Gender Differences in the Perception of Online Higher Education During COVID -19 Pandemic

Irina Maiorescu[1], Gabriel Cristian Sabou[2], Alexandru-Lucian Vîlcea[3] and Bogdan Georgescu[4]
[1)2)3)] *Bucharest University of Economic Studies, Bucharest, Romania.*
E-mail: irina.maiorescu@com.ase.ro; E-mail: gabriel.sabou@com.ase.ro;
E-mail: lucian.vilcea@ie.ase.ro; E-mail: georgescubogdanmk@gmail.com

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Abstract

Because of the COVID-19 pandemic, numerous countries introduced severe restrictions for social interaction, work, education and travelling. Education was abruptly transferred to online environment, without preparation time for taking into consideration the learning needs of students, generated by their personality, learning style, ICT skills and gender. As such, the perception of the higher education quality might have been impacted by this emergency online learning. The current paper aims to identify if the sudden experience of online education generated by pandemic is differently perceived by students of different genders. For this, the results of a quantitative research deployed on students from Bucharest University of Economic Studies, after one year of experiencing online learning, were analysed and interpreted in the light of previous research in the field. These results point to the fact that there are differences between genders in what concerns the time required by online learning and the perception of future perspectives of employment, as a result of the received online education.

Keywords

Gender perception, online learning, higher education, quality, Covid-19 pandemic

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Introduction

COVID-19 pandemic brought across the globe a crisis that required emergency measures. Almost all areas of activity were affected by these measures, the higher education making no exception from it. On campus education – including here teaching, learning and all related administrative activities, was disrupted, authorities aiming to limit as much as possible the social interactions, to stop the spreading of COVID 19 virus (UNESCO, 2021a).

It is debatable whether programs, methods, and materials designed for face-to-face interaction between professors and students, managed to be equally effective in this emergency online teaching. The rapid shift of courses and laboratories to online environment brought a certain heterogeneity in the methodology of teaching, as in in many cases professors had to use whatever was available and easier from their point of view, to communicate with students (Aguilera-Hermida et al., 2021).

Online learning, just as is the case of on-campus learning, should be crafted according to the particularities of the users. Personality traits, learning styles, previous educational background and gender can influence how the quality of the education is perceived (Bhagat, Wu and Chang, 2019; Yu, 2021; Hsiao, 2021). As such, the current paper aims to investigate whether there are differences between genders in the way quality of education is perceived, after one year of online education in pandemic.

In the first part of the paper, the review of the scientific literature focuses on the pandemic context and its effects on the quality of higher education processes, with particular accents on the research studies about gender differences in the perception of online education.

The second section of the paper presents the design and the results of a quantitative research that was deployed in February 2021, after two semesters of shifted education in online environment, with the purpose of assessing genders' perception about the quality of online education, as experienced through pandemic.

Conclusions of the paper, underlining the main points revealed by both the scientific literature and by own quantitative research analysis and, consequently, future directions of research, are presented in the last part of this paper, which contributes thus to extending the understanding of pandemics effects on human behaviour.

1. Review of the scientific literature

Before 2020 -2021 pandemic, it is estimated that 20% of all worldwide countries had digital learning resources in teaching; however, this was available only in some schools. About 10% of countries were evaluated as having robust digital learning capacity to be offered to students outside campus and no country had a totally digital curriculum for teaching and learning (EU, 2021).

The expectations of stakeholders about the quality of the educational services offered by higher education institutions vary from one culture to another, since quality is the synergic result of many factors. According to ISO 9000:2015, quality means fulfilling the needs and expectations of customers and of organization's all relevant stakeholders. Regardless of differences in the way education quality is perceived by scholars, business environment and academia, there is one common point: the capacity of the higher education institutions to really transfer knowledge and competences to students, according to the advertised and promised standards (Arambewela and Hall, 2006). The transfer of knowledge and competences from professors to students greatly depends on how the professor skills and teaching materials adapt to the needs of the learner.

