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Pros and Cons of e-Learning in Economics and Business in Central and Eastern Europe: Cross-country Empirical Investigation

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Abstract

Background: The ongoing information and technological revolution, as well as the Covid-19 pandemic, accelerated the use of e-learning worldwide. **Objectives:** This article aims to present the results of our empirical research among students of economics and business from Central and Eastern Europe on the advantages and disadvantages of e-learning. **Methods/Approach:** The article uses a survey, and the research sample included 1647 respondents (students of economics and business) from universities in three countries: Croatia, Poland, and Serbia. We used the multivariate comparative analysis (factor analysis and principal components analysis) by applying Statistica computer software. **Results:** The assessment of individual forms of e-learning in the three countries is similar. In e-learning, investigated students appreciated, first of all, the time-saving. At the same time, it is difficult to concentrate and harder to develop the interpersonal skills needed to work in a real environment. **Conclusions:** E-learning seems to be a vital instrument complementing traditional learning, as the respondents declared. However, it should not replace traditional face-to-face education; it should only support it.

Keywords: e-learning; distance learning; factor analysis; Croatia, Poland, Serbia

Introduction

E-learning is understood as digital or online education and interactive or digitally assisted learning (Lara et al., 2020). It has been known as a tool to support the traditional educational process for years. Alongside traditional face-to-face education, distance learning was the earliest to emerge, especially in countries with large spatial areas and low population densities (e.g. Australia, USA). Initially, correspondence courses (printed materials sent by post) were the main media used. Much later, audio and video recordings were introduced (tapes, video cassettes sent by post). Radio broadcasts (the first in 1948 by the University of Lousiville) and television broadcasts (the first in 1950 by New York University) became popular. And finally, very recently, we have new forms of e-learning (e.g. e-learning platforms such as Blackboard or Moodle, video meetings such as Zoom, MS Teams, Google Meet or ClickMeeting, and finally even massive open online courses MOOCs), while the current civilisation challenges such as technology and the industrial revolution (Rymarczyk, 2020), the millennials generation, the Covid-19 pandemic results in new social phenomena in higher education such as the internationalisation of universities (Sułkowski et al., 2020) or the use of social media and digital marketing by universities (Mazurek et al., 2018).

The education level influences economic growth, economic convergence processes, and a society's overall level of wealth (Głodowska, 2017) and is particularly important in the case of women (Głodowska, 2018). The modern industrial revolution is a natural process that has progressed due to the technological advances in social and economic systems so far (Maciejewski et al., 2020). The effects of the fourth industrial revolution are visible in the area of education, which in turn is particularly important for the mentioned social and economic systems. New technological solutions and devices, usually associated with the Internet, have modernised and improved the education (learning-teaching) process (Tarabasz et al., 2018). The Covid-19 pandemic accelerated this process. E-learning has played a special role here as the primary form of education during the pandemic. However, this is associated with fear, student anxiety, and some psychological problems for young people (Loan et al., 202; Zeqiri et al., 2022). However, e-learning has long been the focus of many researchers before the ongoing pandemic (Samir et al., 2014; Bartosik-Purgat et al., 2018; Pejic Bach et al., 2018).

With the dynamic development and use of information and communication technologies (ICT), especially the Internet, distance education began to be equated with e-learning (online distance learning). Along with the development of sharing economy, open educational resources (OER) are gaining popularity, and their dynamic development relates to the development of open-source software (OSS) and the popularisation of open content (OC), as well as the development of dedicated software for e-learning. Open educational resources (OER) are a term created by UNESCO in 2002, which is a common name for any educational resource that is openly accessible through free licensing or transfer to the public domain and made available through any information and communication technology (Wach, 2018).

The literature identifies many advantages of using e-learning at the university level of education. The saving of time and effort in travelling to university is identified as the most important (Ms et al., 2013). In the era of increasing globalisation and internationalisation, it also provides the opportunity to attend courses regardless of the geographical location of the e-learning course provider. The student becomes a self-directed learner and learns simultaneously and asynchronously at any time. Lecturers notice similar observations in terms of time-saving. However, preparing an e-learning

course requires much effort and gathering rich authoring content. On the other hand, it reduces costs connected with the organisation of classes in a traditional form. Moreover, easy access to a wide range of materials and studies contributing to the deepening of knowledge and relying on emotions are advantages (Bigos et al., 2020).

