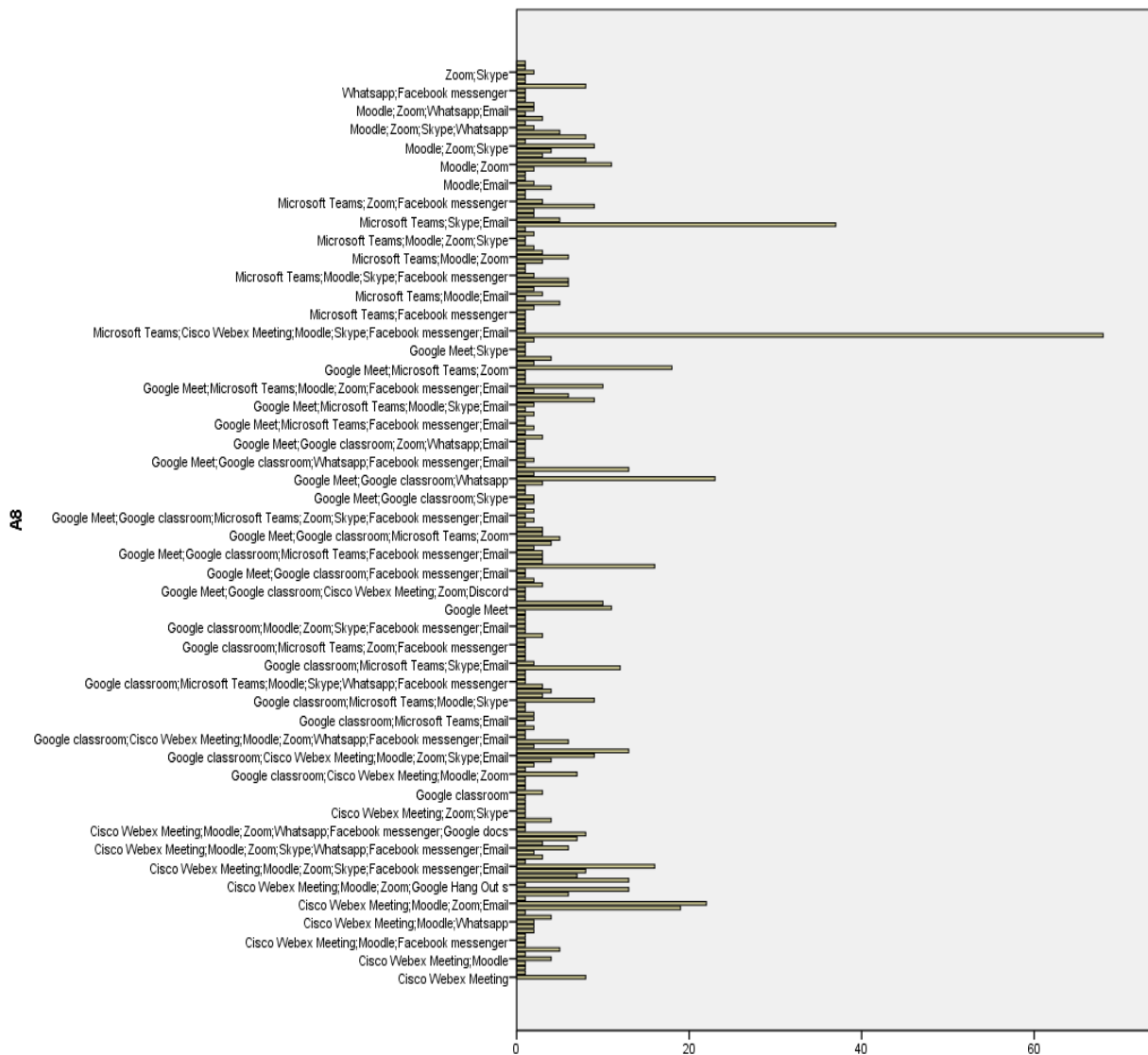


Figure 6. Distribution of answers regarding applications/platforms used by teachers
 Source: own data

From a statistical perspective, we tried to find out if there are relationships between the constructs in the questionnaire and if they can be measured. From the perspective of the relationship between CI (quality of information) and P (student performance), it can be observed that there is a weak direct relationship between course support and the grades students would achieve $r = 0.326$ and a slightly stronger direct relationship between the materials (seminar/course support) and the way online instruction made the course easier to maintain with $r = 0.432$.

