

Article

Artificial Intelligence and Business Studies: Study Cycle Differences Regarding the Perceptions of the Key Future Competences

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Abstract: The purpose of this article is to identify the differences in various aspects of the perception of artificial intelligence by students of economics and business studies at different levels of study and, on this basis, to formulate recommendations both to the higher education institutions themselves, which educate in the field of economic and business sciences, as well as to curriculum designers. First, we utilized descriptive statistics to analyze the responses for each construct among undergraduate and postgraduate students. In the second part, we employed the Kolmogorov-Smirnov and Shapiro-Wilk tests to assess the normality of data distribution. Finally, in the third part, we employed the non-parametric Mann-Whitney U test to identify the differences between undergraduate and postgraduate students. The results show that statistically significant differences can be identified especially in how students of both study levels see and understand the importance of AI. Although we did not identify significant differences between students of both levels in how they see their role in the future labor market, which will be (or already is) characterized by artificial intelligence, we must emphasize that students of both levels evaluate their roles modestly in this respect. Therefore, on this basis, we have made recommendations for more active development and integration of AI in the study process; the article presents important suggestions for improving education to prepare students for the business world of artificial intelligence.

Keywords: artificial intelligence; undergraduate students; postgraduate students; education



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1. Introduction

Artificial Intelligence (AI) has become an integral part of our daily lives and is available on all platforms, from smart homes to smartphones and autonomous cars [1,2]. John McCarthy first presented the concept of AI at the Dortmund Conference in 1956, defining it as “human-like intelligent machines, especially intelligent computer programmes” [3]. AI can be understood as the computational ability to achieve goals in the world, with different types and degrees of intelligence found in humans, animals, and machines [4]. This relatively new concept has led to different definitions across various disciplines and fields. At its core, AI involves using high-level cognitive skills such as reasoning, problem-solving, and generalization to create intelligent behaviors [5].

AI has become an integral part of the education process, with materials and software equipped with skills such as abstract thinking, learning, adapting to new situations, and interaction, mimicking intelligent beings [6,7]. The use of these features and other active learning methods has found a place in the field of education, leading to an increasing number of studies utilizing artificial intelligence [8]. In the age of big data, AI applications are being developed rapidly, with effective use in areas such as banking, technology, and entertainment [9,10]. AI has also contributed to the development of various applications, including management systems, virtual classrooms, patient follow-up systems, game

theory and strategic planning, hand, speech, face and pattern recognition, automation, and robotics [11].

The integration of AI is revolutionizing the education system, as it complements Industry 4.0 and Education 4.0. AI and education are deeply intertwined, and this technology is impacting social interaction in every aspect. As a result, new teaching and learning approaches are being developed and tested in various contexts [12]. Adaptive learning management systems, also known as intelligent teaching systems, are among the most common applications of AI in education [13]. These systems use AI techniques to model the teacher and create an individualized learning environment that suits the needs of each learner [11]. According to Halili [14], incorporating technological developments such as Industry 4.0, AI, augmented reality, cloud computing, and hologram in the education sector enhances productivity and creativity. Therefore, the use of technology in education will promote learning and increase success in all fields.

The study, according to Dergunova et al. [3] aimed to evaluate the perspectives of 98 engineering students on AI. Based on their responses to questions about intelligence and mind, it was concluded that the students did not have a precise understanding of these concepts. This lack of knowledge may indicate insufficient education in these areas. The research revealed that university students perceive AI as having great importance in education due to its ability to offer gamification, foster virtual reality, enhance critical thinking, and facilitate learning. On the other hand, most engineering students cited uncertainty as a major drawback of artificial intelligence, and the lack of communication and interaction in AI-powered vehicles was also deemed problematic. The growing prevalence of artificial intelligence applications may decrease the need for human labor in certain professions, which some students perceive as a disadvantage [3].

We are currently in an era where technology is advancing rapidly, leading to the integration of the concepts of mind and intelligence. Emerging technological products and materials featuring artificial intelligence are becoming prevalent across all sectors [9]. Given this trend, it is crucial to obtain the perspectives of upcoming economists regarding the field of AI [15]. Incorporating modern online and information tools into the curriculum is essential to educate young people effectively in digital technologies, enabling them to develop relevant skills and mindsets. This involves fostering both creative and logical thinking, encouraging innovative use of cyberspace, and promoting a deeper understanding of ethics and humanities [16].

Furthermore, as undergraduate and postgraduate students may have varying levels of knowledge depending on their study programs, their perceptions of AI may differ. Thus, the aim of the paper is to determine the perception of undergraduate and postgraduate students about the concept of AI. Younger generations today are beginning their adulthood during the early stages of the fourth industrial revolution, which could significantly impact them both positively and negatively due to the rapid technological advancements. According to UNESCO Education Sector [17], AI has made its way into the realm of education, where private entities are increasingly developing “intelligent”, “adaptive”, and “personalized” learning systems for use in schools and universities. However, the use of AI in education raises profound questions about what should be taught, how it should be taught, the changing role of professors, and the social and ethical implications of AI. Additionally, there are various challenges related to equity and accessibility in education. As such, an emerging consensus suggests that the very foundations of teaching and learning may be transformed by the integration of AI in education [17].

The aim of this study is to investigate students’ perceptions of AI by examining their perception of (1) the usefulness of Statistics and Quantitative methods, (2) their understanding and knowledge of AI, (3) their perception of the usefulness of AI in their study, (4) their perception on work skills for the future, and (5) their perception on emerging jobs in the Data and AI Cluster. In addition, to prepare students for the changing job market and the increasing importance of AI in the workplace, it is important to incorporate AI-

related topics and skills into the study process, therefore, we prepared recommendations on how to improve the learning process in connection with AI.