As mentioned above, e-learning favours active learning-teaching processes and manifests creativity and innovation. Entrepreneurial pedagogy has been successfully adopted in Anglo-Saxon literature; in practice, it is commonly used because entrepreneurial pedagogy deals with teaching methods that foster the formation of an entrepreneurial attitude. It is the opposite of traditional (classical) teaching, as it promotes active teaching methods, which have been dominant in pedagogy for several decades, especially in general education and specific teaching methodologies (Tasnim et al., 2013). Davies and Gibb (1991) stress that using traditional teaching methods to shape entrepreneurial competencies, awareness, and attitudes is insufficient, and hence an entrepreneurial approach to the teaching-learning process is proposed. Powell (2013) emphasises that activating (entrepreneurial) teaching methods, compared to traditional pedagogy, are not structured and are based on spontaneous teaching-learning.

The main disadvantage of using e-learning, according to the various research results, is the limitation of personal interaction between the line student–teacher and among the students themselves (Somayeh et al., 2016).

The level of sophistication of e-learning courses is also worth noting. Digital tools provide unlimited instrumental possibilities: interactive quizzes, videos, apps, and videotapes. Undoubtedly, it influences the attractiveness of made-available content and, thus, the attractiveness of learning itself. However, it is also the source of a visible discrepancy between providers who can organise such an attractive course and those who are not due to technological and information limitations. Against this background, crucial differences between developed and developing countries become visible, as pointed out by Aung and Khaing (2015) and Lizcano et al. (2020). A new perspective on e-learning arose because of the imposed obligation to use this platform as the only form of education during the Covid-19 pandemic. This period has shown that the e-learning form of education is quite widespread in universities. However, prior research results point out that the perception of e-learning differs between its participants and one of the reasons is simply cultural differences (Ms et al., 2013).

According to Maatuk et al. (2021), remote learning and the ability to deliver e-learning courses have contributed to the uptake of learning by people who would not have undertaken a degree course due to logistical constraints. On the other hand, Harandi (2015) signals a problem with low motivation for e-learning. The lack of face-to-face interaction causes the approach to learning to weaken, and self-discipline is crucial in this regard. On the other hand, Selim (2007) argues that the effectiveness of the use of e-learning is determined by the characteristics of the instructor/course organiser, then IT infrastructure and the university support for the e-learning process, as well as the characteristics of the e-learning course users – the students.

Creating and using e-learning courses determines having access to adequate computer tools and developing skills and abilities to create digital content and use it in learning and continuous learning and development (lifelong learning) due to the dynamics of changes in the digital environment. At the same time, teachers, lecturers, students, and pupils, as stakeholders in the development of e-learning, can identify the advantages and disadvantages of using e-learning in the teaching process.

The present research is a cross-country investigation to deepen the knowledge about the strengths and weaknesses of e-learning and potential opportunities and

threats resulting from this form of education. This article aims to present the results of empirical research among students of economics and business from Croatia, Poland, and Serbia on the advantages and disadvantages of e-learning. Moreover, the article aims to map the perception of e-learning in communication, interactivity, content, effectiveness, and sustainable responsibility.

The article results from an online survey among students from Croatia, Poland, and Serbia on using e-learning in the educational process. The survey was conducted at the end of 2021. More than 1500 respondents' answers became the subject of analysis using the tools of multivariate comparative analysis (factor analysis and principal components analysis). Calculations were performed using Statistica 13.3 software.

Methodology

Data on university students in economics and business was collected in November and December 2021 at the universities involved in teaching economics and business in three countries: Poland, Croatia, and Serbia (the Cracow University of Economics, University of Zagreb, and University of Belgrade). Non-probabilistic sampling methods were combined to reach a relevant number of students. Firstly, we used a snowball effect based on the social networks of university teachers in the following majors: trade and international business, accounting and finance, and tourism. Teachers were asked to share questionnaires with students in their study groups and to explain the aim of the study to their students. Secondly, as the study aimed to observe university students' attitudes, we used the convenience sampling method to reach bachelor's and master's level students in various fields of economics and business.

On the other hand, all teachers were asked to motivate, but not force by any means, their students to fill in questionnaires. Therefore, we can tell that the voluntary participation of students in the sample is another major characteristic of our sample. Targeting as many respondents as possible, we collected more than 1500 valid questionnaires from university students in Croatia, Poland, and Serbia, majoring in various fields of economics and business. Such a large number of collected questionnaires – such considerable data enabled us to reduce a potential research bias when concluding the attitudes of economics and business students regarding e-learning in all three participating countries. The brief structure of the sample is shown in Table 1.

Table 1
The structure of the research sample

Characteristic	Modalities	#	%
Level/year of study	Bachelor level – 1st year	411	25%
	Bachelor level – 2nd year	450	27%
	Bachelor level – 3rd year	425	26%
	Master-level – all years	361	22%
	Total	**1647**	**100%**
Country	Poland	696	42%
	Croatia	656	40%
	Serbia	295	18%
	Total	**1647**	**100%**

Source: Authors' work.

