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ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/rero20

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To cite this article: Tudor Edu, Costel Negricea, Razvan Zaharia & Rodica Milena Zaharia (2022) Factors influencing student transition to online education in the COVID 19 pandemic lockdown: evidence from Romania, Economic Research-Ekonomska Istraživanja, 35:1, 3291-3304, DOI: 10.1080/1331677X.2021.1990782

To link to this article: https://doi.org/10.1080/1331677X.2021.1990782

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Published online: 18 Oct 2021.

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ECONOMIC RESEARCH-EKONOMSKA ISTRAŽIVANJA
2022, VOL. 35, NO. 1, 3291–3304
https://doi.org/10.1080/1331677X.2021.1990782

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Factors influencing student transition to online education in the COVID 19 pandemic lockdown: evidence from Romania

Tudor Edu[a], Costel Negricea[a], Razvan Zaharia[b] and Rodica Milena Zaharia[c]

[a]Marketing-Management Department, Romanian-American University, Bucharest, Romania; [b]Marketing Department, Bucharest University of Economic Studies, Bucharest, Romania; [c]Department of International Business and Economics, Bucharest University of Economic Studies, Bucharest, Romania

ABSTRACT

This study aims to identify factors influencing student transition to online education (STOE) during the COVID19 pandemic in Romania. Although Romania boasts high internet speed, accessibility and affordability, online education is in its infancy. Academic experience variables found in the literature were narrowed into five factors through exploratory factor analysis, and regressed together with online platform and demographic variables to measure their impact on STOE. 565 business students from all academic levels were surveyed. The study uncovered direct and inverse relationships between the five groups of factors, platform functionality, enrolment level and place of residence, and STOE. Findings are relevant to academics and university managers for improving online education.

ARTICLE HISTORY
Received 28 July 2021
Accepted 4 October 2021

KEYWORDS
Online education; student transition to online education; COVID19; Romania

SUBJECT CLASSIFICATION CODES
I21; P46; C51; C53

1. Introduction

The sudden and unpredicted turn to online education because of the COVID19 pandemic opened new research avenues related to higher education. Most of the studies concentrated on students' satisfaction, while limited attention has been paid to the students' transition to online education (STOE).

This study aims to identify factors influencing STOE during the COVID19 pandemic in Romania. Romania ranks among the best countries in the world in terms of internet connectivity, internet speed and internet affordability (European Commission, 2020).

Despite this technological advancement, Romania has not paid too much attention to online education. Some universities had their own blended learning platforms, but the usage of these platforms was very limited when the pandemic started. Romania is

CONTACT Tudor Edu tudoredu@yahoo.com; Rodica Milena Zaharia milena.zaharia@rei.ase.ro

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a paradox, as the attitude toward online education has not matched the potential offered by the internet infrastructure.

This study is structured as follows: literature review, research hypotheses, research methodology, data analysis and results, discussion and testing of hypotheses, and conclusions.

2. Literature review

2.1. From online education to student transition to online education during the pandemic

There is a large body of literature discussing online education, many times the concept being used as an umbrella to cover terms such as online learning, e-learning, or web learning. In a systematic literature review conducted over a period of 30 years, Singh and Thurman (2019) collected 46 definitions only for the online learning concept, discovering similarities and differences with other terms and even disagreements in the definitions of the online learning concept. Differences between these terms are determined, among many aspects, by the learning environment characteristics, the type of learning content, the audience and instruments used to deliver the learning content, or by the type of interaction between the learner and instructor.

Both e-learning and online learning originated during 1980s (Moore et al., 2011). Tsai and Machado (2002) define E-learning as an activity entailing the usage of computers and online liaising structures at the same time. The perspective that E-learning is only a learning process delivered using technology (Nichols, 2003) is contradicted by authors who consider that e-learning means more, including knowledge creation rendered through the transformation of individual experiences into individual knowledge as a result of the educational process (Tavangarian et al., 2004, cited in Moore et al., 2011). Web learning is placed in the educational support context provided via a Web browser, comprising here even the information that can be stocked on CD-ROM or other media (Tsai & Machado, 2002). Online learning always involves an internet connection (Anderson, 2008). Other authors, such as Nichols (2003), define online learning as the educational process delivered exclusively based on websites with no paper support or in-person interaction, Hence, it can be considered, drawing from Nichols' perspective (2003), that e-learning incorporates both online learning and web learning.

