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Article

Quantitative evaluation of willingness to use artificial intelligence within business and economic academic environment

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QUANTITATIVE EVALUATION OF WILLINGNESS TO USE ARTIFICIAL INTELLIGENCE WITHIN BUSINESS AND ECONOMIC ACADEMIC ENVIRONMENT

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Abstract

The article analyses the state of awareness, use, and willingness to use artificial intelligence (AI) in business and economic universities, according to Romanian academics. It is also highlighting the main consequence of AI use in economic and business university education, with the aim of identifying an appropriate framework for the regulated implementation of AI systems in economic universities in Romania. The study aims to identify the advantages, disadvantages, and the willingness to use AI on the teachers' personal initiative in research, teaching, and evaluation activities. The method of analysis used is quantitative, by managing an online questionnaire to which Romanian academic teachers familiar with AI in education responded. Data processing is carried out using Smart PLS, which allows the identification of statistical relationships guiding the perspectives of the use of AI in economic education in Romania. The sample represents a normal volume pilot sample. The results of the study are useful because they identify aspects that can optimise the research and education processes, as well as teaching, evaluation, and learning, to meet the increasing dynamics of AI use in the economic academic environment in Romania. The academics' views on the advantages associated with the use of AI systems and their proposed solutions to maximise the advantages of AI use in research, teaching, and evaluation activities are also highlighted. All of this contributes to the development of a framework for the implementation of AI systems in the economic and business education in Romania. Results indicate an early stage of AI use and integration in the activities of academics from the analysed universities: AI is predominantly used for the evaluation of students, which can be done automatically. The availability of academics to use AI in teaching and research is low.

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Keywords: Artificial intelligence, AI advantages, AI disadvantages, education, university, research, teaching, evaluation

JEL Classification: F02, F63, M21, M38, O33

Introduction

The concept of artificial intelligence (AI) has evolved over time from an abstract idea to an ubiquitous reality in our society. At each development stage, researchers and developers have contributed to the development of AI technologies (Rosenblatt, 1958; Rumelhart et al., 1994), transforming the way we interact with technology and the way we approach complex problems. The use of artificial intelligence and its impact on society have become topics of increasing discussion and research in recent years (Brynjolfsson and McAfee, 2017).

Baker and Smith (2019) provide a general definition of the artificial intelligence: “Computers that perform cognitive tasks usually associated with human minds, especially learning and problem solving”.

Artificial intelligence involves automated communications with students, automated handwriting evaluation, machine performing statistics, and a common application of unsupervised learning (Gillani et al., 2023).

Today, AI is used in a variety of fields, from medicine (Topol, 2019) to transportation with electric cars such as Waymo and Tesla. AI is also found in virtual assistance that relates to Learning Management Systems (LMS) such as Alexa or Siri and Big Data analytics (Marr, 2015). In education, the main AI systems and applications that generate value and improve the professional lives of users in the academic environment relate to LMSs such as Moodle, Canvas or Blackboard, learning content recommendation systems, automated assessment systems, virtual tutorials, and AI assistants. As far as the influence of AI in education is concerned, it has two aspects: the educational process, support and changes in pedagogy, and the routine function of the teacher and the educational sphere and content. AI applications in education identify the potential for major advantages that it brings to the field, such as improvements in the learning process, overall access to quality education, improvements in learning outcomes for students, especially for disadvantaged students, and facilitating teacher-student collaboration through analytics (Kamalov et al., 2023).

AI can bring advantages for student testing and evaluation by creating tests and assessments at levels of difficulty based on each student’s knowledge. AI also helps in administrative activities that are carried out regularly in education, such as plagiarism checking, scheduling of courses and seminars, preparation of curricula, management of students and teachers’ data, and evaluation of teachers’ research work (Khosravi et al., 2022).

This paper analyses the state of awareness, use, and willingness of artificial intelligence use in the Romanian business and economic university environment, from the perspective of teachers. The conflicting issue is the challenges associated with the use of AI systems and the proposed solutions to maximise the benefits of AI in research, teaching, and evaluation activities.

Given the interest in maximising the advantages and minimising the risks of using AI systems and applications in academic research, teaching, and evaluation, a survey of academics in Romanian business and economics universities was conducted.