The study's findings will contribute to our understanding of how students perceive AI and help policymakers initiate discussions on AI development. The study's significance lies in adding to the existing body of literature on AI's social and psychological impact, with a specific focus on a generation that has grown up with automated intelligence in their surroundings. To investigate the differences in the perception of AI between undergraduate and postgraduate students, we first assessed their perception of the importance of Statistics and Quantitative methods in their studies. Developing proficiency in statistics and quantitative methods enables students to effectively perform work tasks and contribute to the economic development of their local and wider environment. The job market is rapidly evolving with the increasing integration of AI in various industries and fields [4,14,18]. Therefore, it is crucial to prepare students for this changing job market by incorporating AI-related topics and skills into the study process. This will help students develop a better understanding of the technology and how it can be applied in their respective fields.

2. Literature Review and Hypothesis

2.1. Usefulness of Statistics and Quantitative Methods

Statistics and quantitative methods play a significant role in economics by aiding in the study of market structures and understanding economic issues. Once these problems are comprehended, statistics help to resolve them by creating appropriate economic policies [19]. In every branch of economics, statistics is used to prove various economic theories and establish mathematical relationships between data sets [20]. Economists can present precise facts about economics and determine cause-and-effect relationships between different variables. Statistics is a science that assists students in learning from data, using proper analysis techniques, and effectively presenting their findings [21]. It is a subject that focuses on the processes of making scientific discoveries, utilizing data to make informed decisions and predictions, and deeply understanding various economic topics [22]. This is especially important in today's age, where numerous sources of information exist with interpretations that may have unknown motives [23].

A survey conducted among 101 students in the master's degree program in Economics and Business at the University of Maribor indicates a significant and positive correlation between students' attitudes toward quantitative methods and their intentions to utilize them in the future [24]. The trustworthiness of analyses and predictions is enhanced by the use of statistical techniques. Furthermore, statistics serves as the foundation for research in almost all scientific fields and is utilized by various private and public sector industries [22]. As a result, students with knowledge of statistics have a broad range of employment opportunities in the digital age [25]. For example, machine learning is a subset of artificial intelligence that enables a model to automatically learn from data, and the algorithm utilizes this knowledge to make predictions. As we input more data, the accuracy of the algorithm's predictions increases. To identify specific patterns, statistics play a crucial role in studying the data, and providing guidance for analyzing and presenting raw data [26]. This approach is widely used in computer vision and speech analysis to uncover previously unseen patterns. From this point of view, statistics and quantitative methods are an important basis for understanding artificial intelligence [22].

On the other hand, Peters et al. [27] noted that student attitudes play a crucial role in statistics education as the course material can be demanding, necessitating students to exercise critical thinking, analysis, and interpretation skills. As a consequence, students may find statistics to be both challenging and uninteresting [28]. In accordance with Songsore and White's research, students considered statistics topics significant when they could be relevantly applied to their daily lives, as well as their academic and career-related interests [22]. Therefore, the null hypothesis that was used to test the student perceptions on the usefulness of Statistics and Quantitative methods is proposed:

H0. *There are no statistically significant differences in the usefulness of Statistics and Quantitative methods between undergraduate and postgraduate students of economics and business sciences.*

2.2. The Student's Knowledge of the Meaning of Artificial Intelligence

Jha et al. [18] found that the level of understanding among undergraduate medical students regarding AI and its potential implications for healthcare was low, and they did not exhibit any concerns about the impact of AI on healthcare.

Doumat et al. [29] found among 206 medical undergraduate Lebanese students that 59.7% of the undergraduate students believed they had a solid understanding of the fundamental concepts of AI. Moreover, there was no notable statistical variance in knowledge between male and female respondents. Among the 38 studies examined, 26 investigated the level of awareness of AI among healthcare students. Out of these, 18 studies indicated that the student's knowledge level was subpar, at 50% [30].

Ahmed's study [31] showed that only 35.3% of the 470 participants had a fundamental grasp of AI. Notably, the majority of the knowledgeable participants were men, and almost 77% of them were unaware of AI's use in medicine. These findings illustrate that despite having a basic understanding of AI, medical students may not be familiar with its practical applications [30].

The objective of the study, according to Ural Keleş and Aydın [32] was to explore the perceptions of university students toward artificial intelligence. The study included 42 students from the Faculty of Education, 47 from the Faculty of Arts and Sciences, and 41 from the Faculty of Economics and Administrative Sciences. The findings revealed that students from the Faculty of Education had a more comprehensive understanding of artificial intelligence compared to their counterparts in the Faculty of Economics and Administrative Sciences and the Faculty of Arts and Sciences. Additionally, the study highlighted that negative perceptions towards AI were more prominent than positive perceptions among all sample groups. Based on the literature review, we aimed to determine if there are statistically significant differences in the understanding of the meaning of artificial intelligence between undergraduate and postgraduate students of economics and business sciences. Therefore, it is hypothesized:

H1. *There are statistically significant differences in the understanding of the meaning of artificial intelligence between undergraduate and postgraduate students of economics and business sciences.*

2.3. Students' Perception of the Usefulness of AI in Their Study

The era of AI presents both challenges and opportunities for education [33,34]. With the emergence of new learning channels, such as learning management systems based on digital textbooks, personalized learning through big data analysis, interactive technologies utilizing voice recognition and speech synthesis, and chatbots driven by natural language processing, the majority of AI technologies have educational and instructional applications [35,36]. The integration of AI in education has the potential to enhance educational material, revolutionize educational approaches, and disrupt traditional educational paradigms [35].

In recent years, significant advancements in AI have positioned it as an emerging technology with the potential to revolutionize the education and health industries. While higher education has already begun incorporating AI, many educators remain unaware of its capabilities [37].

The study according to Joshi et al. [38] shows that professors and students would benefit from a better understanding of how AI can improve their skills in education. Moreover, the study highlights that the optimal utilization of AI technology can lead to improved outcomes in education.

Kumar and Raman [1] carried out research on 682 students of the Business Management Master program. This research shows that there is a strong positive correlation between the student's perception of the use of AI in academia and their view that AI should

be used in the Teaching and Learning Process. The qualitative data collected shows that the students view that using AI in the teaching-learning process can help in enhancing the process and make the process more efficient.