It is, therefore, understandable that, despite some consistent differences between online learning, e-learning or web learning, the terms are widely used interchangeably and assimilated to online education (Anderson, 2008; Arkorful & Abaidoo, 2015; Moore et al., 2011; Sun & Chen, 2016; Tsai & Machado, 2002).

The unexpected COVID 19 pandemic determined educational institutions around the world to adopt similar methods, making these differences between the above-mentioned terms even less obvious (Baber, 2020; Salto, 2020). Therefore, this paper embraces the view underlined by many studies that online education is an inclusive concept, associated and used interchangeably with online learning, virtual learning, e-learning, or technology-mediated learning, that describes the course activities and

interactions between peers performed entirely online (Arkorful & Abaidoo, 2015; Baber, 2020; Moore et al., 2011; Qazi et al., 2020; Sun & Chen, 2016).

Online education is, among others, flexible, cost effective, self-pacing, allowing for access increases of students and academics to resources for learning and research (Arkorful & Abaidoo, 2015; Weller, 2003). However, studies (Arkorful & Abaidoo, 2015; Dumford & Miller, 2018) underline that students engaged in online education tend to have a lower quality of interactions, participate less in collaborative learning, and may develop socialising skills to a lesser extent.

None of the above-explored studies forecasted the abrupt moment of the total immersion of higher education into the online mode. Because of COVID19 lockdown, by mid-March 2020, over 70 countries announced closure of educational institutions (Muthuprasad et al., 2021) and many started to offer online teaching using Zoom, Google Meet, Webex, Skype, FaceTime, Microsoft Teams or other interaction platforms. The decision to move online the entire higher education caught the instructors, students and higher education managers unprepared, mostly where online education was not an important part of the formal education (Abbasi et al., 2020). In some countries, the internet connectivity, the disparities among regions, the inexistence of IT platforms for online education and the lack of devices for online education created difficulties for both students and instructors and influenced their transition to online mode (Adnan & Anwar, 2020; Chen et al., 2020; Salto, 2020). Some studies consider what happened during the pandemic lockdown not being online education, but rather emergency remote education (ERE) (Salto, 2020).

Online education during the pandemic lockdown brought to the fore an issue of interest, important for the quality of learning, called in this study the *student transition to online education (STOE)*. STOE refers to the student's capacity to adapt to the sudden switch from face-to-face education to online education (Baber, 2020; Basilaia & Kvavadze, 2020).

Studies of Adnan and Anwar (2020), Baber (2020), or ILO (2020) showed that the abrupt transition to e-learning shaped the students transition to online education. As ILO (2020) counted, the odds were against STOE because of unfamiliarity with online learning platforms, limited pedagogical support to students, inappropriate students' engagement and self-confidence, improper course design, inadequate teacher preparation, lack of interaction.

STOE in Romania is worthy of investigation. Despite excellent technological endowments, online education is still in its infancy. When the COVID19 pandemic hit, very few universities had blended learning platforms. Even fewer had means to interact with students using both video and audio settings, faculty prepared to use online platforms or curricula adapted for online mode. Investigating STOE during the pandemic lockdown in Romania brings additional empirical evidence and novelty through a newly emerged concept (STOE) and the factors affecting it.

3. Research hypotheses

3.1. Research hypotheses on factors influencing STOE

As limited attention has been paid so far to STOE according to the extant literature, and considering a comprehensive theoretical approach, the advanced hypotheses were

developed from the literature devoted to students' satisfaction. Six groups of factors (instructor support, administrative support, course structure, interaction, student self-confidence and technology) were considered as being essential in explaining STOE.

Instructors' support and administrative support factors emerged from the studies conducted by Mason and Weller (2000), Bolliger and Martindale (2004), and Eom et al. (2006), referring to instructors or staff in various instances, namely related to support, feedback, facilitation or performance. Baber (2020), and ILO (2020) underline that instructors' skills and existence of staff support in providing online courses during the pandemic lockdown directly influenced STOE. Therefore, the first hypotheses for this research are:

H1. The instructors' support has a direct relationship with STOE

H2. The administrative (university) support has a direct relationship with STOE

Another group of factors come under the umbrella of course structure. In the study conducted by Cole et al. (2014), course structure was the second most important factor in influencing student satisfaction. Studies investigating online education during the pandemic lockdown mention this group of factors. For countries with limited or no experience in offering online courses, as in studies conducted by Abbasi et al. (2020), Adnan and Anwar (2020), Baber (2020), or by ILO (2020), course structure was important in surmounting difficulties of STOE. Therefore, this research brings forward the following hypothesis:

H3. The course structure has a direct relationship with STOE

Interaction represents a crucial group of factors. Lack of interaction was the most cited reason for dissatisfaction in the study of Cole et al. (2014). Bolliger and Martindale (2004) mention the triple dimension of interaction: learner-content interaction, learner-instructor interaction and learner. COVID19 lockdown brutally affected the interaction between students and between instructors and students and influenced STOE. Even in countries with experience in delivering online education, students' levels of stress, anxiety, loneliness, and depressive symptoms got worse during the pandemic lockdown (Elmer et al., 2020). Therefore, this study proposes the next hypothesis:

H4. Lack of interaction both with colleagues and instructors (professors) has an inverse relationship with STOE

Grouped under the umbrella of student self-confidence are factors related to the capacity of being familiar with online education (as transition is easier for students familiar with online education than for students less familiar with online education) (Qazi et al., 2020). Studies mention that although students are familiarised with social media, they still do not have sufficient skills in using technological tools or software for educational purposes (Blanco et al., 2020). Thus, this study formulates:

H5. Student's lack of self-confidence has an inverse relationship with STOE

Finally, technology influences STOE. Technology is at the very heart of the online education concept and the only alternative for delivering courses during the pandemic lockdown. The access to technology (both in terms of connectivity and

devices) (Adnan & Anwar, 2020; Chen et al., 2020) was of a great importance, influencing directly STOE. Therefore, our hypothesis is:

H6. Technological factors have a direct relationship with STOE

3.2. Research hypotheses on descriptive variables

Descriptive variables are used in online education research mostly for describing the sample. In the context of the Covid19 pandemic lockdown we considered the following descriptive variables: Online platform functionality, Gender, Student enrolment level and Place of residence during online courses. These variables were drawn from the works of Abbasi et al. (2020), Baber (2020), and Qazi et al. (2020). Qazi et al.'s research (2020) is one of the few works employing demographic variables as explanatory variables in explaining various levels of satisfaction with online education during the pandemic lockdown. Although only place of residence rendered statistically significant results, with urban residence showing higher scores in general, differences were found between male and female students on various satisfaction levels, positions being interchangeable, while postgraduate level students recorded higher scores at all satisfaction level.

Based on these variables and recorded scores, and considering the disparity between the high internet connectivity and still low online education implementation in Romania, this study aims to test four hypotheses, one focusing on the educational platform used by the university and three on students:

H7. University online platform functionality used by the university directly influences STOE

H8. Gender significantly influences STOE

H9. Enrolment level significantly influences STOE

H10. Place of residence during online courses significantly influences STOE

All in all, the following research model is proposed to be tested (Figure 1).

4. Research methodology

The aim of the study was to comprehend antecedents of student transition to online education. The model (Figure 1) was tested by employing an online questionnaire, using convenience sampling (Abbasi et al., 2020). Data were collected between June 25 and August 15, 2020 from business students registered at Romanian universities. At the end of June, business students completed the spring semester in online mode, after two months of lockdown imposed in Romania.

A total number of 610 questionnaires were collected. After checking them for consistency, 565 questionnaires were retained. The sample size surpasses dimensions employed in studies on satisfaction in online education (Baber, 2020; Qazi et al., 2020).

Exploratory factor analysis (EFA) was employed to collapse the academic experience items identified in the literature into factors, and, subsequently, logistic