The purpose of the survey was to evaluate the effectiveness of teachers' use of artificial intelligence, of their own initiative, in academic research, teaching, and assessment. The objectives of the survey were:

- To assess teachers' awareness of AI;
- To assess awareness of the advantages and disadvantages of using AI;
- To assess the willingness and availability of university teachers to use AI;
- To determine which academic areas can benefit from the use of AI;
- To identify ways of using AI in research, evaluation, and teaching.

Based on the assumption that an individual's decision to use or not to use AI is the result of an analysis that balances the reasons, the perceived advantages and disadvantages associated with AI, the willingness of teachers to use AI in education and its effects on the degree of acceptance of AI among respondents were examined.

The paper is structured into four sections. The first section presents the literature review, presenting relevant results obtained over time in the study of the benefits, advantages, and contributions that determine the interest in using and/ or not using AI. The second section presents the research methodology with information on the objectives of the study, the operationalisation of the data collection tool, the sample used, and the registered data analysis methods. The third section presents the results of the analysis of the responses and discussions to identify possibilities for further research. The last section presents limitations of the research and conclusions.

1. Review of the scientific literature

1.1. University business and economics education in the context of the use of artificial intelligence. Advantages and disadvantages

Artificial intelligence is a driven force in the evolution of contemporary society. This technological and information revolution has been underpinned by significant developments in computing and machine learning algorithms. Virtual assistants have become an integral part of our lives (Jordan, 2018). In academic economic and business education, AI can accelerate economic research, used as a tool to rapidly identify, and analyse information from extensive resources (Bessen et al., 2020), with positive impact on innovation and economic development.

The main advantage of using AI in the university environment is related to the customisation of learning content and teaching methods in economic education, adapting curricula to the level of knowledge and learning interest of students. AI contributes to the understanding of complex economic concepts through the analysis of economic and financial data, ensuring the development of forecasts and predictive models (Makridakis et al., 2018). Alongside the research, teaching, and learning process, AI ensures that the evaluation of students' process is improved. AI can collect and analyse student performance data to identify weaknesses and

provide recommendations for improvement of student performance. In order to promote academic integrity, AI systems can identify possible cases of plagiarism in students' work by comparing with existing sources (Kakkonen et al., 2019). Rodríguez and Brito (2017) present a study on the opportunities and threats of artificial intelligence in higher education: teaching-learning, spaces, objects, methodologies, assessment are some of the aspects transformed by AI. According to Rodríguez and Brito (2017), the advantages and disadvantages associated with the use of AI in economic and business education, especially related to data security, privacy, etc., should not be ignored.

The disadvantages of the safe use of artificial intelligence systems in business and economics education can affect not only the data, but also the integrity of the educational process and educational institutions. In this context, AI integrity requires a functional and trusted framework in Romanian universities that supports infrastructure changes and a significant amount of digital equipment (Pisica et al., 2023).

The use of AI often involves the collection and storage of significant amounts of sensitive data, such as financial or personal information from students and teachers. There is a risk that this data may be exposed to privacy breaches, putting sensitive information at risk (Perna et al., 2020). A significant example is the COVID-19 pandemic, which had a strong negative impact on the Romanian university system. The shift to online education has also generated serious privacy and security issues (Sharma et al., 2022; Pop et al., 2022).

In the context of business and economics education, AI can be used for the rapid generation and analysis of data and information. The high costs and limited accessibility of AI in business and economics education can lead to digital exclusion of some students or professionals, exacerbating inequalities in access to education and opportunities (Selwyn, 2020).

1.2. Regulation of the use of artificial intelligence in academia. Opinions supporting or not supporting the regulation of artificial intelligence in academia

One issue of global importance is the regulation on how to use the AI technology. The debate highlights both pro and con views on regulating the use of AI in general and, specifically, in university business and economics education. Setting ethical and accountability standards for educational institutions can prevent, in the opinion of academics, the misuse or discriminatory use of AI in student assessment or learning (Johnson, 2020).

Over-regulation of AI systems can bring with it a myriad of technical and bureaucratic requirements, which can negatively affect the student experience and the performance of educational institutions, (Johnson, 2020). It is important to strike a balance between protecting the rights and safety of students, teachers, and other users and promoting technological innovation and development in higher education in Romania. In order to maximise the benefits of AI and minimise its negative impact, it is essential to continue responsible research, development, and regulation of this technology (Smith, 2019). Humankind's efforts are predicted to continue to develop technology, automation and artificial intelligence more strongly in the future (Khogali and Mekid, 2023).