As the research instrument, an online questionnaire was used. The questionnaire comprised many questions regarding tools used in e-learning, e-learning environment,

e-learning as a support to traditional teaching practices, benefits and obstacles of e-learning, e-learning in the Covid-19 pandemic, future potentials of e-learning, etc. For this paper, we will describe only the part of the questionnaire relevant to the results of this particular study. Out of the complex questionnaire, for this study, we are going to analyse three groups of questions:

1. One Likert scale question on perceived various e-learning forms impact the education process.
2. Set of 39 Likert scale statements regarding e-learning aspects: communication, interaction, motivation; learning efficiency and costs; contents and teaching materials; sustainability, ethics, and social responsibility.
3. One question with one choice regarding opinions on the future of e-learning.

The statements regarding areas and issues of e-learning for Likert scale questions were based on and adapted from the following sources:

- e-learning environment; benefits and advantages of e-learning (Babic, 2012; Pozgaj et al., 2007; Nikolopoulou et al., 2021; Smedley, 2010)
- e-learning level of motivation and contribution of e-learning to achieving learning goals (Pozgaj et al., 2007; Elsalem et al., 2021)
- drawbacks, disadvantages, and obstacles of e-learning (Valantinaite et al., 2020; Babic, 2012; Pozgaj et al., 2007)
- ethical, environmental, health, and other sustainability and social responsibility issues in e-learning (Elsalem et al., 2021; Di Giacomo et al., 2021; Agarwal et al., 2021; Almseidein et al., 2020).

The question regarding the future of e-learning was based on Pozgaj et al. (2007) and Elsalem et al. (2021).

We applied the multivariate analysis tools to analyse the survey research: factor analysis with the principal components model (Kinnunen et al., 2021; Bednasz et al., 2022). The calculations were performed in Statistica 13.3. The main idea of factor analysis boils down to the following steps (Malina, 2006): 1) combining variables into a factor, 2) principal components analysis, 3) extracting principal components, 4) generalising the cases of variables into a more considerable number of variables, 5) orthogonal factors, 5) evaluation of the effects of the application of the principal analysis components. The advantage of this method is the definition of the primary variables underlying the statements given by the respondents and the identification of the structure of their ideas. Moreover, we can create a particular area of perception of reality under this study.

Results

The presentation of the research results consists of four stages. First, we present the evaluation results of various forms of e-learning and their impact on improving learning outcomes. It was done by referring to the direct statements of the respondents. In the second and third steps, we identify the most important factors determining the evaluation of e-learning by students from Croatia, Poland, and Serbia through multivariate analysis. Then, we assess the advantages and disadvantages of using e-learning in the analysed areas. In the last step, we present the results concerning the students' perception of e-learning in the future.

E-learning plays a vital role in the education process of students from Croatia, Poland, and Serbia. The survey results included a broad spectrum of forms of e-learning and their impact on improving the effects of education. Individual forms were

assessed on a five-point scale, indicating the strength of their effect on the learning process. Figure 1 illustrates the average values of evaluating forms of e-learning broken down into university students in economics and business from three surveyed countries: Croatia, Poland, and Serbia.