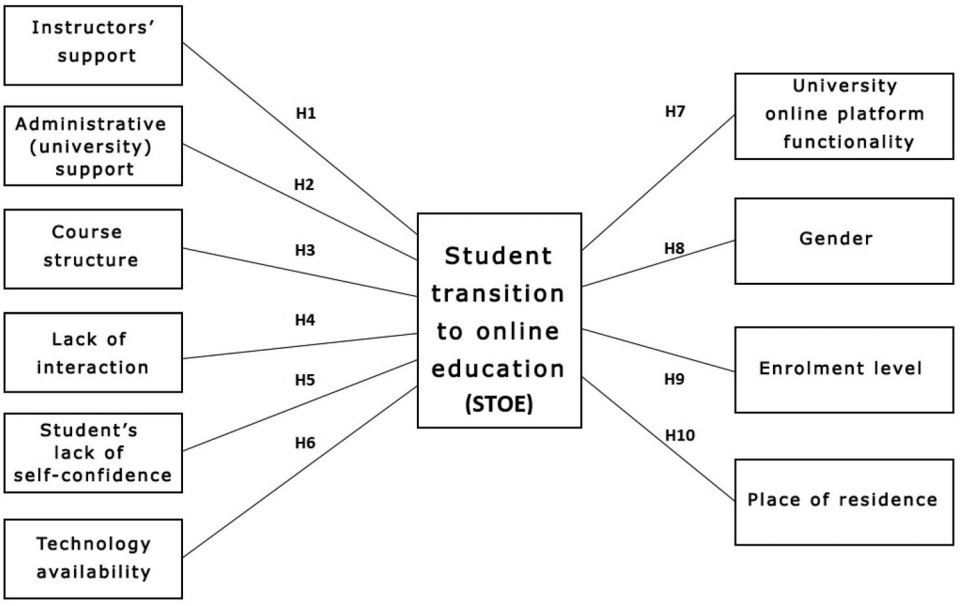

Figure 1. Research Model of Student transition to online education (STOE).
Source: From literature.

regression to measure the impact of these factors, online platform functionality, and demographics on STOE.

For collecting data, 23 Likert scales with 5 levels (Kuo et al., 2013) (ranging from very good to very bad or highly confident to highly unsure) were employed for items pertaining to the influencing factors of STOE. The items were built from the works of Bolliger and Martindale (2004), Cole et al. (2014), Eom et al. (2006), Kuo et al. (2013), and Mason and Weller (2000). Categorical scales were used to measure the university's online platform functionality (poorly/most often adequately/very well) drawing from the work of Baber (2020) and demographics ((gender (man/women), enrolment level (bachelor/master/doctorate), place of residence (urban/rural/another country)), expanding on the work of Qazi et al. (2020). Also, the dependent variable was measured based on a categorical scale, namely easy versus difficult.

The questionnaire was piloted before being uploaded online using a sample of 10 students (Parahoo et al., 2016), equally split between undergraduate and postgraduate levels. Three items were reformulated based on the feedback.

5. Data analysis and results

The 23 items delineated in the literature for the research hypotheses were analysed through EFA (Principal Axis Factoring), using a Varimax rotation. Considering factor loadings of minimum 0.40, Eigenvalues above 1 and a Scree plot (Field, 2009), and a Cronbach Alpha higher than 0.7 (Nunnally, 1978), 3 items were discarded as they did not build into a factor. The remaining 20 collapsed into five factors (Table 1).

Thus, the factors were named: *F1 (Instructors' and administrative staff support), F2 (Course structure), F3 (Lack of interaction), F4 (Student's lack of self-confidence) and*

Table 1. Factor analysis of academic experience items (Principal Axis Factoring).

Rotated factor matrix[a]					
	Factor				
Item	1	2	3	4	5
Internet speed and coverage in Romania					.718
Equipment/device availability					.771
Student-student interaction in online mode			.598		
Student-content interaction during online courses			.581		
Student self-confidence in adapting to online mode				.713	
Student self-confidence in operating with technological tools or software				.791	
General Communication with colleagues			.720		
Student-instructor interaction			.839		
University and administrative support for online mode	.621				
Instructors' performance/knowledge	.851				
Instructors' empathy	.809				
Instructors' evaluations	.742				
Instructors' digital skills	.706				
Instructors' skills to adapt teaching material to online format	.648				
Instructors' feed-back	.714				
Student online Class participation with webcam and microphone					
Online working groups					
Course material availability		.529			
Clarity of course content		.786			
Online suitability of course structure		.769			
Course objectives	.408	.706			
Self confidence in passing over online evaluation				.460	
Connectivity difficulties					
Extraction Method: Principal Axis Factoring; Rotation Method: Varimax with Kaiser Normalization.					

Source: Own research.
Notes. Rotation converged in 6 iterations. Kaiser-Meyer-Olkin Measure of Sampling Adequacy: 0.894; Bartlett's Test of Sphericity-Sig.: 0.00. Cronbach Alpha: >0.70 for all factors and between factors.
[a]Rotation converged in 6 iterations.

