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## Article

# Exploring university students' perceptions of generative artificial intelligence in education

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## EXPLORING UNIVERSITY STUDENTS' PERCEPTIONS OF GENERATIVE ARTIFICIAL INTELLIGENCE IN EDUCATION

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### Abstract

Artificial intelligence, the latest chapter of the technological revolution, has a tremendous potential to change every area of our lives. This article has focused on a specific form of artificial intelligence, namely generative intelligence, which facilitates the generation of content in all its forms (text, image, video, audio, programming codes, etc.). Thus, generative artificial intelligence has a crucial role in education, allowing for the personalisation of educational content and facilitating the learning process.

In the beginning, the paper has highlighted conceptual delimitations regarding artificial intelligence and its applications in education, along with advantages and limitations, highlighting that the adoption of generative artificial intelligence solutions, such as ChatGPT, in higher education in economics has been relatively underexplored in the literature. In order to cover these gaps identified in the literature, have been presented, in the second part of the paper, the methodology and results of an exploratory research, conducted on a sample of 364 undergraduate and master's students at the Faculty of Business and Tourism within the Bucharest University of Economic Studies. The research has provided insight into the perception of Business Administration students regarding these applications. The results indicated a high level of awareness and interest in content generation models and highlighted that users with favourable perceptions regarding the quality of content generated by such applications tend to believe that their integration into academic endeavours can foster creativity and enhance employment prospects.

**Keywords:** generative artificial intelligence, ChatGPT, perceptions, competencies, higher education in economics.

**JEL Classification:** M19, O33.

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## Introduction

*Generative artificial intelligence* (GAI) has become an extremely common concept nowadays. It is based on *artificial intelligence* (AI) and implies the ability of a machine to learn from experience, adapt to new information inputs and perform tasks like humans (Duan, Edwards and Dwivedi, 2019). AI is a multidisciplinary amalgam, based on computer science and logic, designed to solve easy and restrictive tasks (Tirnăcop, 2023). Although it has 70 years of existence behind it, only the last twenty years are considered exceptional, during which AI frequently exceeds various milestones of knowledge (Zang and Lu, 2021).

Generative AI is spinning off from AI, its use generating new content such as text, video, image, software, product design, etc. Generative AI spreads massively in 2016 through WaveNet, continues with GPT-2 (2019) and GPT 3 (2020), and becomes extremely popular at the end of 2022 through ChatGPT (Sætra, 2023). GPT 4 appears also shortly after (Maar, 2023). We can only conclude that we are talking about a recent phenomenon, and moreover one that propagates rapidly in professional and private life, that is estimated to have an impact similar to that of the steam engine, electricity or internet in their time (Gartner, 2023).

As in other areas, *education systems* are also somehow shaken by the emergence and use of generative AI - not only by students, but also by teachers and researchers. Being at the beginning, many questions arise about the limits of using these technologies, from issues related to the correctness of the generated content, to ethical aspects, such as appropriating materials and presenting them as personal creations. On the other hand, we should recognise that society is already impregnated with AI, and in order to be competitive, it is necessary to acquire knowledge and skills to understand and use it (Chiu et al., 2022). Thus, generative AI in education must be seen as an opportunity rather than a threat (Duckworth and Ungar, 2023).

A search of Web of Science materials on AI and education between 1975 and 2023 returned more than 57,400 titles, 80% of which have been written in the last 10 years (Clarivate – Web of Science, 2023), with a noticeable year-on-year increase in interest. Chen, L., Chen, P. and Lin (2020) analyse a number of articles from 2010 to 2019 and conclude that the use of similar platforms and tools by teachers has improved their efficiency and effectiveness, leading to a more qualitative training process. Students also benefited from materials tailored to their needs and capabilities.

Despite being less than a year old, *ChatGPT* is already quite popular among authors. Designed to engage in conversational interactions with users, providing extremely fast responses, it can synthesise information, suggest structure and article titles, generate literature lists among many other things (Salvagno, Taccone and Gerli, 2023). Sohail et al. (2023) analysed 109 articles published in Scopus related to ChatGPT and showed that 27% of the articles relate to the ability to write scientific material. Other authors have been concerned about ChatGPT's relationship with teachers (Lim et al., 2023; Naumova, 2023,) or with students (Gašević, Siemens and Sadiq, 2023). An interesting study comes from Greitemeyer and Kastenmüller (2023) who researched the relationship between personality traits and intent to defraud at the academic level.