Figure 1
Average impact assessment of e-learning on improving the outcome of the teaching process in Croatia, Poland, and Serbia (scale 1-5)
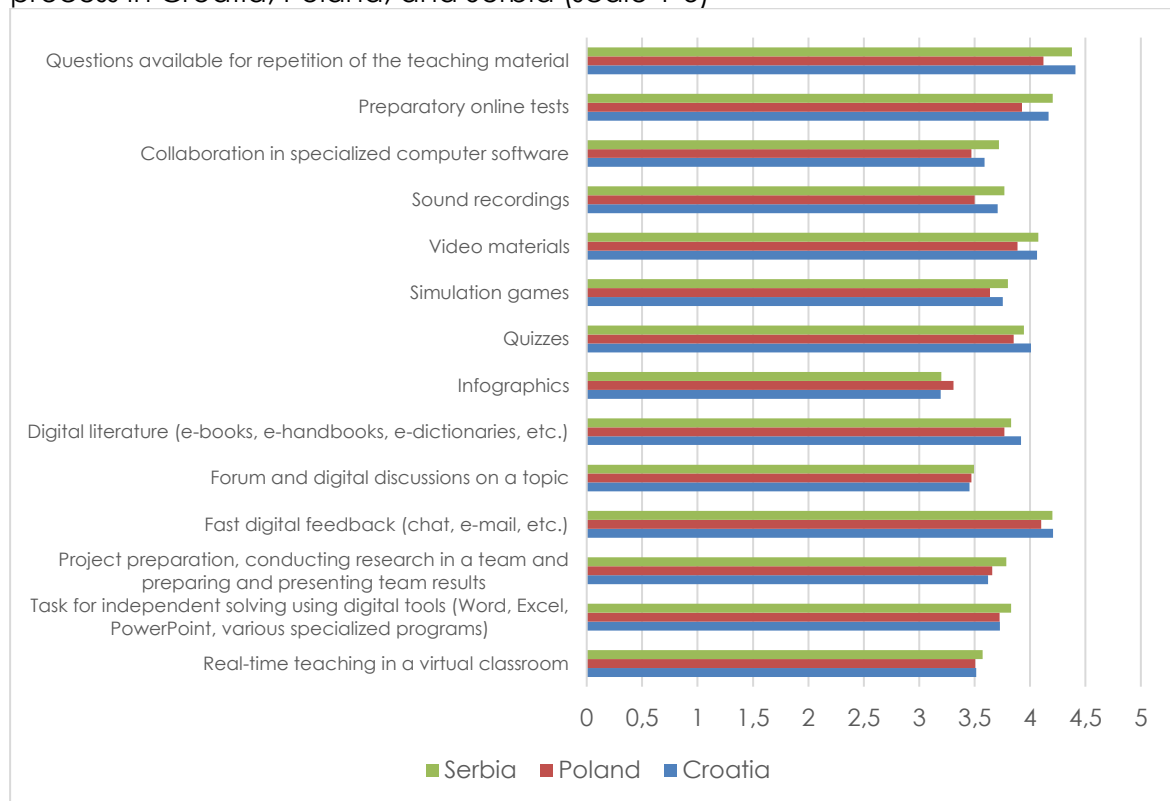

*1- insignificant impact, 2- low impact, 3 - moderate impact, 4 - major impact, 5 – extremely strong (severe) impact
Source: Authors' work.

The assessment of individual forms of e-learning in the three countries is similar. In general, the average marks are high. Only in one area the average mark slightly exceeds the value of 3, which means the moderate influence of e-learning on learning effectiveness. The other ratings are much higher. Students rate the highest scores for the possibility of permanent access to didactic materials, which allows for repeating the content, tests, etc. Online quizzes are also positively assessed, especially by students from Croatia and Serbia. Then the students highly appreciate the pace of interaction via chat and e-mail. However, on the other hand, they evaluate lower participation in online thematic discussions. Students believe that infographics or real-time teaching in a virtual classroom have a moderate impact on the effectiveness of e-learning. The evaluation of Polish students is lower than those of students from Croatia and Serbia.

In the next part of the survey, students referred to statements about e-learning, which were grouped into the following categories: 1) communication, interaction, and motivation; 2) learning efficiency and costs; 3) contents and teaching materials; 4) Sustainability, ethics, and social responsibility. These four groups contained thirty-

nine statements with which the respondents identified themselves according to a five-point scale. The average answers of the respondents indicate that they agree with the statements made at least to a moderate extent. They identify the least with the idea that e-learning motivates students to interact with each other. Most of all, with the statement that distance e-learning saves time (no need to travel). However, the assessment of individual variables (statements) is quite tricky. It is difficult to identify the differences and the most critical factors determining the perception of e-learning by students. Therefore, a multivariate analysis was used: factor analysis and principal component analysis. It allows for finding the connections between particular statements and, by reducing the variables (statements), identifying the factors characterising the perception of e-learning by students while maintaining the informational value of all analysed variables. A factor is a new variable that is not directly observable but is derived from primary variables (statements). These factors concisely reflect a significant part of the information in the data set, and at the same time, each carries a new essential content. They can also be seen as identifiers grouping the output variables into groups that are consistent in terms of the content. The choice of the number of factors retained for further analysis was made through the interpretation of the scree plot (Figure 2) and the own study of Variance (Eigenvalue – Kaiser criterion), treating each variable (statement) as an individual factor (Table 2).