The European Union has adopted a number of regulations and documents that apply to the use of AI in various fields, including education. The most representative documents refer to the Report on Data Protection and Privacy in AI (European Parliament, 2023b), Regulation

on Artificial Intelligence (European Parliament, 2023a), Directive on Copyright in the Digital Single Market (European Commission, 2023c). The European Union is developing a regulatory framework for AI in education, including ethical and technical standards for the assessment and certification of AI technologies (European Commission, 2023a). Governments have the role of establishing the legal and regulatory framework for the use of AI in education. This can ensure transparency, accountability, and respect for the rights of students and teachers (European Commission, 2023b). Organisations and institutions contribute to the regulation of AI, such as the IEEE Standards Association developing Technical Standards for Artificial Intelligence and AI robots (IEEE Standards Association, 2023). European authorities have developed documents on data protection and fundamental rights of AI users to assess the positive and negative implications of new technologies, including AI and big data, on fundamental rights (European Union Agency for Fundamental Rights, 2021).

Users AI also have a key role to play in developing the regulatory framework for artificial intelligence. Through their actions on accepting or rejecting the use of AI systems and providing feedback, users can help ensure that AI is developed and used responsibly, ethically, and for the benefit of society (Brynjolfsson and McAfee, 2018). Teacher users can contribute to improving AI systems by providing feedback on their experience and reporting issues such as bias or discrimination (Pisica et al., 2023; Chan, 2023). Users of AI, including students and teachers, can also request access to information on how AI influences the educational process and demand transparency in decisions made by AI systems (Pisica et al., 2023; Chan, 2023).

2. Research methodology

The main objective of this quantitative research is to determine how the advantages and disadvantages of using artificial intelligence affect teachers' willingness to use AI. There are analysed relationships between:

- The advantages and disadvantages of AI as seen by teachers and
- The use of AI in operational, day-to-day research, teaching and evaluation activities carried out by academics in business and economic universities.

As described in the literature review, artificial intelligence has a wide range of uses in universities (Chan, 2023; Pisica et al., 2023), with consequences that may lead to favourable opinions of academics due to its advantages and unfavourable opinions due to the current stage of development of artificial intelligence (Kamalov et al., 2023). Based on the advantages and disadvantages identified in the literature as associated with the use of AI in the academic environment, we formulated the following research hypotheses:

H1: There is an incipient level of AI use in the Romanian business and economic academic environment.

H2: The advantages perceived by academics as a result of using AI negatively influence their willingness to use AI in teaching (H2a), research (H2b), and student assessment (H2c).

H3: Disadvantages perceived by academics as a result of using AI negatively influence their willingness to use AI in teaching (H3a), research (H3b), and student assessment (H3c).

H4: Disadvantages associated with the current stage of AI development negatively influence the willingness to use AI in teaching (H4a), research (H4b), and student assessment (H4c).

H5: Academics see AI disadvantages as constraints on its use for assessment in academic settings.

To empirically validate the hypotheses, quantitative research was carried out in which teachers were invited to answer questions on their perceived usage habits, advantages, and disadvantages of using AI on their own initiative in a non-formal academic setting. Data were collected using a questionnaire-based survey, conducted online between August and September 2023.

The questionnaire was completed by 101 university teachers who had used AI on their own initiative, representing two-thirds of the total questionnaire population. There is an equal distribution by age group: the 35 - 54 age segment represents 70% of the total sample. The structure of the sample by age group corresponds to the structure published by the Ministry of Education in 2022 for the academic year 2021-2022: 68.29% of teachers aged 35-54 (Ministry of Education, 2022). All types of teaching positions are included, and the gender distribution is balanced: 58% women and 42% men. The structure of the sample by gender shows its representativeness (Ministry of Education, 2022), despite the small size, which is mainly caused by the novelty of the subject. 101 valid responses were obtained, and 23 responses were removed because of the repetitiveness of the scales chosen by the respondents. The form did not allow the recording of non-responses, nor did it allow moving to the next question without answering the previous question.