We appreciate that an important moment is the extremely recent appearance of the first Guide for generative AI in Education and Research, under the direction of UNESCO

(UNESCO, 2023). Its purpose is to ensure that the use of generative AI helps teachers, learners and researchers to achieve better results, in a shorter time, without "usurping" human intelligence. The guide is a useful tool that validates generative AI's role in present, but especially in future education, highlighting the need for a new social contract for education, in which we need to redefine the relationship with technology.

The *purpose* of this paper, through its research, is to analyse how the use of generative AI is perceived by students, in the context of the newness of this technology. Thus, it aims to identify the connection between the use of AI and generative AI, make a radiography of the use of AI tools for generating text, such as ChatGPT, and the perception that students have about these tools. Also, we place in the light how respondents position themselves in relation to the status of learner, and that of future employee: better employability perspectives, creativity, and ethics. Given the very short time elapsed since the advent of ChatGPT and the completion of questionnaires, we appreciate that we bring to the reader's attention a very useful work, with results that will be referential in the future. Equally, the article shows students' preferences in relation to how skills related to knowledge and use of generative AI can be formed, preferences that can be taken into account by teachers and university management when developing the content of disciplines and curricula.

The paper is organised into three main sections. The first section delves into the existing *literature* regarding the presence, benefits, challenges, and constraints of AI in education, as well as the research on the topic of students' perceptions of generative AI. The second section provides an overview of the *research methodology*, outlining the steps undertaken and leading up to the data analysis phase. The final and most extensive section showcases the *research findings* and, where applicable, establishes connections with prior studies. Alongside the *introductory* section, the paper also includes a *conclusion* section that summarises the research's significance, its limitations, and potential avenues for future research.

## **1. Review of the scientific literature**

### **1.1. The use of artificial intelligence systems in education**

Educational institutions will need to continuously adapt their curriculum due to the rapid development of AI. *Generative AI* has the potential to change education in several ways. Because AI development is interdisciplinary, a rigorous curriculum that combines technical (programming, data science) and non-technical (critical thinking, ethics) skills is required. Moreover, Baker, Smith and Anissa (2019) discuss in their report three potential approaches to using educational AI tools: student-centeredness, teacher-centeredness, and the AI in education system (AIEd). In this context, personal tutors, intelligent support for collaborative learning, and intelligent virtual reality are three categories of AI software products for education that are already available, according to Luckin et al. (2016). UNESCO AI for Education (UNESCO, 2020) (a summary of the current state, challenges, and potential applications of AI in education), OECD Learning Compass 2030 (OECD, 2023) (a paradigm for reinventing education in the age of AI), EdTech Hub (2023) (a forum for cooperation, research and innovation in education technology), the Artificial Intelligence (AI) for K-12 Initiative program (AI4K12, 2023) (recommendations and tools for incorporating AI into K-12 curricula) are all excellent sources of information on AI in education (Technological Innovation, 2023).

The introduction and use of AI in higher education has created new opportunities and challenges. The challenges, extensively discussed in the UNESCO Guide to generative AI in Education and Research (UNESCO, 2023), involve not only training instructors for AI, but also training AI to understand education. The guide also includes a new curriculum for the digital age.

According to Park and Kwon (2023), students in the AI era will interact with technology in fundamentally different ways than the previous generation. To prepare them to live in this future, the emphasis is on educating them using a constructivist learning approach, as well as design and creative thinking (Ali et al., 2019). Additionally, students should be required to take AI literacy courses in K12 education. (Park and Kwon, 2023),

On the other spectrum, it is hopeful to see that teachers are quite interested in AI and are aware of the need for AI education (Park and Kwon, 2023). Essays, translations, and creative writing are already examples of AI-generated texts for use in education (Bailey, 2023).

### 1.2. The advantages, opportunities, but also the challenges and limits of AI

Development of AI technologies brings a plethora of opportunities to competency-based education. *Competency-based education* is an approach to education that emphasises the development of skills rather than just the teaching of knowledge. Aspects such as critical thinking, problem solving and collaboration skills are pursued (Sanusi et al., 2022).