During coronavirus pandemic, all affected countries reported an increase in online, distance or hybrid learning. These induced significant changes in the manner of teaching and learning (UNESCO, 2021a). This emergency instituted online learning in higher education is not over, as the threat of pandemic is still present in various countries of the world (Leung and Sharma, 2022). The more that higher education institutions understand the factors affecting the use of emergency online learning, the easier it will be to continue offering high quality online classes to students (Aguilera-Hermida et al., 2021).

The quality of higher education has most likely decreased in those institutions who lacked the infrastructure, the trained personnel, and the experience in running online programs, as these were found to be critical issues (UNICEF and UNESCO, 2021). At the same time, the lack of mobility and the decrease in research activities of the academic staff during this period (UNESCO, 2021b), impacted the normal status and the quality of education.

To the time professors and students previously needed for preparing their classes, it had to be added the extra time required for getting familiar with procedures, technologies, and challenges of online learning. Thus, the pandemic forced both parties to "work harder than before, which negatively impacted the educational process, the pleasure of the teaching/learning process, the level of enthusiasm, and sometimes even the academic results" (Barbu, Popescu and Moiceanu, 2022).

Students had to learn how to use the new learning technologies and software, so that they can connect to their classes. Wang, Shannon and Ross (2013) emphasize the fact that students having more experience in online learning tend to apply more effective learning strategies when taking online courses and they have higher levels of motivation. Nevertheless, acquiring ICT skills, does not necessarily mean that students will have appropriate academic outcomes in online learning (Aguilera-Hermida et al., 2021).

Research studies indicate that there are differences between genders in the way they navigate, communicate, and learn online (Rovai and Baker, 2005; Yukselturk and Bulut, 2009), but not in what regards the educational outputs (Yu, 2021). Other studies indicate that there are differences in what concerns the attitude towards technology - as males have a more favourable attitude towards using it (Cai, Fan and Du, 2017). Also, female students place more importance on the planning of learning, as well as on being able to contact the professor (González-Gómez et al. 2012).

In what concerns certain aspects of online education, such as online learning readiness, research results on gender differences are quite inconsistent. While some research indicates that there are no differences between genders in what regards online learning readiness (Tang, et al., 2021), other studies, on the contrary, found that either the female respondents are more ready to accept online learning (González-Gómez et al., 2012; Chung, Subramaniam and Christ Dass, 2020), or the male respondents are the ones that rather prefer the online learning to the traditional face-to-face system (Yu, 2021).

2. Research methodology

Starting from the relevant issues referring to quality of education and online learning, as identified through the analysis of the scientific literature, and placing them in the 2020-2021 COVID 19 pandemic context, a quantitative research was designed, aiming to analyse whether there are associations between gender and the perception of quality in online education during pandemic. The research focuses on students' perspective, as they are key stakeholders in assessing the quality of learning and providing the needed future premises for improvement of online higher education.

This quantitative research, online questionnaire based, was deployed on Bucharest University of Economic Studies students belonging to the 2nd and 3rd year of bachelor studies and to master programs of Marketing Faculty and Business and Tourism Faculty. The questionnaire was created using Google Docs platform and it was distributed to students in February 2021, after two semesters of online learning in pandemic. It was considered important that students should have had at least one year of normal on campus academic activity, in order to be able to assess the quality of education received during pandemic, against previous on campus experiences. The sampling was non-probability based, with a total of 337 complete and valid questionnaire responses, out of the 389 distributed. There were 232 female and 105 male respondents.

Data retrieved from Google Docs platform hosting the questionnaire composed of 19 questions were first processed with Microsoft Excel and then analysed with the statistical software Minitab 16.

3. Results and discussion

The research questionnaire focussed both on evaluating the importance of aspects specific to quality of online learning during pandemic, and on comparing the quality of online education received during pandemic with the quality of education received on campus before the beginning of pandemic.

As such, respondents were asked to assess on a scale from 1 to 5 the importance of various items for the quality of their online learning. The results were tested to see whether there are differences between genders answers. Because data is not normal and because the shape of gender distributions is quite similar, Kruskal Wallis was applied, with the purpose of assessing whether there are differences between the groups of masculine and feminine respondents. The results are presented in Table no 1.