The study, according to Kairu [37], on 385 students shows that 39.06% agreed that AI would have a positive impact on education, and 49.48% agreed that it would influence learning. Students also recognized AI's potential to track student progress (35.79%), enhance teacher-student interactions (47.78%), and measure classroom engagement (55.21%). The impact of AI is increasingly felt in the education sector, where it serves as an auxiliary tool to enhance the teaching and learning process. According to this, the following hypothesis is proposed:

H2. *There are statistically significant differences in students' perception of the usefulness of AI in their study between undergraduate and postgraduate students of economics and business sciences.*

2.4. Students' Perception of Work Skills for the Future

According to OECD [39], AI is not expected to replace workers whose jobs involve creativity, and it is also not likely to replace those whose jobs require complex social interactions. For a long time, cognitive skills have been deemed the most crucial factor for employment success. However, recent studies suggest that social and emotional skills play a direct role in determining occupational status and income. In fact, social and emotional skills can be equally, and in some cases, even more, important than cognitive skills in determining future employment prospects [39].

As automation takes over tasks that were once performed by humans, the world we know is changing rapidly in the digital age. The advent of the fourth industrial revolution underscores the need for individuals of all ages to comprehend and develop the skills necessary for the future of work, including understanding new technologies and complex processes [40]. According to studies by Bristows [41] and Qlik [42], while most people have a general understanding of what AI is, they lack a clear comprehension of how AI systems function.

Moreover, a survey conducted by Northeastern University-Gallup [43] found that a majority of university graduates do not feel adequately equipped to work in an AI environment. Similarly, a study by Hult International Business School titled "Visions of the Future" revealed that only 20% of 400 undergraduates studying in the UK and USA felt "very prepared", while 62% felt "somewhat prepared" and the remaining 18% did not feel prepared at all. This disparity between academic preparation and industry expectations is significant, as employers seek graduates with advanced technical skills, such as computing or ICT expertise [44].

Unfortunately, university curricula are often supply-driven, driven by academic traditions and lecturer interests, and do not necessarily align with labor market needs, especially with regards to requisite skills [45]. This mismatch between students' and employers' perceptions and expectations of the skills obtained through degree programs could result in producing graduates unprepared for the evolving AI work environment [46].

Abdelwahab et al. [34] in their study on 95 students from 27 higher education institutions (HEI) in the Netherlands found that students and graduates studying at HEIs in the country generally believe that their knowledge and understanding of AI are inadequate to grasp its potential impacts on their future careers. Therefore, the following hypothesis is proposed:

H3. *There are statistically significant differences in students' perception of work skills for the future between undergraduate and postgraduate students of economics and business sciences.*

2.5. Students' Perception of Emerging Jobs in the Data and AI Cluster

The utilization of automation, AI, and other advanced technologies is on the rise, resulting in job transformations. In 2020, COVID-19 expedited this trend and is expected

to further expedite digitization, which may become permanent in certain domains [47]. The evolving landscape of technology is rapidly transforming the nature of work, especially with the advancements in AI. Nearly 50% of today's jobs will be obsolete by 2030, specifically, those that can be replaced by algorithm-based machines. As a result, free enterprise is facilitating the growth of new tech-related jobs, and the need for skilled computer technicians will continue to rise as technology increasingly permeates our world and daily lives [48].

Moreover, the advent of technology will simplify and enhance daily life, as physically strenuous and less mentally demanding jobs are replaced by those that require creativity and cognitive skills. AI is an interdisciplinary field that encompasses computer science, math, engineering, and related disciplines [49]. Some examples of AI applications include natural language processing, image recognition, robotics, and decision-making algorithms. To create machine learning algorithms, data must be analyzed to produce predictions or decisions, which is crucial for developing AI models capable of recognizing patterns, anticipating outcomes, and learning from experience [50].

The creation and implementation of AI systems require a broad range of abilities, including machine learning, natural language processing, data science, deep learning, computing, robotics, and problem-solving. Proficiency in programming languages, frameworks, and development tools is also necessary for AI experts. Acquiring these skills can provide professionals with a competitive edge and open doors to exciting career opportunities [4,15,38,51].

The McKinsey Global Institute predicts that AI may displace 15–30% of the global workforce, which translates to 400 million to 800 million workers, by 2030, and the increasing use of AI in machinery may require millions more people to switch careers or improve their skills [52]. Consequently, immediate research into these issues is crucial since current college students will soon join a job market where proficiency in working with, developing, and managing AI will be necessary for many positions. Therefore, studying AI-related courses has become a necessary trend that offers significant benefits for students' future career development [39,53]. Thus, it is hypothesized:

H4. *There are statistically significant differences in Students' perspectives about emerging jobs in the Data and AI Cluster between undergraduate and postgraduate students of economics and business sciences.*

3. Materials and Methods

3.1. Data and Sample

An online questionnaire was administered to 197 undergraduate and postgraduate students at the University of Maribor, Faculty of Economics and Business (Slovenia), who had prior knowledge of SPSS statistical software support during their studies. The questionnaire was sent to 260 students, and 197 students responded to the questionnaire. The data were collected from 1 December 2022 to 31 January 2023. Of the total number of students surveyed, 48.2% were undergraduate, and 51.8% were postgraduate students. Online questionnaires were sent to students of various courses in economics and business sciences. Table 1 presents the number of students by study field and education program.

3.2. Research Instrument

The research employed a closed-type online questionnaire as its instrument, where students were asked to rate their agreement with provided statements on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (completely agree). The construct items for the Usefulness of Statistics and Quantitative methods were adopted from Šebjan and Tominc [54], items for the student's knowledge of the meaning of AI were adopted from Mansor et al. [55] and IBM [56], and items for Students' perception of the usefulness of AI in their study were adopted from Chai et al. [51], Rabah and Mukhallafi [57]. Additionally, items for Students' perspectives on work skills for the future and Students' perspectives

about emerging jobs in the Data and AI Cluster were adopted from Selenko et al. [58] and Mun [59].

Table 1. The number of students.