The questionnaire included direct and disguised factual and opinion questions on the state of knowledge, information, awareness, application of AI software in the economic and business university environment and the perspective and willingness of its use in research, teaching, and evaluation activities, in the opinion of the teaching staff of economic universities in Romania. The questionnaire has more than 100 items, quantitative and qualitative, of which 48 quantitative items are analysed because they respond to the objective of the paper and allow the validation of stochastic relationships described by the research hypotheses. The items included in this quantitative analysis are measured using a five-point Likert-type scale (score 1 given for the opinion "Strongly disagree" and 5 for "Strongly agree"). The second Likert scale used also had five points (score 1 given for the answer "Not at all" and 5 for the answer "Very strongly"). The other qualitative items were not included in the modelling.

The reliability of the data was achieved using factor analysis, while relationships between constructs were empirically verified using structural equation modelling. The choice of exploratory variables was also based on the non-parametric correlation matrix using Spearman coefficients. Interpretations were performed based on the outputs of the Smart-PLS 4.0 software (Ringle et al., 2015), using structural equation models, bootstrapping based on 5,000 distinct samples, which allows these samples to be generated using a relatively low volume response for the survey sample (Khan et al., 2019).

3. Results and discussions

3.1. Results of the Factorial Analysis

In order to validate the items included in the questionnaire that are part of the models and to determine the exploratory and dependent variables, a confirmatory factor analysis based on principal components was performed. A number of six factors was established to meet the need to confirm the research hypotheses. Of the six factors, three relate to characteristics of AI use and three factors relate to respondents' willingness to use AI for teaching, research, and evaluation respectively.

If we analyse the first factor (F1), it contains items about the advantages of using artificial intelligence, as they appear in the opinion of respondents who have used this new technological product. The advantages measured by the respondents on a scale from 1 to 5 refer to the use out of curiosity, which is an advantage of researchers, curiosity leads them to try new technologies. This item has a loading factor of 0.760 and is complemented in the construct by accessibility of information (0.850), ease of use of AI products/services (0.835), confidence in AI-generated information (0.808), speed of obtaining information (0.858), documentation (0.872), scientific comparisons (0.872), willingness to contribute to AI training (0.722) and evaluation of AI solutions in relation to human intelligence solutions (0.864). The validity of factor 1 is given by the Cronbach-Alpha value of 0.942.

The second factor (F2) refers to disadvantages related to the use of AI in the opinion of the responding teachers and contains items about the inaccessibility of AI due to the current stage of development and limitations of AI in certain fields (0.854), the difficulty of using AI in academic activities (0.921), and the lack of formal training for generating questions to AI (prompts) (0.858), and its validity is given by the Cronbach-Alpha value of 0.854.

The third factor (F3) contains items that relate to the stage of use of AI and contains six items about the uncertainty of teachers (0.715), distrust of AI-generated results or different AI-generated answers for the same question (prompt), if the question is asked differently (prompt is different) (0.744), protection of data and personal information (0.724), the willingness not to contribute to AI training for fear of the risk of displacement or comparison by students of the level of the teacher with the scientific level of the AI (0.693), lack of legislative regulation (0.905), and non-authenticity of the information provided by the AI (0.883). The validity of this factor is given by the Cronbach-Alpha value of 0.891.

The fourth factor (F4), which opens the items proposed by the authors, refers to the willingness and intention to use AI in teaching on one's own initiative. This factor contains four items about the willingness to use AI in academic teaching activities (0.934), intention to use AI in academic teaching activities in the short term (0.894), intention to use AI in academic teaching activities in the long term (0.906), and advantages of using AI in academic teaching activities (0.904) and has a good validity given by the Cronbach-Alpha value of 0.931.

The fifth factor (F5) contains four items, proposed by the authors, and describes the intention and willingness to use AI in research. The items in F4 are about the intention to use artificial intelligence in academic research activities in general (0.946), the short-term intention to use artificial intelligence academic research activities (0.900), the long-term intention to use artificial intelligence in research activities (0.948) and the advantages of using artificial intelligence in academic research activities (0.919), activities that involve an extremely high

level of creativity and innovation. The construct validity is given by the Cronbach-Alpha value of 0.947.