F5 (Technology availability). Interestingly, the items for instructors' support and administrative staff support combined into one factor.

Subsequently, the five factors, and the university online platform functionality and demographic variables were regressed against STOE, the results being presented in Table 2.

The model includes eight significant variables (Wald tests, $p < 0.001$ for the second to the fourth variables and the sixth, $p < 0.01$ for the first and fifth, $p < 0.05$ for the eighth, and $p < 0.1$ for the seventh variable) (Table 2), the impact of each variable on student's transition to online education (STOE) being explained based on odds ratio.

F1 (instructors' and administrative staff support), with an odds ratio of 1.703, displays that an increase of one unit on the measurement scale of the predictor increases the odds of having an easy transition to online education by a multiplicative factor of 1.703.

F2 (course structure), with an odds ratio of 1.786, displays that an increase of one unit on the measurement scale of the predictor increases the odds of having an easy transition to online education by a multiplicative factor of 1.786.

F3 (Lack of interaction), with an odds ratio of 0.288, displays that a decrease of one unit on the measurement scale of the predictor increases the odds of having an easy transition to online education by a multiplicative factor of 3.472.

F4 (Student's lack of confidence), with an odds ratio of 0.242, displays that a decrease of one unit on the measurement scale of the predictor increases the odds of having an easy transition to online education by a multiplicative factor of 4.132.

Table 2. Logistic regression-student transition to online education (STOE) as dependent variable.

							95% C.I. for Exp (B)	
Variable	B	S.E.	Wald	df	Sig.	Exp (B)	Lower	Upper
F1 (Instructors' and administrative staff support)	.532	.154	11.881	1	.001	1.703	1.258	2.304
F2 (Course structure)	.580	.144	16.239	1	.000	1.786	1.347	2.369
F3 (Lack of interaction)	−1.245	.190	42.819	1	.000	.288	.198	.418
F4 (Student's lack of self-confidence)	−1.418	.168	71.338	1	.000	.242	.174	.337
F5 (Technology availability)	.406	.144	7.923	1	.005	1.501	1.131	1.991
University online platform functionality (Poorly)			71.332	2	.000			
Most often adequately	1.277	.205	38.876	1	.000	3.585	2.400	5.356
Very well	2.067	.286	52.268	1	.000	7.899	4.511	13.832
Enrolment level (Bachelor)			5.648	2	.059			
Master	.701	.320	4.803	1	.028	2.016	1.077	3.775
Doctorate	1.118	1.096	1.041	1	.307	3.060	.357	26.205
Place of residence (Urban)			7.780	2	.020			
Rural	−.714	.295	5.871	1	.015	.490	.275	.873
Another country	1.057	.899	1.380	1	.240	2.877	.494	16.765

Source: Own research.

Notes. Hosmer and Lemeshow Test-non-significant value ($p > 0.05$)-adequate level of data fitting; Chi-square = 375.265 ($p < 0.001$); Nagelkerke R Square = 0.647; correctly classifying 83% of the cases. Logistic regression assumptions met (according to Haydam et al., 2017).

F5 (Technology availability), with an odds ratio of 1.501, displays that an increase of one unit on the measurement scale of the predictor increases the odds of having an easy transition to online education by a multiplicative factor of 1.501.

The variable *university online platform functionality* (significant overall at $p < 0.001$), with odds ratios of 3.585 ($p < 0.001$) and 7.899 ($p < 0.001$), displays that students considering that the platform/s worked most often adequately, and, respectively very well, were 3.585, and, respectively 7.899 times more inclined to have an easy transition to online education than those considering that the platform/s worked poorly.

The variable *enrolment level* (significant overall at $p < 0.1$), with an odds ratio of 2.016 ($p < 0.05$), shows that students enrolled in master programmes were 2.016 times more inclined to have an easy transition to online education than those enrolled in bachelor programmes.

The variable *place of residence* during online courses (significant overall at $p < 0.05$), with an odds ratio of 0.490 ($p < 0.05$), shows that students residing in urban areas were 2.040 times more inclined to have an easy transition to online education than those residing in rural areas.

6. Discussion and testing of hypotheses

All factors have a significant impact on STOE. From the factors identified through EFA, the most important effect was rendered by *F4 (Student's lack of self-confidence)*, followed by *F3 (Lack of interaction)*. The least important effect on STOE was rendered by *F5 (Technology availability)*.