For example, depending on the impairments, technology can provide appropriate resources for specific needs; AI systems can simultaneously provide students with immediate feedback, helping them understand their errors and directing them to the right solution; collecting and evaluating performance data can help teachers improve their lesson plans and curricula (Greene-Harper, 2022). Also, AI can automate administrative tasks such as scheduling and grading, giving teachers more time to focus on teaching (The Knowledge Review, 2023). However, automated grading using AI-generated text patterns has the potential to negatively affect students' final grades and future career prospects (Akgun and Greenhow, 2021).

The use of AI-generated writing in *academic* settings has raised questions about the likelihood of cheating and the ethical ramifications (Bailey, 2023), as not all educational institutions have the resources, such as state-of-the-art computers and specialised software, to teach AI effectively. Furthermore, students with different backgrounds and skill levels require customised approaches to AI education, making it difficult to provide a one-size-fits-all curriculum. *Competency-based* education requires innovative assessment methods that assess practical skills, and these can be difficult to design and implement. Also, there may be a gap between what industry needs and what education provides in terms of AI skills. Add to this a potential bias and questionable fairness in AI systems, the risk of losing jobs to AI, and a decrease in human connection, a crucial component of learning, and we can have a wider picture of the challenges related to AI (Greene-Harper, 2023; Vallis et al., 2023).

Research findings by Rajabi et al. (2023) on student perceptions of using ChatGPT highlights the need for *ChatGPT* users to be aware of the tool's limitations, such as the possibility of incorrect or biased responses. They also emphasise the need to double-check chatbot responses and the need for a balance between classwork and homework to prevent potential abuse of ChatGPT, while maintaining a positive learning environment.

Recognising that AI is a tool to enhance learning and not a replacement for human teachers, it is essential to strike a balance between the advantages and disadvantages of AI in the classroom. For example, *ChatGPT* can be a useful tool to enhance learning, but it is important to keep in mind its limitations and the value of human connection in the classroom.

### **1.3. Adoption of generative AI systems in higher education and students' perceptions of them**

Students' perceptions of generative AI, a topic of interest in education, have been the subject of several studies already. One research brings forth the comparison of the attitudes toward AI shown by students training for a career in education, respectively business administration and management, and highlights that 82.51% of those studying economics and business management and 85.82% of those studying education had favourable attitudes towards AI (Almaraz-López, Almaraz-Menéndez and López-Esteban, 2023). Another study recommended the inclusion of generative AI in entrepreneurship curricula, so that students could investigate the possibilities to use it to develop new goods and services (Bell, R. and Bell, H., 2023).

In another study carried out by Ibrahim et al.'s (2023) on the perceptions and performance of text-based conversational AI in 32 universities, it was found that student views of this new technology were mixed, with some expressing positive views and others expressing negative views. Based on this, we can infer that not all learners will be interested in AI - some may be really worried and nervous, while others are interested, and others just don't care. As a result, teachers must take into account a variety of points of view when implementing AI in the classroom (Guzman, 2023). University students' impressions of generative AI technologies such as ChatGPT were examined in another study at the University of Hong Kong (Chan and Hu, 2023). The research found that students saw advantages such as individualised learning, improved engagement, and increased creativity, and also noticed certain difficulties, such as lack of control and ethical issues.

Other studies (Grassini, 2023; Shaji, Hovan and Gabrio, 2023) on the impact of ChatGPT on student learning and preparation for the future workforce have produced conflicting findings. ChatGPT could improve learning by expanding on already known information and facilitating research, but relying solely on ChatGPT, on the other hand, can inhibit critical thinking, practice, and communication with instructors, which could delay learning development and have a negative effect on work readiness.

Shoufan (2023) asked senior computer engineering students to evaluate ChatGPT and revealed that they find the tool fascinating, inspiring, and useful for both study and works; the students were also enjoying how easy it was to use and the fact that it provided well-organised answers and clear justifications, as if they were given by a human. However, many students believed that ChatGPT answers were not always correct, and most appreciated that having a solid knowledge is necessary for employment, as ChatGPT does not replace human intelligence. The students believed that ChatGPT needs improvement and expressed their hope that this will happen soon.