Table 2. The correlation between the quality of information (QI) and student performance (P) correlations

		QI1	QI2	P1	P2	P3
CI1	Pearson Correlation	1	,676**	,326**	,415**	-,105**
	Sig. (2-tailed)		,000	,000	,000	,004
	N	766	766	766	766	766
CI2	Pearson Correlation	,676**	1	,342**	,432**	-,150**
	Sig. (2-tailed)	,000		,000	,000	,000
	N	766	766	766	766	766
P1	Pearson Correlation	,326**	,342**	1	,588**	-,192**
	Sig. (2-tailed)	,000	,000		,000	,000
	N	766	766	766	766	766
P2	Pearson Correlation	,415**	,432**	,588**	1	-,381**
	Sig. (2-tailed)	,000	,000	,000		,000
	N	766	766	766	766	766
P3	Pearson Correlation	-,105**	-,150**	-,192**	-,381**	1
	Sig. (2-tailed)	,004	,000	,000	,000	
	N	766	766	766	766	766

** . Correlation is significant at the 0.01 level (2-tailed).

Source: own data

Instead, an inverse relationship can be found between the course materials and the ability to be distracted by the instructor's presentation because they can engage in other activities at the same time, with a Pearson correlation coefficient of $r = -150$, proving that students were interested in the instructor's presentations and were not distracted by the activities around them.

From Table 3, it can be seen that there is an average direct correlation between the support of the course and the related materials, which were well organized and easy to use, and the level of satisfaction with a Pearson correlation coefficient of $r = 0.597$, while the other elements of satisfaction have little correlation with the information provided by the teachers. It can be highlighted that there is an inverse relationship between the quality of information and the difficulty in performing online learning activities $r = -0.149$ and that the interruption of face-to-face teaching activities negatively affects the learning process and here we observe that $r = -0.291$.

Table 3. The correlation between the quality of information(QI) and student satisfaction(S)

		Correlations								
		QI1	QI2	S1	S2	S3	S4	S5	S6	S8
CI1	Pearson Correlation	1	,676**	,597**	,328**	,239**	,093*	,245**	-,149**	-,291**
	Sig. (2-tailed)		,000	,000	,000	,000	,010	,000	,000	,000
	N	766	766	766	766	766	766	766	766	766
CI2	Pearson Correlation	,676**	1	,530**	,337**	,262**	,126**	,264**	-,126**	-,339**
	Sig. (2-tailed)	,000		,000	,000	,000	,000	,000	,000	,000
	N	766	766	766	766	766	766	766	766	766
S1	Pearson Correlation	,597**	,530**	1	,603**	,512**	,175**	,547**	-,196**	-,518**
	Sig. (2-tailed)	,000	,000		,000	,000	,000	,000	,000	,000
	N	766	766	766	766	766	766	766	766	766

S2	Pearson Correlation	,328**	,337**	,603**	1	,571**	,220**	,735**	-,229**	-,576**
	Sig. (2-tailed)	,000	,000	,000		,000	,000	,000	,000	,000
	N	766	766	766	766	766	766	766	766	766
S3	Pearson Correlation	,239**	,262**	,512**	,571**	1	,419**	,566**	-,209**	-,431**
	Sig. (2-tailed)	,000	,000	,000	,000		,000	,000	,000	,000
	N	766	766	766	766	766	766	766	766	766
S4	Pearson Correlation	,093*	,126**	,175**	,220**	,419**	1	,319**	-,081*	-,177**
	Sig. (2-tailed)	,010	,000	,000	,000	,000		,000	,025	,000
	N	766	766	766	766	766	766	766	766	766
S5	Pearson Correlation	,245**	,264**	,547**	,735**	,566**	,319**	1	-,260**	-,591**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000		,000	,000
	N	766	766	766	766	766	766	766	766	766
S6	Pearson Correlation	-,149**	-,126**	-,196**	-,229**	-,209**	-,081*	-,260**	1	,370**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,025	,000		,000
	N	766	766	766	766	766	766	766	766	766
S8	Pearson Correlation	-,291**	-,339**	-,518**	-,576**	-,431**	-,177**	-,591**	,370**	1
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,000	
	N	766	766	766	766	766	766	766	766	766

** . Correlation is significant at the 0.01 level (2-tailed).
 * . Correlation is significant at the 0.05 level (2-tailed).

Source: own data

Table 4. The correlation between the usefulness of online education (U) and student satisfaction (S)

		Correlations											
		U1	U2	U3	U4	U5	S1	S2	S3	S4	S5	S6	S8
U1	Pearson Correlation	1	,518**	,633**	,475**	,328**	,687**	,456**	,341**	,113**	,374**	-,247**	-,398**
	Sig. (2-tailed)		,000	,000	,000	,000	,000	,000	,000	,002	,000	,000	,000
	N	766	766	766	766	766	766	766	766	766	766	766	766
U2	Pearson Correlation	,518**	1	,561**	,472**	,629**	,600**	,707**	,492**	,201**	,762**	-,282**	-,589**
	Sig. (2-tailed)	,000		,000	,000	,000	,000	,000	,000	,000	,000	,000	,000
	N	766	766	766	766	766	766	766	766	766	766	766	766
U3	Pearson Correlation	,633**	,561**	1	,580**	,448**	,625**	,553**	,448**	,198**	,486**	-,273**	-,456**
	Sig. (2-tailed)	,000	,000		,000	,000	,000	,000	,000	,000	,000	,000	,000
	N	766	766	766	766	766	766	766	766	766	766	766	766
U4	Pearson Correlation	,475**	,472**	,580**	1	,411**	,499**	,525**	,359**	,201**	,464**	-,217**	-,356**
	Sig. (2-tailed)	,000	,000	,000		,000	,000	,000	,000	,000	,000	,000	,000
	N	766	766	766	766	766	766	766	766	766	766	766	766