The sixth factor (F6) is also the authors' original contribution and contains four items relating to willingness and intention to use AI in student evaluation, lower level of innovation activity, and higher degree of standardisation and repetitiveness. This factor contains items about the readiness to use AI in academic assessment activities (0.966), which are automated activities with a low level of creativity, the short-term intention to use AI in activities of evaluation of students (0.942), the long-term intention to use AI in evaluation of students' activities (0.959), and the advantages of using AI in activities of students' evaluation, in the opinion of the respondents (0.966). This factor is also reliable, with a Cronbach-Alpha value of 0.970. The reliability of the data is given by Cronbach-Alpha values > 0.700 for each construct, showing the validity of the responses.

According to Table no. 1 that illustrates the confirmatory factor analysis (Joreskog et al., 2016), the CR reliability coefficient > 0.700 for each construct shows a high degree of confidence in the recorded responses. The average of the variance extracted, AVE > 0.500 shows that the items explain fewer errors than the variance in the construct. The results were interpreted using Smart-PLS 4.0 (Ringle et al., 2015) and allowed the identification of factors influencing the intention to use artificial intelligence in the short and long term by academics, who are knowledgeable and have already used artificial intelligence in research, teaching and evaluation activities. The correlations identified by the structural equation model are consistent with the non-parametric correlations significant for a 1% significance level (implying a 99% confidence level) analysed to confirm the determinants of academics' attitudes towards the issue of the willingness of AI use in research, teaching and evaluation.

Table no. 1. Items grouped by factors extracted by Confirmatory Factor Analysis and the corresponding loadings factors

Item	CFA
F1. Advantages of using AI, items adapted from Pisica et al., (2023) (Cronbach-Alpha = 0.942 > 0.7 ; CR = 0.951 > 0.7 ; AVE = 0.686 > 0.5)	
Curiosity	0.760
Information accesibility	0.850
AI product/services easiness of use	0.835
Confidence in AI generated information	0.808
Speed of obtaining information	0.858
Research	0.872
Scientific comparisons	0.872
Willingness to contribute to AI training	0.722
Evaluating AI solutions compared with human intelligence solutions	0.864
F2. Disadvantages of using AI, items adapted after Chan (2023) (Cronbach-Alpha = 0.854 > 0.7 ; CR = 0.908 > 0.7 ; AVE = 0.766 > 0.5)	
Inaccessibility	0.854
Dificulty of use	0.921
Lack of training for generating questions addressed to AI (prompts)	0.858
F3. Disadvantages related to the current level of AI development, items adapted from Pisica et al., (2023) and Chan (2023) (Cronbach-Alpha = 0.891 > 0.7 ; CR = 0.903 > 0.7 ; AVE = 0.611 > 0.5)	
Uncertainty	0.715

Item	CFA
Lack of confidence in AI-generated results/ Different answers for the same question (prompt), addressed differently	0.744
Personal data and information protection	0.724
Willingness not to contribute to AI training	0.693
Lack of legal regulations	0.905
Lack of authenticity of information provided by AI	0.883
F4. Willingness of teachers to use AI in teaching activities, items created by authors (Cronbach-Alpha = 0.931 > 0.7; CR = 0.951 > 0.7; AVE = 0.828 > 0.5)	
Using AI in teaching activities	0.934
Short-term intention to use AI in teaching activities	0.894
Long-term intention to use AI in teaching activities	0.906
Advantages of using Ai in teaching activities	0.904
F5. Willingness of teachers to use AI in research activities, items created by authors (Cronbach-Alpha = 0.947 > 0.7; CR = 0.961 > 0.7; AVE = 0.862 > 0.5)	
Use of AI in research activities	0.946
Short-term teachers' intention to use AI in research activities	0.900
Long-term teachers' intention to use AI in research activities	0.948
Advantages of using AI in research activities	0.919
F6. Willingness of teachers to use AI in evaluation activities, items created by authors (Cronbach-Alpha= 0.970 > 0.7; CR=0.978 > 0.7; AVE = 0.918 > 0.5)	
AI use in evaluation activities	0.966
Short-term intention to use AI in evaluation activities	0.942
Long-term intention to use AI in evaluation activities	0.959
Advantages of using AI in evaluation activities	0.966

The confirmatory factor analysis shows a correct construct of the latent variable *Teachers' intention to use AI on their own initiative in research, teaching and assessment*, the three major categories of activities carried out by higher education business and economics teachers. Interpretation of the identified relationships and their intensity was based on the outputs of Smart-PLS 4.0 (Ringle et al., 2015; Hair, 2019).