Study Fields	Undergraduate Students	Postgraduate Students
Economics	5	6
E-Business	9	16
Finance and Banking	22	7
Marketing	29	21
Business Management and Organisation	20	19
International Business Economics	2	4
Entrepreneurship	6	17
Accounting, Auditing and Taxation	2	12

3.3. Statistical Analysis

Initially, we used descriptive statistics to analyze the responses for each construct among undergraduate and postgraduate students. Next, we used Kolmogorov-Smirnov and Shapiro-Wilk tests to check the normality of data distribution. The tests revealed that none of the constructs' descriptions had normally distributed data ($p < 0.001$). Milenovic [60] recommends the Mann-Whitney U test for comparing two independent groups if the dependent variable is continuous or ordinal but not normally distributed. Hence, we used the non-parametric Mann-Whitney U test to determine the distinctions between undergraduate and postgraduate students, which serves as an alternative to the parametric *t*-test for independent samples.

4. Results

As previously mentioned, the Kolmogorov-Smirnov and Shapiro-Wilk tests show that the data is not normally distributed ($p < 0.001$) for all items describing constructs (1) usefulness of Statistics and Quantitative Methods, (2) students' knowledge of the meaning of AI, (3) students' perception of the usefulness of AI in their studies, (4) students' perception on work skills for the future, and (5) students' perception about emerging jobs in the Data and AI Cluster. Therefore, we utilized the non-parametric Mann-Whitney U test. Descriptive statistics and statistically significant differences in all the items of the five constructs between undergraduate and postgraduate students of economics and business sciences are presented in Tables 2–6.

The average level of agreement between undergraduate and postgraduate students regarding the usefulness of Statistics and Quantitative methods in Table 2 indicates that, on average, they agree that having expertise in statistics and quantitative methods is generally useful and enables them to accomplish learning activities and obligations more efficiently. However, postgraduate students have a higher average level of agreement with these two statements compared to undergraduate students. The lowest average level of agreement among undergraduate and postgraduate students was observed regarding the item "Using expertise in statistics and quantitative methods will improve my study grade average" (on average, students partially agree with the stated item). On the other hand, a Mann-Whitney U test for two independent samples shows that there are no statistically significant differences in the usefulness of Statistics and Quantitative methods between undergraduate and graduate students ($p > 0.05$). Based on the results, we received a hypothesis H0: There are no statistically significant differences in the usefulness of Statistics and Quantitative methods between undergraduate and postgraduate students of economics and business sciences. In the next step, Table 3 shows descriptive statistics and statistically significant

differences in students' knowledge of the meaning of AI between undergraduate and postgraduate students.

Table 2. Descriptive statistics and analysis of differences in usefulness of Statistics and Quantitative methods between undergraduate and postgraduate students.

Item	Undergraduate Students		Postgraduate Students		Mann–Whitney U	Asymp. Sig. (2-Tailed)
	Mean	Std. Deviation	Mean	Std. Deviation		
Using expertise in statistics and quantitative methods enables me to accomplish learning activities and obligations more quickly.	3.65	0.665	3.80	0.912	4249.500	0.105
Using expertise in statistics and quantitative methods is improving my study grade average.	3.19	0.871	3.06	0.998	4328.000	0.260
The use of expertise in statistics and quantitative methods improves my study efficiency.	3.28	0.785	3.21	1.028	4638.000	0.777
Expertise in statistics and quantitative methods makes my study obligations simple.	3.24	0.768	3.28	0.948	4684.500	0.666
In my opinion, expertise in statistics and quantitative methods is useful in general.	3.69	0.826	3.81	0.931	4346.000	0.182

Table 3. Descriptive statistics and statistically significant differences in students' knowledge of the meaning of AI between undergraduate and postgraduate students.

Item	Undergraduate Students		Postgraduate Students		Mann–Whitney U	Asymp. Sig. (2-Tailed)
	Mean	Std. Deviation	Mean	Std. Deviation		
In my opinion, AI makes faster business decisions based on outputs from cognitive technologies	3.69	0.839	4.02	0.689	3769.000	0.003
In my opinion, AI technologies save time and money by automating and optimizing routine processes and tasks.	3.96	0.820	4.39	0.747	3324.000	0.000
In my opinion, AI Solutions give businesses an opportunity to reinvent themselves to stay relevant in the digital age.	4.05	0.817	4.47	0.656	3456.000	0.000
In my opinion, AI solutions offer enormous benefits for businesses, including personalized marketing, inventory management, customer service, operational automation, and recruitment.	3.91	0.826	4.27	0.706	3637.000	0.001
In my opinion, AI increases productivity and operational efficiencies in businesses.	3.61	0.854	4.03	0.884	3530.500	0.000

Table 3. Cont.

Item	Undergraduate Students		Postgraduate Students		Mann–Whitney U	Asymp. Sig. (2-Tailed)
	Mean	Std. Deviation	Mean	Std. Deviation		
In my opinion, AI solutions are computer software that carries out humanlike activities, such as learning, problem-solving, and planning.	3.53	0.861	3.83	0.902	3866.000	0.009
In my opinion, AI has a wide range of uses in businesses, including streamlining job processes and aggregating business data.	3.73	0.831	4.19	0.728	3340.000	0.000
In my opinion, machine learning is primarily used to process large amounts of data quickly.	3.81	0.854	4.11	0.900	3897.500	0.012
In my opinion, the application of machine learning in stock market forecasting is a new trend, which produces forecasts of the current stock market prices by training on their prior values.	3.53	0.826	3.63	0.843	4539.000	0.491
In my opinion, deep learning is an even more specific version of machine learning that relies on neural networks to engage in what is known as nonlinear reasoning.	3.44	0.797	3.69	0.808	4164.000	0.087
In my opinion, AI combined with machine learning can respond accurately to customer queries and help automate customer interactions.	3.41	0.951	3.82	0.865	3667.000	0.002
In my opinion, intelligent machines can replicate human functions, such as emails, online chat, phone calls, and social media conversations (this proves the most effective for businesses that communicate with high volumes of customers).	3.48	1.050	3.77	1.089	4050.000	0.039
In my opinion, cloud-based artificial intelligence apps are quicker in processing big data and producing results thereof (these undiscovered insights give companies the edge they need to be more competitive in the marketplace).	3.85	0.816	4.23	0.811	3500.000	0.001
In my opinion, AI solutions can predict outcomes based on data analysis, such as sales volume, demand, and stock volumes (this enables companies to make more effective decisions).	3.87	0.878	4.14	0.745	4057.000	0.034

Table 4. Descriptive statistics and statistically significant differences in students' perception of the usefulness of AI in their study between undergraduate and postgraduate students.