U5	Pearson Correlation	,328**	,629**	,448**	,411**	1	,501**	,583**	,649**	,345**	,682**	-,245**	-,488**
	Sig. (2-tailed)	,000	,000	,000	,000		,000	,000	,000	,000	,000	,000	,000
	N	766	766	766	766	766	766	766	766	766	766	766	766
S1	Pearson Correlation	,687**	,600**	,625**	,499**	,501**	1	,603**	,512**	,175**	,547**	-,196**	-,518**
	Sig. (2-tailed)	,000	,000	,000	,000	,000		,000	,000	,000	,000	,000	,000
	N	766	766	766	766	766	766	766	766	766	766	766	766
S2	Pearson Correlation	,456**	,707**	,553**	,525**	,583**	,603**	1	,571**	,220**	,735**	-,229**	-,576**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000		,000	,000	,000	,000	,000
	N	766	766	766	766	766	766	766	766	766	766	766	766
S3	Pearson Correlation	,341**	,492**	,448**	,359**	,649**	,512**	,571**	1	,419**	,566**	-,209**	-,431**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000		,000	,000	,000	,000
	N	766	766	766	766	766	766	766	766	766	766	766	766
S4	Pearson Correlation	,113**	,201**	,198**	,201**	,345**	,175**	,220**	,419**	1	,319**	-,081*	-,177**
	Sig. (2-tailed)	,002	,000	,000	,000	,000	,000	,000	,000		,000	,025	,000
	N	766	766	766	766	766	766	766	766	766	766	766	766
S5	Pearson Correlation	,374**	,762**	,486**	,464**	,682**	,547**	,735**	,566**	,319**	1	-,260**	-,591**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,000	,000		,000	,000
	N	766	766	766	766	766	766	766	766	766	766	766	766
S6	Pearson Correlation	-,247**	-,282**	-,273**	-,217**	-,245**	-,196**	-,229**	-,209**	-,081*	-,260**	1	,370**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,000	,025	,000		,000
	N	766	766	766	766	766	766	766	766	766	766	766	766
S8	Pearson Correlation	-,398**	-,589**	-,456**	-,356**	-,488**	-,518**	-,576**	-,431**	-,177**	-,591**	,370**	1
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000	,000	
	N	766	766	766	766	766	766	766	766	766	766	766	766
**. Correlation is significant at the 0.01 level (2-tailed).													
*. Correlation is significant at the 0.05 level (2-tailed).													

Source: own data

Looking at the relationship between the usefulness of the information provided and student satisfaction (Table 6), a moderately strong to strong direct relationship can be seen between student comfort and the levels of satisfaction described in the questionnaire: Satisfaction with this learning method, Lack of interaction, Comfort, Time saved. As expected, the highest value is $r=0.649$ between the comfort of online teaching and time gain. We observe a strong correlation $r=0.687$ between the usefulness of the learning materials provided by the teachers and the satisfaction with the online learning method. From this point of view, we can conclude that students appreciate the efforts of teachers to adapt to the form of online teaching by providing facilities and support to complete the academic year.

Very weak inverse correlations exist between the specific elements of the usefulness of online activities and the difficulties in performing online learning activities due to the lack of habit of

learning with the help of new technologies, and the interruption of activities negatively affects the learning process.

3. CONCLUSIONS

The analysis of the given answers leads to the conclusion that the management of the studied universities did everything possible so that the didactic activities could take place normally and without interruptions, in accordance with the plans that were originally made. Even though there were some technical problems because various devices did not work, the transition went smoothly because the students were able to use the various technical devices, but also thanks to the telephone and Internet operators who understood the need to offer a higher quality Internet signal. The quality of the didactic material suffered from the fact that few teachers prepared courses for the online format. The activity was conducted in a similar way to the classic format, with the difference that this time it took place from the home office and the student could lie quietly on the sofa in the room, a fact that was positively evaluated by the students when they were asked about the comfort offered by the online format. Communication, another important online element, also suffered from the fact that, according to the students, the teachers did not have the necessary time to respond to the students' emails. From a didactic point of view, the main problem was that students were burdened with additional activities, which was negatively evaluated by them as "we stay home anyway and you have time for homework and projects". It is interesting and appreciated by the students that some teachers have adapted and are innovative from a pedagogical point of view by offering what the students are looking for: Course recordings, explanations on graphic tablets or video tutorials that have become exciting and challenging for students to ask questions and initiate discussions. Therefore, the request of the teachers, who expressed their interest and were innovative, was highly appreciated by the students.

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