According to research carried out by Sánchez-Ruiz et al. (2023), the students' opinions about the harmful effects of ChatGPT on education, academic integrity, employment and other aspects of life were divided. The students showed they were able to quickly adapt to use ChatGPT, demonstrating strong confidence in his responses and overall use in the

learning process, along with a positive evaluation. However, questions have been raised about the potential impact on the ability of future engineers to develop critical lateral skills.

Additionally, Iuga (2023) carried out an interesting SWOT analysis for Romania in relation to generative AI, highlighting the prospects for Romanian enterprises to take advantage of this technology to improve operational procedures and build new capabilities. While this is not specific research that directly examines the perceptions of economics students regarding generative artificial intelligence in education in Romania, this study can offer valuable insights and a relevant context for exploring related subjects.

## 2. Research methodology

As indicated throughout this article, aspects related to the use of *artificial intelligence systems in education*, as well as the advantages, benefits, challenges, and limitations of these solutions, have been addressed in the specialised literature. However, it is important to note that there is a lack of research on the degree of usage and on perceptions of aspiring economists regarding these issues, especially since we have not identified other studies targeting students and master's students from Romania, neither in the field of economics, in general, nor in the field of Business Administration studies. To address these gaps in the specialised literature, this article aims to present the results of a broader research conducted among undergraduate and master's students at the *Faculty of Business and Tourism within the Bucharest University of Economic Studies*.

The research *aimed* to determine the perceptions of generative AI models among undergraduate and graduate students. The *primary objectives* of our research were as follows:

- **O1:** Identify the impact of digital skill levels on the adoption of generative AI models (for text, images, videos, etc.);
- **O2:** Determine the connection between respondents' gender and the use of generative AI;
- **O3:** Examine the relationship between using generative AI models in general and using generative AI for text for academic purposes;
- **O4:** Explore the correlation between perceptions of the quality of AI-generated texts and those related to creativity and employment prospects in the context of AI.

Related to these objectives, we have formulated the following *hypotheses*:

- **H1:** The acquired digital competences favour the adoption of generative AI;
- **H2:** Gender influences the extent to which generative AI is used;
- **H3:** Users of generative AI models rely on AI solutions that generate text (such as Chat GPT) for academic purposes;
- **H4:** Users who evaluate positively the quality of AI-generated texts believe that using AI for academic purposes improves creativity and employment prospects.

This research was based on a *standard methodology* that is applied in the *questionnaire-based surveys*. The choice of such a method is justified by the fact that it is commonly used

in social sciences to investigate user/ consumer behaviour and test related theories. (Hinkle, Wiersma and Jurs, 2005; Groves et al., 2009).

The method chosen for data collection was the *self-administered questionnaire*, which was developed on the *Google Forms* platform and was distributed as a link by e-mail to the students of the Faculty of Business and Tourism (undergraduate and graduate) and through the forums and groups dedicated to them. The questionnaire consisted of both open and closed questions, multichotomous and with semantic scale. The opening section of the questionnaire briefly explained its purpose to ensure a common frame of reference for all potential respondents. We note that this questionnaire underwent testing prior to its finalisation and distribution to the research community.

The sample used in the survey was 364 persons. We specify that initially there were 371 respondents, but 7 questionnaires were not validated, being subsequently excluded. Given the limited sample size, this online questionnaire-based survey is an exploratory research, which is used to discover relationships, interpretations, and characteristics of subjects that suggest new theories and define new problems (Swanson and Holton, 2005). Data collection was carried out between May and June 2023. We used the *IBM SPSS Statistics version 26* for descriptive analysis and for hypothesis testing.

### 3. Results and discussion

In order to assess how students perceive generative AI in the context of education, the questionnaire focused on the following areas: awareness of generative AI models, frequency of use of AI-generated text models, quality of AI-generated text, impact on grades, creativity & employability & ethical implications. Moreover, one of the questions targeted the interest students have in pursuing formal education on AI tools, which can inform the university management in its future endeavours.

The starting question aimed to understand *the context in which students find themselves with respect to generative AI* – have they heard about such models, have they used them, and how interested they are in this topic (Table no. 1).