Item	Undergraduate Students		Postgraduate Students		Mann–Whitney U	Asymp. Sig. (2-Tailed)
	Mean	Std. Deviation	Mean	Std. Deviation		
In my opinion, using AI in education improves the educational environment for learning.	3.59	0.857	3.54	0.817	4520.000	0.382
In my opinion, AI clarifies many points the professor cannot cover in his/her explanation.	3.24	0.908	3.15	1.009	4599.500	0.517
In my opinion, AI fulfills and complements all students' learning needs.	3.06	0.932	3.07	1.012	4703.500	0.802
In my opinion, AI enables students to obtain additional educational support for what the professor does in a classroom.	3.55	0.954	3.85	0.872	3940.000	0.017
In my opinion, learning through artificial intelligence will make learning less terrifying than learning it using the traditional way.	3.35	0.998	3.50	0.909	4512.500	0.380
In my opinion, AI changes the way how students acquire skills in certain subjects.	3.61	0.842	3.76	0.814	4350.000	0.226
In my opinion, the professor's role will diminish when the student uses artificial intelligence to learn certain subjects.	3.59	0.857	3.53	0.792	4503.000	0.357
In my opinion, using AI affects the ability to communicate with the professor.	3.23	0.906	3.14	1.007	4488.500	0.514

Table 3 indicates that the highest average level of agreement among undergraduate students regarding their knowledge of the importance of AI is related to the item that AI Solutions give businesses an opportunity to reinvent themselves to stay relevant in the digital age, which follows AI technologies save time and money by automating and optimizing routine processes and tasks, AI solutions offer enormous benefits for businesses, including personalized marketing, inventory management, customer service, operational automation and recruitment and AI solutions can predict outcomes based on data analysis, such a sales volume, demand, and stock volumes (this enables companies to make more effective decisions). The lowest average of agreement among undergraduate students was misled by the items that AI combined with machine learning can respond accurately to customer queries and help automate customer interactions and that deep learning is an even more specific version of machine learning that relies on neural networks to engage in what is known as nonlinear reasoning.

Similar to undergraduate students, postgraduate students also show the highest average level of agreement that AI solutions give businesses an opportunity to reinvent themselves to stay relevant in the digital age. The next highest average agreement among postgraduate students about knowledge of the meaning of AI refers to AI technologies saving time and money by automating and optimizing routine processes and tasks, AI solu-

tions offer enormous benefits for businesses, including personalized marketing, inventory management, customer service, operational automation and recruitment and cloud-based artificial intelligence apps are quicker in processing big data and producing results thereof (these undiscovered insights give companies the edge they need to be more competitive in the marketplace). Based on the Mann–Whitney U test, we found that there are statistically significant differences between undergraduate and postgraduate students in all items that refer to student’s knowledge of the meaning of AI ($p < 0.05$) except for two items (1) the application of machine learning in stock market forecasting is a new trend, which produces forecasts of the current stock market prices by training on their prior values and (2) deep learning is an even more specific version of machine learning that relies on neural networks to engage in what is known as nonlinear reasoning ($p > 0.05$).

Table 5. Descriptive statistics and statistically significant differences in students’ perception of work skills for the future between undergraduate and postgraduate students.

Item	Undergraduate Students		Postgraduate Students		Mann–Whitney U	Asymp. Sig. (2-Tailed)
	Mean	Std. Deviation	Mean	Std. Deviation		
Analytical thinking and innovation are important skills to have in the workforce	3.99	0.779	4.28	0.666	3765.500	0.004
Active learning and learning strategies are important skills to have in the workforce	3.84	0.780	4.14	0.732	3826.500	0.008
Complex problem-solving is an important skill to have in the workforce.	3.95	0.817	4.27	0.677	3754.500	0.010
Critical thinking and analysis are important skills to have in the workforce.	4.05	0.834	4.31	0.758	3930.000	0.026
Creativity, originality, and initiative are important skills to have in the workforce.	3.94	0.925	4.24	0.764	3897.500	0.022
Using statistics and quantitative methods to solve problems is an important skill to have in the workforce.	3.69	0.858	3.86	0.825	3962.000	0.025
A good background in programming, logic, data structures, language processing, and cognitive learning theory are important skills to have in the workforce.	3.78	0.877	3.79	1.003	4626.500	0.650

Thus, based on the results, we accepted hypothesis H1: There are statistically significant differences in the understanding of the meaning of artificial intelligence between undergraduate and postgraduate students of economics and business sciences. In the following, Table 4 shows descriptive statistics and statistically significant differences in students’ perceptions of the usefulness of AI in their study between undergraduate and postgraduate students.

Table 4 indicates that the highest average agreement among undergraduate students regarding their perception of the usefulness of AI in their study is that AI changes the way how students acquire skills in certain subjects, which is followed by using AI in education improves the educational environment for learning and the professor’s role will diminish

when the student uses artificial intelligence to learn certain subjects. The lowest average agreement among undergraduate and postgraduate students' perception of the usefulness of AI in their study is that AI fulfills and complements all students' learning needs. On the other hand, the highest average agreement among postgraduate students regarding their perception of the usefulness of AI in their study is that AI enables students to obtain additional educational support for what the professor does in a classroom which is followed by AI changes the way how students acquire skills in certain subjects.

Table 6. Descriptive statistics and statistically significant differences in students' perception of emerging jobs in the Data and AI Cluster between undergraduate and postgraduate students.