3.2. Modelling academics' willingness to use artificial intelligence in their main research, teaching, and student assessment activities

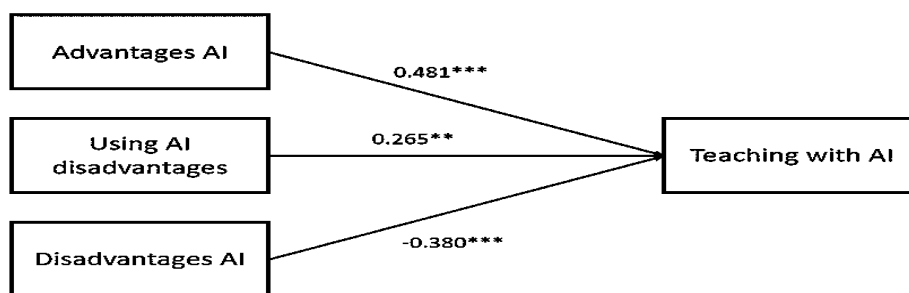
The output in Table no. 2 and Figure no. 1 underlines that not all three components of AI advantages and disadvantages included in the model have a positive impact on teachers' intention to use AI in their teaching activity in the short and long term, for a 5% significance level. The greatest influence is on the advantages of using AI, with a mean correlation coefficient $\beta = 0.481$ ($t = 5.422$, $p = 0.000$, $CI = [0.281; 0.626]$). This shows that the respondents are teachers open to new, innovative solutions that add value to their teaching ($R = 0.47$). Hypothesis H2a is validated with a 5% significance threshold. The disadvantages of using AI tend towards 0 (out of the 95% confidence interval). Hypothesis H3a is invalidated with an error of 3%.

Disadvantages of the stage of AI development negatively influence AI use in teaching, with a low but statistically significant level of intensity due to teachers' dissatisfaction with the current stage of AI development. This validates the H4a hypothesis.

Table no. 2. Influence of AI advantages considered on the intention to use AI in teaching activities ($R = 0.466$, $t = 6.195$, $p = 0.000$)

Relationship	B	t	p	CI
Advantages → Teaching	0.481	5.422	0.000	[0.281; 0.626]
Disadvantages of AI use → Teaching	0.265	2.193	0.028	[-0.066; 0.455]
AI disadvantages → Teaching	-0.380	3.698	0.000	[-0.560; -0.210]

The model shows statistical significance and validates the positive influence of teachers' perceived advantages on the intention to use artificial intelligence in teaching activities. The model also validates the negative influence of the disadvantages given by the current stage of development of artificial intelligence on its use in teaching. Advantages of using and intention to use AI in teaching show the highest correlation coefficient, at a medium intensity level, statistically significant for a 5% significance level. The model is valid, teachers intend to use AI in teaching activities because of the current advantages it is offers. Thus, hypothesis H1 is confirmed with a 95% probability.



Where *** for $p < 0.01$, ** for $p < 0.05$ and * for $p < 0.10$

Figure no. 1. Model regarding AI's impact on teaching activities

The second model (in Figure no. 2) identifies the stochastic relationships between the advantages and disadvantages, in the respondents' opinion, and those given by the current level of AI development (exogenous variables) and their use in academic research activities (endogenous variable), as shown in Table no. 3.

Table no. 3. Influence of AI advantages and disadvantages considered on the intention to use AI in research activities ($R = 0.355$, $t = 5.670$; $p = 0.000$)

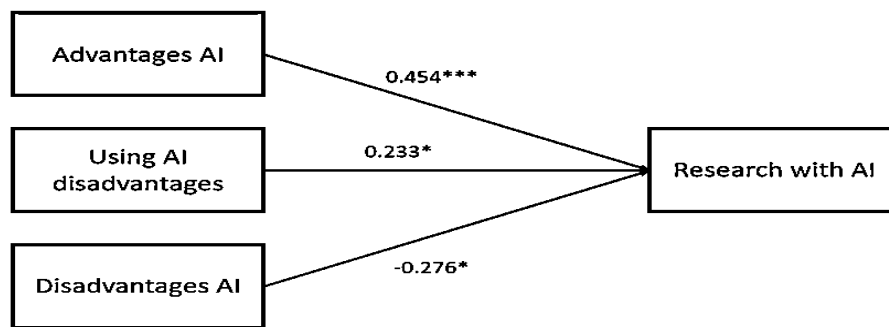
Relationship	β	t	p	CI
Advantages → Research	0.454	4.888	0.000	[0.254; 0.612]
Disadvantages of AI use → Research	0.233	1.879	0.060	[-0.109; 0.420]
AI disadvantages → Research	-0.276	1.825	0.068	[-0.461; 0.218]