**Table no. 1. The degree of use of generative AI models**

Answer	Frequency	Percent
Yes, I have heard about them, but haven't used any. I'm interested to try them.	83	22.8%
Yes, I have heard about them, but I don't want to use them.	51	14.0%
Yes, I have used AI models for generating content a few times.	191	52.5%
Yes, I use them regularly.	20	5.5%
No, I have never heard about AI models for generating content.	19	5.2%
<b>Total</b>	<b>364</b>	<b>100%</b>

It is interesting to notice that a significant portion of the university students surveyed have some level of awareness of AI models for generating content - 95% heard of them and have a strong opinion on using them or not using them. The majority (52.5%) have used AI models for generating content at least a few times. Additionally, a notable percentage (22.8%) have heard about these models and express interest in trying them. However, it is important to note that there is also a segment of 14% who have heard about these models but do not want to use them, possibly due to concerns or other reasons. Additionally, a



smaller percentage (5.5%) use AI-generated content regularly, while a similar percentage (5.2%) have never heard about AI models for generating content. In comparison, in the study conducted by Byles, Lea, and Howe in May 2023 at the University of Northampton, 62% of the respondents reported not using AI models, while in the study by Chan and Hu, published in July 2023, 33% of the respondents stated that they have not used AI models such as ChatGPT. Based on this trend over time, we can infer an increased rate of adoption of these tools.

When giving details about the *reasons behind their choice (use or not use)*, the students mention diverse motives that range from “curiosity” to “incorrect information”. Let us first focus on the 90% of the students that are interested in using generative AI models:

- 33% express a curiosity-driven interest that suggests that they are intrigued by the technology and explored or will soon explore its capabilities.
- A similar percentage (32%) consider using AI-generated content models for greater efficiency. They comment that the tools represent ways to save time and effort in content creation and learning.
- Around 14% of students see AI-generated content as a source of inspiration, which highlights the potential of these tools to spark creative ideas and foster innovation within the academic context. Moreover, this suggests that students don't plan to use the content as it is, but they will bring their own ideas.
- A troubling percentage of 10% of students use AI-generated content models to find information (e.g., they mentioned “some statistical data”, “restaurants in Bucharest” or “historical and geographical facts about different countries”) and, moreover, consider reliable the content generated. Students say that they used AI when the exact information was not available on Google or when they wanted to generate exact information. This could indicate a huge potential risk of misinformation and mistrust. Moreover, we may witness a growing dependence on AI-generated content, which may have both positive and negative consequences. On the positive side, it can fill knowledge gaps when traditional sources are insufficient, while on the negative side we will see the rising risk of spreading false information and of over-reliance, potentially leading to a lack of critical thinking and verification of information.

In the beginning of the study 10% of the students declared that they are not interested in using generative AI. Their reasons vary between expecting the content generated by AI to be incorrect, forecasting negative effects on their cognitive abilities, preference for using their own mind, seeing it as a case of plagiarism or not perceiving any added value.

Speaking of all generative AI models in commercial use, the one that stands out is *ChatGPT* - it is mentioned by 76% of the students that have used generative-AI and by 53% of those who have limited experience or no experience with AI tools, but are interested. This finding is concurrent with that of the study carried out in Germany in 2023 on 6.311 students from 395 colleges (Garrel, Mayer and Mühlfeld, 2023). When asked how they use AI tools in their studies and for what purposes, 63.2% of the students stated that they had already used or are currently using AI-based tools for their studies and 48.9% of them already used ChatGPT. The higher percentage of familiarity we have noticed in our study can be explained by the time passed in between the two studies and the positive results the people experience that further catered to widespread discussions and use of the tools.

When looking at the *frequency of use for generative-AI text models*, most of the students declared they use them for academic purposes “rarely” (42%) or “sometimes” (37%) or expect to use them “rarely” (37%) or “sometimes” (46%), which suggest that students believe they will continue to rely on the traditional methods for academic content creation.

When looking at *students’ perception about the quality of AI-generated text*, it is interesting to notice that more of those with little or no experience expect the quality to be lower than their own written text – 30%. From those who speak from experience on using AI-generated text, only 15% perceive the quality to be lower than their own writing. This suggests that lack of exposure to AI-generated content might lead to a more skeptical or cautious outlook, whereas a hands-on experience with AI-generated text can positively influence perceptions of quality, possibly because students have seen the potential benefits and improvements in their work. This finding is consistent with that of the study carried out between 2018 and 2019 in Turkey, when AI was not yet that prominent on the firmament of breakthrough technologies (Keleş and Suleyman, 2021). The test used showed that, at that point in time, negative perceptions of all sample groups about artificial intelligence were more significant than positive perceptions.