F4 (Students' lack of self-confidence) had a statistically significant inverse impact on STOE, the results supporting hypothesis H5. This finding is in line with other studies (Qazi et al., 2020), and it is not a surprise. Students are familiarised with social media, but not necessarily with technological tools or software for educational

purposes, and perceived the transition to online education difficult and stressful (Blanco et al., 2020).

F3 (Lack of interaction), similar to *F4 (Students' lack of self-confidence),* had a statistically significant inverse impact on STOE, the findings supporting hypothesis H4. The results augment Elmer et al.'s (2020) conclusions, namely increased anxiety, loneliness and stress. Limited interaction imposed by the lockdown (student-instructor and student-student), missing friends, or lack of physical team work, augment uncertainty and induce the feeling of hopelessness and exclusion (Elmer et al., 2020).

On a third place, as importance, *F2 (Course structure)*, had a statistically significant direct impact on STOE, hence, hypothesis H3 being supported. *Course structure*, referring to course objectives and course infrastructure, is an important determinant of STOE, because online studying requires a specific course content and a distinct way of delivering the course content. The findings of this study underlie the importance of tailoring courses to online education (Abbasi et al., 2020; Adnan & Anwar, 2020; Baber, 2020; ILO, 2020).

Close to *F2 (Course structure)*, *F1 (Instructors' and administrative staff support)*, displayed a statistically significant direct impact on STOE. Two research hypotheses were distinctively formulated, one for instructors' support, and one for administrative staff support. The EFA combined the items covering these two perspectives into one factor. It can be concluded that hypotheses H1 and H2 are supported. The position of this factor in influencing STOE consolidates the importance of instructors' and staff support both during normal times (Bolliger & Martindale, 2004; Eom et al., 2006; Mason & Weller, 2000) and during exceptional times (Baber, 2020; ILO, 2020). The new perspective displayed by this research, through the combination of instructors' and admin staff's input in STOE, emphasises that students feel more secure, especially during disruptive periods, if these two types of effort are combined.

F5 (Technology availability) had a statistically significant direct impact on STOE, although this factor had the lowest influence. The finding supports H6. It is an expected result, as the country boasts very good broadband internet connectivity at low rates and displays a converse situation to the one from other studies which concluded that technological factors were an obstacle in acquiring satisfaction (Adnan & Anwar, 2020).

University online platform functionality had a statistically significant direct impact on STOE. When the platform worked very well, the best effect was attained, hence, hypothesis H7 being supported. This finding is, again, an expected one, and in line with the findings from other studies (Abbasi et al., 2020; Baber, 2020; Qazi et al., 2020) as STOE is heavily dependent on the internet availability, and on the online platform/s used for educational purposes, in particular.

Gender did not statistically significantly influence STOE, concluding that hypothesis H8 was not supported. This finding, supporting Qazi et al's findings (2020) on student satisfaction, may be explained by the extraordinary context, that surprised all students in a similar way (both male and female students). The general uncertainty generated by the pandemic and the suddenness of the turning to a mode of education that nobody experienced before, shaped STOE in a similar way for both female and male students.

Enrolment level prompted a statistically significant impact on STOE, as students enrolled in master programs were more inclined to have an easier STOE, compared to bachelor students, therefore hypothesis H9 being supported. These results contradict the findings of Qazi et al. (2020), as they found no significant difference between academic levels in online education satisfaction. One possible explanation can be that master students are more mature and familiar with the online environment. Many students enrolled in master programmes are employed in multinational companies, and working from home or having online meetings are common job descriptions. Bachelor students in Romania are not used with online classes, and STOE was influenced by the fact that everything was new, unpredictable and very fluid.

Place of residence during online courses was found to have a statistically significant relationship with STOE, students living in urban areas being more likely to have an easier transition to online education compared to those living in rural areas, hence, hypothesis H10 being supported. The significant relationship between place of residence and STOE, being in sync with Qazi et al's results (2020) on student satisfaction, can be explained based on differences between rural and urban areas associated with Internet service uptime, as on-site interventions take more time in the country side. Additionally, students were used to use internet services for educational purposes especially in the urban area, where universities are located.

7. Conclusions

7.1. Theoretical significance and recommendations

This study aimed to identify factors influencing student transition to online education (STOE) during the COVID19 pandemic in Romania. The novelty of the study is determined by two major aspects. It considers student transition to online education as a variable and measures the influence of factors identified in the literature on STOE. Secondly, it analyses STOE in Romania, a country with excellent internet endowments, but very limited tradition in online education.