Figure 2
Scree plot
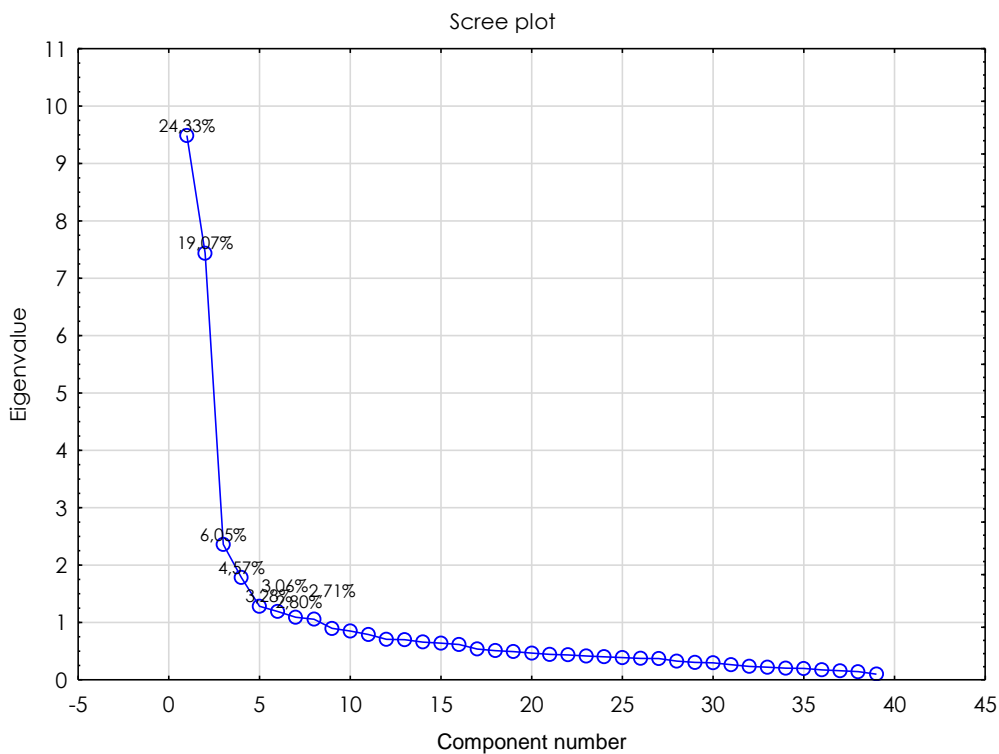
Source: Authors' work.

Table 2
The eigenvalue for 39 factors (statements) and Variance

Factor	Eigenvalue	% of Variance	Cumulative Eigenvalue	Cumulative % Var.
1	9.1611	23.4899	9.1611	23.4899
2	7.4144	19.0114	16..5755	42.5013
3	2.6293	6.7419	19.2048	49.2432
4	1.5397	3.9480	20.7446	53.1912
5	1.1587	2.9710	21.9033	56.1623
6	1.0843	2.7802	22.9876	58.9424
7	0.9167	2.3506	23.9043	61.2930
8	0.8911	2.2848	24.7954	63.5778
9	0.7989	2.0485	25.5943	65.6263
10	0.7898	2.0251	26.3840	67.6514
11	0.7084	1.8165	27.0925	69.4679
12	0.6891	1.7669	27.7815	71.2347
13	0.6638	1.7022	28.4454	72.9369
14	0.6345	1.6268	29.0799	74.5637
15	0.6138	1.5738	29.6936	76.1375
16	0.5899	1.5127	30.2836	77.6502
17	0.5465	1.4013	30.8301	79.0515
18	0.5346	1.3707	31.3647	80.4222
19	0.5062	1.2979	31.8708	81.7201
20	0.4784	1.2268	32.3493	82.9469
21	0.4738	1.2148	32.8231	84.1617
22	0.4617	1.1839	33.2848	85.3456
23	0.4602	1.1801	33.7450	86.5257
24	0.4462	1.1440	34.1912	87.6697
25	0.4245	1.0885	34.6157	88.7582
26	0.4037	1.0350	35.0194	89.7933
27	0.3946	1.0118	35.4140	90.8051
28	0.3794	0.9729	35.7934	91.7780
29	0.3531	0.9055	36.1465	92.6834
30	0.3493	0.8957	36.4959	93.5792
31	0.3301	0.8464	36.8260	94.4256
32	0.3264	0.8370	37.1524	95.2626
33	0.3064	0.7855	37.4588	96.0481
34	0.3046	0.7809	37.7633	96.8291
35	0.2775	0.7115	38.0408	97.5406
36	0.2719	0.6972	38.3128	98.2378
37	0.2678	0.6867	38.5806	98.9246
38	0.2398	0.6150	38.8204	99.5395
39	0.1796	0.4605	39.0000	100.0000

Source: Authors' work.

For the analysed area, the Variance of all variables (statements) is 39 (as many as there are variables), while the first factor with a value of 9.1611 explains more than 23% of the total Variance. The scree plot in Figure 2 starts at the eigenvalue of the sixth factor, suggesting six factors for further analysis. It is also confirmed by the Kaiser criterion (Table 2), which requires choosing those factors whose eigenvalue is greater than 1. The first six factors, with a cumulative eigenvalue of 22.9876, explain more than 58% of the total Variance. These six factors can describe more than half of the information in the thirty-nine questions. Finally, we selected six factors explaining the perception of e-learning by students from Croatia, Poland, and Serbia for further analysis.