Overall, the content generated with the help of AI is expected to be incorrect or irrelevant “often” by approximately 13% of the respondents that used or are interested in using the tools, and “sometimes” by 44%. This translates into the fact that too many of the surveyed students (43%) have a relatively positive view of AI-generated content: they seem to believe that AI-generated content is rarely or never incorrect or irrelevant. This finding should sound the alarm, as the high level of trust students seem to have and the perception as a reliable source of content is not supported by how the models work. AI-generated text models are famous for their “hallucinations” or “confabulations” (if we don’t want to anthropomorphise AI). Natively, there is nothing in a GPT (generative pre-trained transformers) model’s raw data set that separates fact from fiction (Edwards, 2023). If used as a brainstorming tool, its logical leaps and confabulations might lead to creative breakthroughs, but when used as a factual reference, the model could cause real harm.

On this note in the end of the questionnaire we aimed to assess *the interest of students in being better prepared for using AI* (Table no. 2).

**Table no. 2. Students’ interest in learning about generative AI and using AI tools in a formal setting**

Answer	Frequency	Percent of N=364
I am interested in taking a stand alone course on AI tools (applications, how to use them safely and ethically). (A)	105	29%
I am interested in using AI tools in different disciplines and finding out how they can be applied. (B)	172	47%
I am interested in attending extracurricular events that focus on AI tools. (C)	94	26%
I am not interested in learning or using any AI models.	77	21%
Other.	3	1%
<b>Total</b>	<b>451</b>	

78% of the respondents are interested to learn more about generative AI tools and their applications in a formal context, a percentage similar to that recorded by Bistas et al. (2021). The highest percentage, 47%, indicated an interest in using AI tools across various

disciplines and exploring their potential applications; within them more than half chose only this option, while the rest opted for a combination of options – A+B+C, A+B or A+C.

To our surprise, a relatively high percentage (21% of all respondents) stated that they are not interested in learning about or using AI models, which means that the rows of those that declared themselves uninterested in this technology from the very beginning were further thickened by some of those that used generative AI and re-assessed their future interest in the technology. Their reasons lie in their belief that they don't need to or that using such models will have a negative impact on their cognitive abilities. This finding further underscores the importance of providing a balanced and informed education about generative AI. Addressing misconceptions and highlighting the potential benefits of AI in various contexts can help bridge the gap and engage a broader spectrum of students in AI-related learning opportunities.

This particular finding is supported by the fact that 26% of the respondents interested in AI models also state that “is unethical to use AI-generated text in academic assignments”. This group may be concerned with issues related to plagiarism, originality, and the integrity of their work. Their stance reflects a cautious approach to the use of AI in academic writing. On the other spectrum, a minority of students (7%) believe that AI should be used without any restrictions. This group is likely more permissive when it comes to the use of AI in academic assignments and may not see the need for stringent ethical guidelines. It is also worth noting that many of the students surveyed (52%) declare that AI can be used in academic settings in certain conditions: proper citation and significant modifications of the text (30%); proper citation (15%); significant modifications (7%). These results indicate an understanding of the importance of giving credit to AI-generated content, aligning with academic integrity standards, while also valuing the transformative role of human input in the content creation process.

To achieve our *research objectives*, we used SPSS v. 26 and conducted a *dependency test* to determine whether there is a relationship between the variables analysed.

For the *first objective (O1)*, we considered the independent variable “acquired digital competences” and the dependent variable “use of AI-generated content models”. We applied the Chi-square test and calculated the Cramer’s V value to determine the strength of the relationship, if any. The results show that there is a relationship between the two variables, which is confirmed by the value of 0.000 for asymptotic significance (Table no. 3). It is a direct correlation, which means that an increase in the acquired digital competences leads to an increase in the use of generative AI. We can say that the relationship has a medium intensity, as evidenced by the Cramer’s V value of 0.188 (Kim, 2017). The hypothesis was tested in 364 cases. Based on the results, we can say that *hypothesis H1 – “The acquired digital competences favour the adoption of generative AI for content” is confirmed.*