Table no. 1. Kruskall Wallis test applied to quality components variables cross gender

Null hypothesis (H_0) - statistic context	**Tested variable**	**Cross variable**	**Decision**	***P-value****
The distribution of the tested variable is the same in all the categories of the cross variable	Communication platform professor – student with video capabilities	Gender	Accept H_0	*0.699*
	Resources for individual study text based (.pdf, .ppt, .doc etc)		Accept H_0	*0.336*
	Resources for individual study in audio format (audio books, courses etc.)		Accept H_0	*0.377*
	Resources for individual study as video files (i.e., YouTube)		Accept H_0	*0.688*
	Communication platform between administration/ secretary office and students		*Reject* H_0	*0.022*
	Access to international scientific research papers		*Reject* H_0	*0.033*
	Security of online communication connection		*Reject* H_0	*0.048*
	Professors with ICT skills		*Reject* H_0	*0.029*
	The same platform and teaching method for all courses		Accept H_0	*0.294*
	Invited professors from abroad universities		Accept H_0	*0.184*
	Invited speakers from business environment		Accept H_0	*0.491*

Note: *significance level for p-value: 0.05

These results state that there are differences between genders, in what concerns the variables Communication platform between administration/ secretary office and students, Access to international scientific research papers, Security of online communication connection and Professors with ICT skills.

Further on, a Mann Whitney test for comparing the medians of these variables was applied, its results being presented in Table no. 2.

Table no. 2. Mann Whitney Test for comparing the median of quality components, by gender

Tested variables	N	Median	Results
Professors with ICT skills (F)	232	4.0000	W = 41020,5.0
Professors with ICT skills (M)	105	4.0000	Test of ETA1 = ETA2 vs ETA1 > ETA2 is significant at 0,0144
Communication platform between administration/ secretary office and students (F)	232	5.0000	W = 41108,5
Communication platform between administration/ secretary office and students (F)	105	5.0000	Test of ETA1 = ETA2 vs ETA1 > ETA2 is significant at 0,0109
Security of online communication connection (F)	232	5.0000	W = 40848,0
Security of online communication connection (M)	105	5.0000	Test of ETA1 = ETA2 vs ETA1 > ETA2 is significant at 0,0239
Access to international scientific research papers (F)	232	5.0000	W = 40969,5
Access to international scientific research papers (M)	105	5.0000	Test of ETA1 = ETA2 vs ETA1 > ETA2 is significant at 0,0168

Note: *significance level for p-value: 0.05

According to these results, although the medians of the two genders are equal, there is a higher proportion of female respondents, than male respondents who consider very important the *Access to international scientific research papers, Security of online communication connection, Communication platform between administration/ secretary office and students* and important and very important *having Professors with ICT skills.*

Because 2020- 2021 was the first academic year with online education during university, respondents could not compare these quality components specific to online learning with what was before pandemic. These results reflect their opinion about quality, after one year of continuous online education experience. Hence, further on, they were asked about other general issues, reported in the scientific literature as important for the quality of education. Respondents were requested thus to compare different aspects of online education against the traditional on campus education, before pandemic (table no.3).

Table no. 3. Aspects of online education compared with the "normal" on campus education, before pandemic, in terms of quality

Variables	The same as before (% of respondents)	More than before (% of respondents)	Less than before (% of respondents)
Professors' involvement in teaching	59,35%	17,21%	23,44%
Understanding the concepts explained	44,51%	10,39%	45,10%
Communication with secretary office and university administration	23,74%	7,42%	68,84%
Free time	20,47%	37,69%	41,84%
Working for case studies/homework	33,83%	59,05%	7,12%
Exams grading reflecting the reality	63,80%	10,98%	25,22%
Trusting the quality of education received	54,01%	9,79%	36,20%
Having perspectives for getting a good job	53,12%	12,17%	34,72%
Being prepared for the real practice within business environment	50,45%	13,35%	36,20%

It can be remarked that while 54% of respondents trust the quality of online education received during pandemic, about a third (36%) state they trust it less, a compared to the quality of traditional, on campus education they received before pandemic. It seems that „understanding the concepts explained" less than before pandemic is a quality issue reported by 45% of respondents, while the communication with administration and secretary offices – another important quality characteristic of education, according to scientific literature, was considered lower than before pandemic by 68% respondents.