The advantages of using AI on research activity also have a positive, statistically significant impact on research activity, but at a lower intensity compared to the impact upon the teaching activity. To measure the influence of the advantages of using AI on the willingness of teachers to use AI in research, a coefficient $\beta = 0.454$ ($t = 4.888$, $p = 0.000$, $CI = [0.254; 0.612]$) is obtained as shown in Table no. 3. Approximately zero influence is caused by the disadvantages of using AI in research, a factor that has a very small, insignificant, positive impact on the willingness to use AI in research, for a risk of committing error of degree 1,

alpha' of 5%, as the β -value = 0.233 and the confidence interval contains the value zero ($t = 1.879$, $p = 0.060 < 0.10$, $CI = [-0.109; 0.420]$).

Both disadvantages of use and those due to the current level of AI development determined the willingness to use in its confidence interval to tend toward zero. However, in terms of research activity, the results highlight the reluctance of teachers to use AI in research activity ($R = 0.35$). One explanation for the identified correlation may be the risk of plagiarism attributed to the use of AI in research. Also, academics are capable to carry out research without the help of AI, as the output shows that this stochastic relationship is insignificant, research being the most complex academic activity. The model is significant and confirms hypotheses H2b, H3b, and H4b.

The research activity is positively, statistically significantly influenced, with a low to medium intensity, by the factor variable advantages of using AI.



Where *** for $p < 0.01$, ** for $p < 0.05$ and * for $p < 0.10$

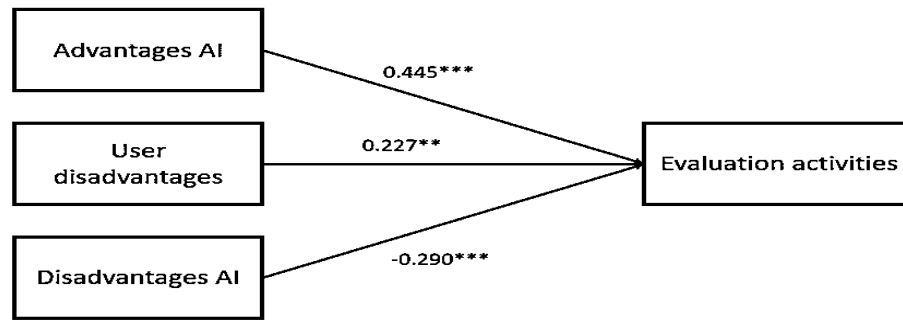
Figure no. 2. Model regarding AI's impact on research activities

The third model (in Figure no. 3) presents the stochastic relationships of constructs upon the activities of students' evaluation. All influence relationships on the willingness to use AI in evaluation activity are statistically significant, although the level of intensity of correlations is low. The low level of correlation appears due to the specifics of the evaluation activity, which is repetitive, automatic, and does not involve scientific creativity and innovation. (Table no. 4)

Table no. 4. The influence of AI on the evaluation activity ($R = 0.343$, $t = 5.129$, $p = 0.000$)

Relationship	β	t	p	CI
Advantages → Evaluation	0.445	5.181	0.000	[0.257; 0.592]
Disadvantages of IA use → Evaluation	0.227	2.318	0.020	[0.007; 0.406]
AI disadvantages → Evaluation	-0.290	2.835	0.005	[-0.470; -0.095]

The third model is statistically significant and confirms hypotheses H2c, H3c, and H4c with 95% probability and does not confirm hypothesis H5 with a 5% risk of committing the first-order error.



Where *** for $p < 0.01$, ** for $p < 0.05$ and * for $p < 0.10$

Figure no. 3. Model regarding AI's impact on evaluation activities

3.3. Discussions

The AI influence students' evaluation activities does not appear to be particularly appreciated by teachers, as the correlation coefficient shows a stochastic correlation of low intensity ($R = 0.343$), but statistically significant ($p = 0.000$). The low influence is explained by the fact that students' evaluation activity cannot be replaced by AI, but is only influenced by AI, as it is a complex activity that requires human decisions, as teachers hold the legal and direct responsibility of evaluating students.