**Table no. 3. Correlation between general digital skills and use of generative AI models for content**

Elements	Value	Asymptotic Significance	df = min (r – 1, c – 1)
Chi-Square ( $\chi^2$ )	38.590	0.000	3
Cramer’s V	0.188	0.000	-
N of Valid Cases	364	-	-

Regarding the *second objective (O2)*, another topic of interest was whether gender plays a role in the use of content-generating AI models. According to other research (Siregar, Hasmayni and Lubis, 2023), gender plays a role in the use of AI for content generation, in the sense that men tend to use more AI models. At the same time, other studies (Niethammer, 2020) have emphasised that only 22% of individuals working in the AI industry are female.

In our study out of the 364 respondents, 61.8% were female, 36.8% were male, 0.8% were non-binary and 0.5% chose not to respond. Based on the results of testing the strength of the association between “gender” and “use of generative AI for text”, which yielded a value of asymptotic significance greater than 0.05, we can conclude that *hypothesis H2 – “Gender influences the extent to which generative AI is used” is refuted*. According to our study and contrary to other findings, gender does not influence the use of generative AI for text (Table no 4).

**Table no. 4. Correlation between gender and usage of generative AI models for text**

Elements	Value	Asymptotic Significance	df = min (r – 1, c – 1)
Chi-Square ( $\chi^2$ )	10.023	0.614	3
Cramer’s V	0.096	0.614	-
N of Valid Cases	364	-	-

For the *third objective (O3)*, we ran a linear regression to find for a relationship between the use of generative AI (independent variable) and the use of AI solutions that generate text for academic purposes (dependent variable). Looking at the significant value of our model of 0.000, which is less than 0.05, we can confirm that our model is statistically significant (Table no. 5). The significance of the model can be stated as follows:

$$F(1.209) = 20698, p = .000 \tag{1}$$

In the model summary, the percentage of variance is observed, which in our case is 8.6%. The value can be interpreted as follow: 8.6% of those who use AI solutions use them to generate text for academic purposes. The result *confirms hypothesis H3 formulated in the research methodology – “Users of generative AI models rely on AI solutions that generate text (such as Chat GPT) in education”*, and this, according to Yilmaz and Karaoglan Yilmaz (2023), leads to a significant improvement in users' skills.

**Table no. 5. Correlation between the usage of generative AI and the usage of AI solutions that generate text for academic purposes**

Elements	F	Sig.	df
N of Valid Cases	211	-	-
ANOVA	20.698	0.000	1

The *fourth objective of the research (O4)* was to investigate the correlation between perceptions of the quality of AI-generated texts and those related to creativity and employment prospects in the context of AI. In order to validate our hypothesis, that “users who evaluate positively the quality of AI-generated texts believe that using AI for academic purposes improves creativity and employment prospects”, we needed to validate both tests simultaneously.

The results of the first test on the relationship between the positive perception of the quality of AI-generated text and the impact on creativity show a positive correlation of medium strength between the variables (Table no. 6). For the analysis, we considered 206 responses (those who positively evaluated the quality of AI-generated texts). Based on test results, we can estimate that one in five respondents believe that AI has a positive impact on their creativity. Similar conclusions are obtained by Marrone, Taddeo and Hill (2022), as well as by Tapalova and Zhiyenbayeva (2022).

**Table no. 6. Correlation between positive assessment of quality of AI-generated texts and perception on creativity and employment prospects**

Elements for creativity	Value	Asymptotic Significance	df = min (r – 1, c – 1)
<b>Chi-Square (<math>\chi^2</math>) - creativity</b>	31.770	0.002	3
<b>Cramer's V - creativity</b>	0.227	0.002	-
<b>Chi-Square (<math>\chi^2</math>) – employment prospects</b>	23.703	0.022	3
<b>Cramer's V - employment prospects</b>	0.196	0.022	-
<b>N of Valid Cases</b>	206	-	-

The same test was conducted to assess the relationship between the positive perception of the quality of AI-generated text and the impact on employment prospects. The results indicate that there is a positive influence of the medium intensity between these two variables.