To recognise the structure of the answers given by the respondents and to determine the variables (statements) underlying the opinions presented, i.e., the search for constructs, we analysed the correlation between the initial variables (39 statements) and the new six factors (Table 3). The factor axes (Varimax) rotation was

used to obtain a simple structure of factor loadings, which facilitates the interpretation of factors. Table 3 shows the results of the correlation between the variables (statements) and factors. Only those variables whose value of the correlation coefficient exceeded 0.7 were selected. Finally, we present only four factors because a sufficiently high correlation between the variables and factors was not observed in the other two factors.

Table 3
Correlation between variables (statements) and factors (with rotation)

Variable	Cost Factor	Productivity Factor	Activating Factor	Fun Factor
E-learning significantly reduces the costs of the educational process in the long term (travel, accommodation, etc.	0.753			
E-learning saves time (no need to travel)	0.752			
E-learning is more environmentally friendly than traditional teaching	0.714			
It is easier to lose concentration during e-learning compared with traditional learning		0.747		
E-learning extends the time required to master the material		0.701		
In e-learning, less practical experience is gained because no experiments and mentoring work with the teacher are carried out		0.765		
In e-learning, the communication skills needed to work in a real environment are insufficiently developed		0.743		
In e-learning, control, external evaluation, accreditation, and quality assurance of education have not been developed as in traditional education systems		0.754		
E-learning improves communication and activity in the classroom because it reduces the fear and shame of public speaking			0.739	
E-learning motivates students to interact with each other			0.822	
E-learning enhances my engagement and creativity			0.832	
E-learning further boosts my motivation to work			0.837	
Multimedia materials (audio and video materials, games, etc.) that can be used in e-learning make the learning process more fun				0.763

Source: Authors' work.

Based on the content of the selected variables, the following factors were named:
- o **Cost factor:** Relates to both financial costs and social costs. The respondents considered this to be the essential factor in assessing e-learning. Almost a quarter of the information value provided by the respondents is included in this factor. In e-learning, they appreciated the time saving and the elimination of

certain transaction costs that occur in the traditional education process. In addition, respondents stated that environmental and ecological aspects are also important. E-learning, therefore, reduces social costs and promotes social responsibility.

- o **Productivity Factor:** Relates to the effectiveness of the education through e-learning and the learning outcomes, including commitment and self-discipline. In this area, respondents see a somewhat negative impact of e-learning on the learning process. In e-learning, it is difficult to concentrate and harder to develop the interpersonal skills needed to work in a real environment. Moreover, respondents indicated that more time is required to absorb content and materials. In the context of the first factor, it can be said that e-learning saves time on mobility but, on the other hand, extends the learning time itself. The productivity of learning through e-learning was also lowered by a lack of control over the quality of learning and participation in practical experiments.
- o **Activating Factor:** Refers to student engagement, motivation, and creativity. E-learning has a positive effect on the indicated spheres. The respondents indicate many benefits resulting from education in the form of e-learning. It is easy for shy people who have problems with public speaking. Moreover, it encourages interactions, motivates to work, and stimulates creativity.
- o **Fun factor:** Relates to the perceived pleasure of learning. This factor is described by one variable and explains only 3% of the information value of the total set of statements. It is less important but identified as an independent factor. The respondents emphasise that multimedia materials included in e-learning courses positively affect the enjoyment and joy of learning.

To identify the advantages and disadvantages of e-learning and build a kind of map of e-learning perception by respondents, the factor and main components analysis were conducted separately for each analysed area included in the questionnaire. The same methods were used (scree plot, analysis of eigenvalues).

Table 4 presents the variables correlated with individual factors in each study area separately, along with the eigenvalue and % variance.

Two factors were selected in each area of perception. In general, the distribution of factors was such that one factor determined the advantages and the other disadvantages of e-learning. The exception is the area of contents and teaching materials, where respondents see only advantages. Based on the analysis of Variance, it can be assessed which factor is of greater importance and, thus, how the respondents relativise the advantages and disadvantages of e-learning. Respondents see more advantages than disadvantages in the area of communication, interaction, and motivation. Factor 1 explains almost half of all the information in this area's statements. In turn, they assess learning efficiency and costs more negatively, which is consistent with Table 2 (productivity factor). Only positives are noticed when it comes to the contents and e-learning materials.

In contrast, in the area of sustainability, ethics, and social responsibility, respondents believe that e-learning is more harmful. It leads to the polarisation of participants, harms health and physical conditions, and increases the risk of violating intellectual property rights. As advantages, the respondents indicate the inclusive nature of e-learning (e.g., for people with disabilities) and the positive impact on ecology and the environment.