Item	Undergraduate Students		Postgraduate Students		Mann–Whitney U	Asymp. Sig. (2-Tailed)
	Mean	Std. Deviation	Mean	Std. Deviation		
I see myself as an artificial intelligence specialist.	2.61	1.094	2.77	1.196	4379.000	0.331
I see myself as a big data specialist or developer.	2.77	1.026	2.91	1.220	4487.000	0.355
I see myself as a data analyst.	3.05	1.025	3.16	1.288	4480.000	0.346
I see myself as a machine learning engineer.	2.53	1.138	2.50	1.254	4709.500	0.819
I see myself as a robotics engineer.	2.43	1.058	2.55	1.362	4771.500	0.849
I see myself as a computer vision engineer.	2.54	1.165	2.63	1.278	4614.500	0.635
I see myself as digital marketing and strategy specialist.	3.60	1.180	3.65	1.174	4703.000	0.712
I see myself as a process automation specialist.	2.88	1.119	3.14	1.223	4149.000	0.116
I see myself as a Software and applications developer.	2.74	1.141	2.99	1.309	4340.000	0.195

The Mann–Whitney U test results showed statistically significant differences between undergraduate and postgraduate students' perceptions of the usefulness of AI in obtaining additional educational support beyond what is provided in the classroom by professors ($p < 0.05$). Furthermore, the Mann–Whitney U test results indicated that there were no significant differences in the other items related to students' perceptions of the usefulness of AI in their study between undergraduate and postgraduate students ($p > 0.05$). As a result, we rejected hypothesis H2: There are statistically significant differences in students' perception of the usefulness of AI in their study between undergraduate and postgraduate students of economics and business sciences. Table 5 presents descriptive statistics and statistically significant differences in students' perception of work skills for the future between undergraduate and postgraduate students.

The results presented in Table 5 indicate that critical thinking and analysis are considered the most crucial skills to possess in the workforce, as indicated by the highest average agreement among both undergraduate and postgraduate students. This is followed by analytical thinking and innovation, complex problem-solving, creativity, originality, and initiative, which are equally important for both undergraduate and postgraduate students and listed in the same order. The data also shows that, on average, postgraduate students express a higher perception of work skills for the future than undergraduate students.

Based on the Mann–Whitney U test, we found statistically significant differences between undergraduate and postgraduate students in all factors related to students' perception of work skills for the future ($p < 0.05$), except for the item “a good background in

programming, logic, data structures, language processing, and cognitive learning theory are important skills to have in the workforce" ($p > 0.05$). Thus, based on the results we confirm hypothesis H3: There are statistically significant differences in students' perception of work skills for the future between undergraduate and postgraduate students of economics and business sciences. In the last step, Table 6 shows descriptive statistics and statistically significant differences in students' perception of emerging jobs in the Data and AI Cluster between undergraduate and postgraduate students.

The average level of agreement between undergraduate and postgraduate students regarding their perception of emerging jobs in the Data and AI Cluster in Table 6 indicates that, on average, they agree that they see themselves as digital marketing and strategy specialists, followed by computer vision engineers. On the other hand, undergraduates had the lowest agreement, on average, to see themselves as robotics engineers, while postgraduate students had the lowest agreement, on average, to see themselves as machine learning engineers, but the differences were not significant-Mann-Whitney U test for two independent samples shows that there are no statistically significant differences in students' perception about emerging jobs in the Data and AI Cluster between undergraduate and postgraduate students ($p > 0.05$). Based on the results, we reject a hypothesis H4, that there are statistically significant differences in students' perception of emerging jobs in the Data and AI Cluster between undergraduate and postgraduate students of economics and business sciences.

5. Discussion

As the COVID-19 pandemic wreaked havoc on the economy and necessitated a shift to remote learning for many schools, professors turned to technology to deliver instruction, while school districts looked to enhance their technological capabilities beyond the pandemic. This surge in technology usage has led to the wider adoption of AI in classrooms [61,62]. AI is gradually transforming the field of education, revolutionizing the way students learn and altering the approach that professors and educational institutions take to their responsibilities [7,18]. By updating educational software, automating grading tasks, assisting in course improvement, and offering numerous other benefits, this technology is revolutionizing traditional education and teaching methods [3,25]. The introduction of AI is intensifying the complexity and scope of the challenges brought about by technology. As a result, societies must address critical questions such as defining the role of human intelligence, identifying the most effective ways to integrate human intelligence with AI, exploring how human and artificial intelligence can collaborate and enhance each other, and determining the new knowledge and skills that need to be acquired and nurtured [39].

Also, AI involves leveraging data structures to make predictions and identify patterns, enabling machines to perform analytical tasks autonomously [38]. Statistics encompasses a set of principles for obtaining information from data to aid in decision-making and establishing relationships between various data points [19]. Consequently, statistics plays a critical role in the field of AI, and proficiency in probability and statistical concepts is essential for anyone operating within it [20]. Moreover, statistical methods are used in AI for data preprocessing and cleaning, feature selection, and evaluation of models. These methods also help to identify the relationships between input and output variables and detect patterns and anomalies in the data [19,21]. In summary, statistics and probability are essential tools for anyone working in the field of artificial intelligence. Having a good understanding of these concepts enables researchers to design more effective and accurate AI models, which in turn can lead to better decision-making and predictions [63].

The discussion is presented for each of the studied multidimensional constructs.

5.1. The Perceived Usefulness of Statistics and Quantitative Methods

The results show that both undergraduate and postgraduate students, on average, agree that having expertise in statistics and quantitative methods is useful and that using this expertise enables them to accomplish learning activities and obligations more efficiently.