These variables were tested to see whether there is an association between gender and the perception of online education quality, as compared with the normal, before pandemic education quality. Pearson Chi Square test was applied, the results being presented in Table no. 4.

Table no. 4. Pearson Chi Square Test of association between variables "aspects of online education during pandemic" and "gender"

Variable	Pearson Chi-Square coefficient	Degrees of freedom	P-value *
Professors' involvement in teaching	0,954	DF = 2	0,621
Understanding the concepts explained	4,969	DF = 2	0,083
Communication with secretary office and university administration	4,441	DF = 2	0,109
Free time	*20,864*	*DF = 2*	*0,000*
Working for case studies/homework	*14,873*	*DF = 2*	*0,001*
Exams grading reflecting the reality	1,878	DF = 2	0,391
Trusting the quality of education received	2,138	DF = 2	0,343
Having perspectives for getting a good job	*7,132*	*DF = 2*	*0,028*
Being prepared for the real practice within business environment	*10,540*	*DF = 2*	*0,005*

Note: *significance level for p-value: 0.05

By analysing the distribution of counts in the table for those variables which show a statistically significant connection with gender (p value < 0.05), it resulted that during pandemic online education female respondents declared, in a higher-than-expected number, they had less free time than before - when attending courses normally, on campus. On the contrary, male respondents declared in a higher-than-expected number they had more time when attending online courses, than before. Though, there are studies that indicate that in general, online learning is more time consuming than on campus traditional learning (Cavanaugh, 2005), this difference between genders may be partially explained by the fact that male gender seems to be more comfortable when dealing with technology in online learning, than female gender (Cai, Fan and Du, 2017), and navigating and learning in unfamiliar environments takes more time.

When analysing the distribution of "working on case studies/ homework" variable across gender, it results that, women declare in a higher-than-expected number that they work more on case studies/homework in online education during pandemic than before, while male respondents claim the other way around.

By calculating the Spearman correlation coefficient between these two variables: "free time" and "working at case studies" with ordinal scales (1- less than before, 2- the same as before and 3- more than before), it was obtained a negative, but quite weak correlation, of - 0.220, hence no strong premises for a future look for causality could be formulated.

In a similar manner, by looking at the distribution of cells in the table for the variable "having perspectives for getting a good job" cross tabulated with gender, it is shown that the feminine gender is more pessimistic about perspectives for a good job, as they consider – unlike masculine gender, in a higher number than expected, that the online education provides less opportunities for a good job, than the normal on campus education.

The distribution of variable "being prepared for the real practice within business environment" across variable "gender" indicates that, again, feminine respondents feel less prepared for the challenges of the business environment reality, in a higher number than expected. Masculine gender, on the contrary, declares in a higher-than-expected number that education during pandemic provides better insights in the real business environment, than it had done before.

Conclusions

Because of the pandemic, emergency online education has been introduced in universities, replacing the traditional face-to-face, on campus education. The lack of prior preparation for an online system of education created difficulties for both professors and students.

The quality of education depends on many factors, and it is important when designing procedures and methodologies of learning to consider the particularities of the learners- gender included. The current paper analysed the associations between gender and the perception of quality in higher education during pandemic, through a quantitative research.

Data analysed indicated that feminine respondents perceived online education as taking more time and implying more projects and homework than before pandemic, but with lower perspectives of obtaining a good job and with lower training for the realities from the business environment.

The research *limitations are* due to sample specificity. The respondents belong to a university that had previously developed for educational support a platform for blended learning, even though it had not been used on mandatory, regular basis by professors and students. This platform was used together with other popular communication platforms such as Zoom, Google Hangouts etc. Also, all courses and exams were held online. As such, results should be regarded in this context.

A further direction of research will consist in analysing the change of students' perception about quality in their education along pandemic stages, as well as after its ending, to provide a better understanding about the effects of such a major global event upon education and society.

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