Table 4
Description of factors in the selected area of students' perception

Area of perception	FACTOR 1	FACTOR 2
Communication, interaction, motivation	It reduces the fear and shame of public speaking; It motivates students to interact with each other; It enhances my engagement and creativity; It boosts motivation to work	It lacks fast two-way face-to-face communication; It lacks social interaction between people; It is not as motivating as traditional learning
Eigenvalue	3.1290	1.8929
% of Variance	44.7002	27.0412
Area of perception	**FACTOR 1**	**FACTOR 2**
Learning efficiency and costs	There is no clear line between free time and work/study time; It is easier to lose concentration; It extends the time required for mastering the material; Less practical experience is gained (no experiments and mentoring); The communication skills needed to work in a real environment are insufficiently developed; It lacks control, external evaluation, etc.	It achieves a better balance of private and school/university obligations; It allows greater individualisation of the pace of learning which reduces stress; It reduces the costs of the educational process; It saves time; It enables the transfer of knowledge to a larger number of pupils/students
Eigenvalue	4.7323	3.3644
% of Variance	33.8021	24.0315
Area of perception	**FACTOR 1**	**FACTOR 2**
Contents and teaching materials	IT enables access to, and connection of a larger amount of content of different formats that expand knowledge, skills, and competencies; Greater learning flexibility is achieved; Materials can be viewed, listened to, or read multiple times	Multimedia materials (audio and video materials, games, etc.) that can be used in e-learning make the learning process more fun
Eigenvalue	3.0857	1.1128
% of Variance	44.0818	15.8965
Area of perception	**FACTOR 1**	**FACTOR 2**
Sustainability, ethics, and social responsibility	There is a greater occurrence of plagiarism and violation of intellectual property rights; It is less accessible to students of lower socioeconomic status; It leads to excessive use of digital technology, which negatively affects health; It negatively affects physical activity; It is difficult to check who is on the other side	It raises the level of involvement of special groups of pupils/students; It raises the level of involvement of students with disabilities; It is more environmentally friendly than traditional teaching
Eigenvalue	3.7669	2.4935
% of Variance	34.2442	22.6685

Source: Authors' work.

When asked about the future of e-learning, respondents expect it will be a vital instrument complementing traditional learning (having a complementary nature). However, they do not want the education process to be entirely replaced by digital forms (not having a substitutive nature). Therefore, they perceive e-learning as a complementary tool and not a substitute for traditional learning and teaching, which means – in other words – students opt for blended learning as a mix of both approaches (Figure 3).

Figure 3
Opinions of respondents on the future of e-learning
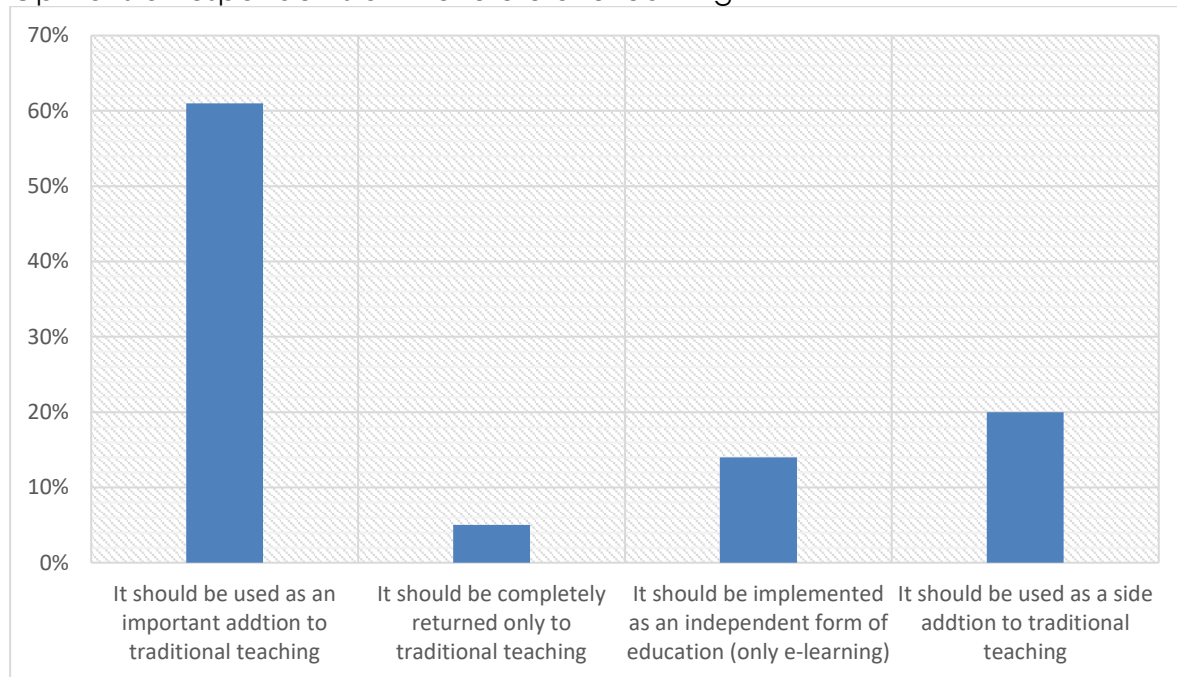
Source: Authors' work.