Furthermore, postgraduate students showed a higher average level of agreement on items related to the usefulness of statistics and quantitative methods compared to undergraduate students. This finding is understandable since postgraduate students typically encounter more courses that require the application of statistics and quantitative methods compared to undergraduate students. They also have a more advanced level of knowledge and experience from their undergraduate studies. This exposure and experience may have contributed to the higher level of agreement on items related to the usefulness of statistics and quantitative methods among postgraduate students. Overall, Friedrich et al. [63], and Jalajakshi and Myna [19] summarize that higher levels of education and greater exposure to statistical methods can lead to a better appreciation for the value of statistical techniques in academic work. On the other hand, results of a Mann-Whitney U test indicated no statistically significant differences in the usefulness of Statistics and Quantitative methods between undergraduate and postgraduate students of economics and business sciences (Table 2). This finding suggests that both groups of students generally view statistics and quantitative methods as equally useful for achieving their academic goals. The absence of significant differences may be due to the fact that undergraduate students are also exposed to courses that require the application of statistics and quantitative methods, although to a lesser extent than postgraduate students. It may also indicate that postgraduate students' additional education and experience with these methods have not resulted in a significantly different perception of their usefulness than that of undergraduate students. Overall, this information implies that both undergraduate and postgraduate students recognize the importance of statistics and quantitative methods for academic success, regardless of their level of education. According to Friedrich et al. [63], statistics form an essential part of data science that is applied across multiple industries. Its ability to extract meaningful insights and resolve intricate issues in business, scientific research, and society makes it a valuable tool. Thus, our recommendations on how to improve the teaching of statistics and quantitative methods to undergraduate and postgraduate students so that they can use them in different subjects and in their studies are:

1. **Emphasize the relevance of statistics:** Many students struggle to see the practical application of statistics beyond the classroom. By highlighting how statistics is used in different fields, such as business, healthcare, and social sciences, students can understand how to apply statistical concepts in real-life scenarios.
2. **Use real-life examples:** When teaching statistics, it is helpful to use examples that students can relate to. Using relevant examples, such as sports statistics or opinion polls, can help students see the practical application of statistics and increase their engagement.
3. **Offer hands-on experience:** Statistics is a practical subject that requires an application. Providing students with opportunities to work on real-world data and perform statistical analyses will help them develop the necessary skills and understanding to use statistics in their studies.
4. **Teach data visualization:** Visualization is an essential part of data analysis and interpretation. Teaching students how to create and interpret graphs and charts can help them understand complex data sets and communicate their findings effectively.
5. **Provide personalized learning:** Students have different learning styles, and it is essential to cater to their individual needs. Offering personalized learning through interactive activities, online resources, and one-on-one sessions can help students understand statistics better.
6. **Use technology:** Technology, such as statistical software and online tools, can make learning statistics more accessible and engaging. Incorporating technology into the teaching of statistics can also provide students with valuable skills that are in high demand in the workforce.
7. **Make it fun:** Statistics can be a challenging subject, but it does not have to be dull. Incorporating games, puzzles, and competitions into the teaching of statistics can make it more enjoyable for students and increase their motivation to learn.

5.2. Student's Knowledge of the Meaning of AI

The results showed (Table 3) that there are statistically significant differences in students' knowledge of the meaning of AI between undergraduate and postgraduate students of economics and business sciences. The results indicate that both undergraduate and postgraduate students have a high level of agreement on the benefits of AI for businesses, including personalized marketing and automation. Postgraduate and undergraduate students may have different opinions about artificial intelligence due to several factors, including differences in academic background, exposure to advanced AI technologies, and the complexity of AI-related issues. For example, postgraduate students typically have a deeper understanding of the fundamental concepts and theoretical foundations of AI. They have had more time to explore the subject matter in greater depth and breadth, which can lead to a more nuanced understanding of the technology's potential benefits and risks. In contrast, undergraduate students may only have a basic understanding of AI and its applications, which can lead to less-informed opinions. Furthermore, postgraduate students may have greater exposure to advanced AI technologies, such as deep learning and natural language processing, through their research during their studies. This experience can provide them with a more realistic understanding of the current capabilities and limitations of AI systems. Mansor et al. [55] and Seo et al. [64] emphasize that incorporating AI-related topics into courses and providing opportunities for students to explore and learn more about AI can help students understand the importance and potential of this emerging technology. Based on the provided data, it seems that postgraduate students have a more positive attitude toward AI and its potential benefits for businesses than undergraduate students. As mentioned above, this could be due to a variety of factors, such as greater exposure to AI-related coursework, research, or work experience.

To address these differences, the curriculum designer could consider incorporating more advanced AI-related topics and case studies into postgraduate courses. Additionally, the curriculum could focus on practical applications of AI in real-world business scenarios to better prepare postgraduate students for AI-related job opportunities. It may also be beneficial to provide more opportunities for undergraduate students to engage with AI-related topics and gain hands-on experience through projects, internships, or workshops. This could help bridge the gap between undergraduate and postgraduate students' attitudes toward AI and provide a more comprehensive education for all students. Furthermore, it may be worth exploring the reasons behind the differences in attitudes towards specific topics, such as the use of machine learning in stock market forecasting. This could inform the development of tailored coursework or resources that address specific knowledge gaps or misconceptions.

Thus, our recommendations on how professors could introduce the meaning and importance of AI to students are:

1. Include AI-related case studies and examples in lectures: Professors can incorporate examples of how AI is being used in various industries and fields, such as healthcare, finance, and education. This can help students understand the real-world applications and potential benefits of AI.
2. Assign readings and research papers on AI: Professors can assign readings and research papers on AI-related topics to provide students with a more in-depth understanding of the technology and its implications. This can also help students develop critical thinking skills and engage in discussions about the benefits and risks of AI.
3. Organize guest lectures and workshops on AI: Professors can invite AI experts from industry or academia to give guest lectures or workshops on AI-related topics. This can provide students with insights into the latest developments in the field and the skills required to work with AI.
4. Encourage students to explore AI on their own: Professors can provide students with resources and tools to explore AI on their own, such as online tutorials and open-source software. This can help students develop practical skills in AI and gain a deeper understanding of the technology.

5. Incorporate AI-related projects and assignments: Professors can assign projects and assignments that require students to apply AI techniques to solve real-world problems. This can help students develop hands-on experience in working with AI and appreciate the potential of the technology.