Several conclusions occurred from the study analysis. Five factors emerged as influencers of STOE from the six initially hypothesised: Instructors' and Administrative Support, Course Structure, Lack of Interaction, Student's lack of Self-Confidence, and Technology availability. The regression revealed that Student's lack of self-confidence had the strongest effect on STOE, which could be understandable in the pandemic context considering the sudden need of universities to switch entirely to online, and to use the solutions available at the time. This conclusion draws attention, also, on the importance of technological skills students *have* and *should have*. As the present research underlined, in line with the conclusions of the literature, just being active on social media is not equal with having digital skills for learning and working in a digital era. As a result, universities have to pay attention to developing digital skills for students, considering that their lack of confidence could come from insufficient skills in using technological tools or software for educational purposes. Lack of Interaction came closely to Student's lack of self-confidence. This was probably the factor most affected by the COVID19 pandemic, and students fully perceived the lack of interaction as an important motive of discomfort. Online

environment cannot replace face-to-face interaction. There are ways in which interaction in the online education can be enhanced, such as better course designs that stimulate both student-instructor and student-student interactions. Thirdly came the Course structure. Online education needs a different approach compared to face-to-face education. Students need a specific content, adapted to the online environment, namely a better and clearer structure of the teaching material. The lack of online education experience in Romania should also be tackled by training instructors and administrative staff to be content creative in order to ease the transition to online education. Instructors' and administrative support had a lesser impact than the factors mentioned above. This can be explained by the fact that students believed that faculty and staff were there to help them. This assumption underpins the fact that a successful transition to online education, especially during exceptional circumstances depends on the support received by students from instructors and universities. Therefore, universities have to pay closer attention to training their faculty and administrative staff for better digital skills, better capacity to adapt teaching material to online format, and more consistent feedback. Technology availability influenced STOE. This is probably the most common-sense result obtained through the analysis, as one cannot discuss about online education in the absence of technology. The last position of this factor on the impact on STOE is a result of very good internet connectivity, availability and affordability in Romania. These are important assets that helped universities from Romania to compensate, in a way, for the lack of experience in providing online education. Also, STOE was influenced by the online platform functionality used by the university and student enrolment level. Thus, universities need to focus on developing and up-timing their platforms, and adapting them to students' needs in a friendly manner to facilitate usage. Postgraduate students had an easier transition to online education compared to the undergraduate students, representing, also, an expected result, as many postgraduate students having jobs, are already used with some form of remote work, and are familiar with online tools for professional communication. Therefore, universities should develop guidelines, provide training sessions and focus on technical support for undergraduate students. More than that, some courses for postgraduate students can be retained to be delivered in the online mode, and Romanian universities should consider seriously a hybrid approach (face-to-face courses embedded with online courses) for postgraduate students. Place of residence during online courses had a significant impact on STOE, with students residing in urban areas having an easier transition to online education, confirming, thus, the existing disparities between rural and urban areas in terms of internet connectivity.

7.2. Study limitations and future research directions

There are several limitations of this study. One emerges from the sampling methodology. Therefore, the results are not generally valid for the community of business students from Romania, despite the large dimension of the sample analysed in this paper. However, the findings are valuable, as being the first study of this kind, on Romanian case, and the results display conclusions important for universities'

managers. Digitalization in teaching and research is far more complicated than using an online platform, and this is exactly what our study proves.

Another limitation is given by the investigation of business students only. Nevertheless, the study opens new avenues for research in different domains. Investigating students from other fields can be interesting in order to conclude if STOE differs according to the field of study.

Our study focused only on student transition to online education in the pandemic context. It would be interesting to analyse the satisfaction, also, students had during this sudden immerse in online mode. Therefore, the model can be expanded to investigate students' satisfaction with online education as a dependent variable, and, furthermore, to test if it correlates with STOE.

Disclosure statement

All authors contributed equally in all stages of manuscript drafting; therefore, the sequence of authors is displayed alphabetically.

Funding

This research did not receive funding.

ORCID

Tudor Edu http://orcid.org/0000-0001-9110-9287
Costel Negricea http://orcid.org/0000-0001-5174-9888
Rodica Milena Zaharia http://orcid.org/0000-0003-1636-4434

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