Despite the fact that there are disadvantages of using AI, determined by its level of development, academic teaching staff show an open mind in using AI in the students' evaluation process. This can be explained by the intensity of the influence of the advantages on the willingness to use AI in evaluation activities. Variables restricting the willingness to use AI are: limitations related to data protection and security, uncertainty, and mistrust generated by insufficient regulation of AI.

Regarding the teaching activity, it can be seen that the advantages of using AI have a positive influence on teachers' willingness to use AI in teaching. The study shows an unwillingness of teachers to use AI due to the disadvantages of using AI. Inference cannot be made; the relationship is statistically insignificant, zero occurs in the confidence interval with a 5% significance level. One explanation for the reluctance to use AI in teaching is due to the disadvantages of using AI. This is explained by teachers' fear of being compared to AI. The disadvantages of the current stage of development of AI in teaching have the greatest negative influence, showing that there is reluctance to expose the personal knowledge to students, compared to the level of AI.

In the case of the research activity, it can be seen that the advantages of using AI have a positive and significant influence on the use of AI. Disadvantages do not have a statistically significant influence on the willingness to use AI in research. This is explained by the high level of research potential of the teachers. AI is not necessarily needed as a research tool.

Conclusions

The results of this research may have implications on both how AI is used in academic education and for future prospects of formal regulations. The use of AI in the educational process is still at an early stage. This result is confirmed by the novelty of the product, the small sample size, and the beta correlation coefficients in the models analysed, which show a low level of intensity of the correlations, despite the benefits generated by the use of AI.

In the opinion of the responding teachers, for automatic processes that require less creativity, such as repetitive or students' evaluation activities, there is a greater willingness of teachers to use AI. At the same time, for activities that require more cognitive functions and creativity, such as research work, the usefulness of AI is reduced. The results on the disadvantages of using AI obtained from the modelling are inconclusive. In this sense, further studies may be a direction to continue the research. This is confirmed by studies on the application of AI in other fields of activity. Huang and Rust (2019) confirm that AI implementation stages start from simple, automatic, repetitive processes, and AI will be implemented successively for more powerful functions. It is likely that AI will be increasingly implemented in academia as a result of social pressures and at the demand of the business environment, which adapts faster to this pressure (Pelau et al., 2021). Structural equation modelling shows the complexity of the constructs that influence the use of AI in academia. It is important for universities, with a view to future regulation of AI use, to know the behavioural influencing factors of AI use by academics, in order to identify, through further research, which factors can be controlled and regulated internally by universities.

The usefulness of this research consists of its impact in the Romanian business and economic academic environment, because it expands the theories of acceptance of the use of technology in education (Gursoy et al., 2019). Possibilities for further research are: expanding the pilot sample, refining the items by introducing qualitative items in the models after quantifying them, and adding other items in the modelling, referring to the regulation of ethics and academic integrity issues. The success or failure of the use of AI in academia will depend on the ability of teachers, regardless of region or country of origin, to adapt to the social and business pressures of increasing use of new technologies (Gursoy et al., 2019).

The limitations of the research are represented by the relatively small size of the sample and the impossibility to include qualitative items in the quantitative modelling. Qualitative items will find their usefulness in the construct developments in subsequent studies of this pilot survey. The transformation of qualitative items into quantitative items in future research will be necessary due to the exponential development of artificial intelligence and the social pressure to use it.

Concluding, AI also has a number of advantages in the administrative field of education, such as plagiarism checking, scheduling courses and seminars, preparing curricula, managing student and teacher data, and evaluating teachers' research activities. All these advantages offered by AI presented in the paper save time and resources by allowing teachers and education staff to focus more on teaching-learning, research, and evaluation. Alongside these multiple advantages of AI, it has created a number of controversies and challenges through the disadvantages it nevertheless entails such as systemic bias, discrimination, inequality for marginalised groups of students, and xenophobia (Hao, 2017; Hwang and Tu, 2021; Pisica et al., 2023) to issues of confidentiality and bias in data collection and processing (Holmes et al., 2022). In this context, we can state that, in the academic environment, academics agree,

to a certain extent, to implement and use of AI in the educational process, mainly in the learning and students' evaluation process and, to a smaller extent, in the research process.

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