Based on the results of the two tests, we can *confirm hypothesis H4* – “Users who evaluate positively the quality of AI-generated texts believe that using AI for academic purposes improves creativity and employment prospects”. There is a direct dependency between the variables, which means that those who have a positive impression of AI are more likely to believe that using AI for academic purposes improves their creativity, but also their employment prospects. Significant differences between students who have rarely or never used these technologies and other participants are reported in the study conducted by Chan and Hu (2023).

**Conclusions**

*Generative artificial intelligence* can be a valuable resource for both students and professors, enhancing the learning process and fostering competency-based education, in the context of the digital revolution. *Generative AI* can create learning resources tailored to each student's level and needs, providing assistance in academic writing, and encouraging the development of creativity and critical thinking skills in the educational process. It is the role of the professors to guide students in discovering the benefits of these solutions and harnessing the opportunities they offer. However, the adoption of artificial intelligence systems requires knowledge, competencies, and skills that the education system must provide. Clearly, this gradual process involves the development of strategies, updating curricula, introduction of new subjects, and the initial training of educators, among other steps. Likewise, it is essential to carefully manage authenticity and ethics in the use of

artificial intelligence in an academic context, in order to mitigate potential risks and challenges associated with this continuously evolving technology.

In this context, we can state that *the results of our research* are valuable not only to *decision-makers in the field of education*, in general (given the ongoing development of the national strategy for artificial intelligence, which obviously includes this domain), but especially to those in the *field of higher education in economics in Romania*, as well as the key players within the academic community, namely *students and professors*. This is because our study provides a comprehensive perspective on the perceptions and attitudes of students and master's students in the economic field regarding the use of generative artificial intelligence.

The *results of our research* indicate a high level of awareness among respondents regarding AI models for generating generation, with the majority having heard of them, and a significant number already using them. Additionally, respondents who have not yet utilised these models, express interest in trying them, citing reasons such as curiosity, desire to explore technology capabilities, and the potential for time and effort savings in content creation and learning, aligning with the findings of other studies (Keleş and Aydın, 2021; Baidoo-Anu and Owusu Ansah, 2023; Garrel, Mayer and Mühlfeld, 2023).

At the same time, it is essential not to lose sight of the respondents that are aware of generative AI models but have no interest in utilising them, as well as those who are not interested in learning about AI models in a formal context. Furthermore, some of those who have used or intend to use AI models, perceive that the AI-generated content is rarely or never incorrect or irrelevant, raising concerns about the trust placed in AI models. These findings are not singular, with other studies also highlighting the existence of similar issues (Ofosu-Ampong et al., 2023; Shoufan, 2023). However, these observations underscore the need for education and awareness regarding AI and emphasise the importance of a balanced adoption of generative artificial intelligence in education, requiring a careful approach to address misconceptions and promote responsible AI usage in an educational context.

Regarding the *correlations* identified in our analysis, we can conclude that students with more advanced digital skills are more inclined to use AI for content generation. In this particular sample, gender did not emerge as a decisive factor in adopting AI-generated content models, contradicting previous research findings (Siregar, Hasmayni and Lubis, 2023). Furthermore, our results highlight the interconnectedness of AI usage, as users of generative AI models are also inclined to use AI solutions for text generation in academic activities, demonstrating the synergy between AI applications. It is worth noting that users who hold favourable perceptions of AI-generated text quality tend to believe that integrating AI into academic endeavours can foster creativity and enhance employment prospects, reinforcing the potential benefits of AI in educational contexts.

There were certain *limitations* during the preparation of this article, such as the lack of studies focusing on the use of artificial intelligence in higher education in economics in our country. This is the main reason for referencing studies carried out in other countries and related to other fields of study. Clearly, our research also has limitations related to the sample used, which cannot be statistically representative when considering higher education in economics in Romania. *Future research* could be conducted among aspiring economists from various universities in our country and across different specialisations, with a focus on aspects and variables that our research addressed less (such as:

investigating the ethical implications of AI integration in higher education, tracking the long-term academic and career outcomes of students who have experienced/used AI to determine if there are significant advantages or disadvantages, and exploring how AI-driven tools and platforms can boost student engagement and motivation in economics courses). Additionally, consideration could be given to comparing the perceptions of students and master's students. Obviously, the perspective of teachers and trainers is of interest and should be investigated, and, as AI systems are adopted and used in different educational contexts, longitudinal research will become necessary to capture changes over time in the perceptions of both learners and professors.

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