Discussion

While some previous studies investigated only some aspects of e-learning, starting from positive impacts and drivers of e-learning (Pozgaj et al., 2007; Elsalem et al., 2021; Nikolopoulou et al., 2021), gave some particular insights into obstacles and/or social responsibility issues in the e-learning environment (Valantinaite et al., 2020; Di Giacomo et al., 2021; Agarwal et al., 2021), or merely discussed theoretical frameworks and factors which influence e-learning in general (Babic, 2012; Smedley, 2010), this study brings new insights into comprehensive perceptions of university students at economic disciplines showing that students in this field, as explained before, see numerous benefits of e-learning and that advantages in many areas exceed disadvantages. The survey results confirm the importance of e-learning for students from Croatia, Poland, and Serbia. The multidimensional analysis allowed us to identify the factors describing the perception of e-learning by the surveyed students and to indicate the advantages and disadvantages. According to the respondents, the positive aspects of e-learning are more critical, and they also identify a considerable number of positive impacts on the education process.

Our finding on blended learning corresponds to prior empirical results of Pozgaj et al. (2007), where 14.53% of students claimed that only e-learning should be used for education, while 76.07% of students claimed that e-learning should be used as a supplement to traditional learning. Therefore, we can conclude that the blended

learning model, where e-learning is used as valuable support, is a preferred model for future education in economics and business.

Conclusion

Currently, we have been experiencing, as one can assume, one of the greatest reorganisations of the entire educational system, especially of teaching methods and didactic means. Contemporary civilisation challenges are completely changing the face of modern education. E-learning (online learning) and m-learning (mobile learning), or at least the combination of traditional teaching with online learning (blended learning), are gaining more and more popularity, especially among millennials. Interactive teaching using entrepreneurial didactic methods, including strategic games, becomes indispensable. Modern economy and contemporary social changes require permanent changes not only in the curricula and organisation of teaching but also in the forms of teaching.

Based on the empirical research results, we can conclude that the assessment of individual forms of e-learning in the three countries is similar. In e-learning, investigated students appreciated the time saving and the elimination of certain transaction costs that occur in the traditional education process. In addition, respondents stated that environmental and ecological aspects are also important. In e-learning, it is difficult to concentrate and harder to develop the interpersonal skills needed to work in a real environment. As the respondents declared, E-learning seems to be a vital instrument complementing traditional learning. However, it should not replace traditional face-to-face education but support it.

Our research is not free of its limitations. First, the sampling does not represent all three countries, and we cannot make generalisations. Secondly, this study does not include the internal context of e-learning experiences (how e-learning was organised in each investigated university), which might have impacted the perception of surveyed students.

Contemporary academic education requires searching for more and more new forms of knowledge transmission and communication between the lecturer and students (Wach, 2018), but also focusing on shaping entrepreneurial attitudes (Maciejewski, 2018; Wach & Bilan, 2021) or specific skills needed in the labour market. E-learning is a great tool for transferring knowledge and acquiring new skills. This type of solution suits the expectations of present-day students, mainly from the millennial generation or younger, for whom the digital world is a natural working environment. E-learning can also be used as an excellent supplement to traditional education (blended learning), especially in the lifelong learning process postulated by the European Union (Hajdukiewicz, 2018), seeing it as a desirable innovation in the academic world (Farrow, 2018), or a tool for shaping entrepreneurial attitudes among young people (Wach et al., 2019; Nowiński et al., 2020). Present-day education and e-learning require transforming and promoting green entrepreneurship and climate protection (Alvarez-Risci et al., 2021). New e-learning platforms require increasingly innovative solutions based on the latest advances in engineering science (Smatkov et al., 2019; Chang et al., 2022), including the biometric solutions already in use for verifying the person taking the final exam.

Further empirical studies should focus more on the digital transformation of modern education and higher educational institutions. It would also be interesting to investigate the efficiency of e-learning by comparing it to traditional learning based on two control groups (face-to-face group vs e-learning group).

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