5.3. Students' Perception of the Usefulness of AI in Their Studies

The results show (Table 4) that both undergraduate and postgraduate students perceive AI as changing the way they acquire skills in certain subjects and improving the educational environment. Postgraduate students also believe that AI provides additional educational support. The results show no significant differences in the perception of AI between the two groups. According to European Commission [65], the transformative power of AI in education and training for students, professors, and staff is immense. Its applications can assist students with learning challenges and aid professors in providing personalized education. However, with the accelerated adoption of AI, it is crucial for educators and learners to grasp fundamental concepts of AI and data management. This will enable them to approach this technology with a positive, critical, and ethical mindset, unlocking its complete potential [64,66]. Thus, some of our recommendations on how to introduce new ways of teaching with AI into the study process are:

1. Incorporate AI-based educational tools: Professors can introduce AI-based educational tools such as chatbots, virtual tutors, and intelligent tutoring systems that can help students learn better.
2. Use AI-based adaptive learning systems: Adaptive learning systems use AI algorithms to personalize the learning experience for each student based on their individual learning needs, progress, and performance. Professors can use these systems to improve the effectiveness of their teaching and help students learn more efficiently.
3. Integrate AI into assignments and projects: Professors can integrate AI into assignments and projects by asking students to analyze data using AI algorithms, develop AI-based solutions to real-world problems, and evaluate the ethical implications of AI technologies.
4. Offer AI-focused courses: Professors can design and offer courses that focus on AI technologies, their applications, and their implications. These courses can provide students with a deeper understanding of AI and prepare them for careers in AI-related fields.
5. Foster collaboration and interdisciplinary learning: AI is a multidisciplinary field that requires collaboration between experts from different domains. Professors can foster collaboration and interdisciplinary learning by bringing together students from different backgrounds and encouraging them to work on AI projects together.

5.4. Students' Perception of Important Work Skills of AI for the Future

As AI continues to permeate the job market, possessing skills in this field can provide individuals with a distinct edge in their pursuit of lucrative employment opportunities [59,63]. As workplaces and classrooms become more diverse, social and emotional skills, including empathy, self-awareness, respect for others, and effective communication, are increasingly essential [39]. Results in Table 5 show the importance of work skills in the current job market based on the perception of undergraduate and postgraduate students of economics and business sciences. Critical thinking and analysis were found to be the most crucial skills followed by analytical thinking, innovation, complex problem-solving, and creativity. On average, postgraduate students express a higher perception of work skills for the future than undergraduate students. Moreover, results show that there are statistically significant differences in students' perspectives on work skills between undergraduate and postgraduate students in economics and business sciences. In our opinion, there could be several reasons why postgraduate students express a higher perspective on work skills for the future compared to undergraduate students. Postgraduate students have already spent several years in higher education and may have a better understanding of the job

market and its requirements. They may also have gained more practical experience through research projects, or other professional engagements, which could have equipped them with a more realistic view of the skills needed for the workforce. Additionally, postgraduate students tend to have a more specialized education and may have developed skills that are highly relevant and in demand in their respective fields. Overall, their advanced academic and professional background may provide them with a better perspective on the skills required to succeed in the future job market. To ensure that undergraduate students (and also postgraduate students) are aware of the skills that will be important for the future job market, we recommend the faculties could implement the following improvements:

1. Offer career guidance: The faculty could organize career counseling sessions, workshops, and events where students can interact with professionals from various industries and learn about the skills that are in demand in the job market.
2. Encourage internships and experiential learning: The faculty could facilitate internships and other practical opportunities for students to gain work experience and develop the skills required in the industry.
3. Offer courses that teach relevant skills: The faculty could revise the curriculum to include courses that teach relevant skills such as critical thinking, problem-solving, creativity, innovation, and data analysis, which are highly valued by employers.
4. Foster collaboration and teamwork: The faculty could encourage teamwork and collaborative learning in classes and group projects, which are crucial skills in today's work environment.
5. Facilitate alumni and industry engagement: The faculty could engage alumni and industry professionals to share their experiences and knowledge with students, providing them with valuable insights into the skills and competences required in the job market.

5.5. Students' Perception of Emerging Jobs in the Data and AI Cluster

As AI's capabilities, such as computation, simulated intelligence, and creativity, have progressed, new opportunities are arising for its utilization in various sectors, such as manufacturing, healthcare, finance, marketing, and education [67]. The results presented in Table 6 indicate that both undergraduate and postgraduate students see themselves as digital marketing and strategy specialists, followed by computer vision engineers, when considering emerging jobs in the Data and AI Cluster. Moreover, there are no statistically significant differences in the perception of undergraduate and postgraduate students of economics and business sciences regarding emerging jobs in this area. In our opinion, the reason why students see themselves as digital marketing and strategy specialists and computer vision engineers when considering emerging jobs in the Data and AI Cluster may be due to the growing demand for professionals with expertise in these areas. With the rise of technology and the increasing use of data, there is a need for individuals who can analyze data to make informed decisions and develop strategies that will lead to business growth. Digital marketing and strategy specialists, in particular, are in high demand as businesses seek to leverage digital platforms to reach and engage with customers. On the other hand, computer vision engineers are increasingly important in developing AI-driven systems for image and video recognition, autonomous vehicles, and other applications [39,59]. As a result, students may be pursuing careers in these areas to meet the growing demand and take advantage of emerging opportunities in the Data and AI Cluster [44,46]. Our recommendations on how the faculties could present students with professions in the Data and AI Cluster and help them to better understand how these professions look in the real world are:

1. Career Fairs: The faculty could organize career fairs where companies and organizations from the Data and AI Cluster can present their professions and answer questions from students. This can give students a chance to talk to professionals and learn about the different opportunities that exist within the field.

2. **Internship Opportunities:** The faculty could work with companies in the Data and AI Cluster to provide internship opportunities for students. This would allow students to obtain hands-on experience and a better understanding of what each profession entails.
3. **Guest Speakers:** The faculty could invite professionals from the Data and AI Cluster to give guest lectures or presentations to students. This can help students to learn about different professions in the field and what it is like to work in the real world.
4. **Job Shadowing:** The faculty could work with companies in the Data and AI Cluster to offer job shadowing opportunities for students. This would allow students to follow a professional for a day or a week to see what their job is like in the real world.
5. **Information Sessions:** The faculty could host information sessions on each profession in the Data and AI Cluster. These sessions could cover the day-to-day responsibilities of each job, required skills and qualifications, potential career paths, and more.

Research has shown that AI has a positive impact on higher education [35,55,66]. Klutka et al. [68] found that students experience improved learning outcomes, increased access, higher retention rates, reduced educational costs, and shorter time to completion. By utilizing AI technology and machine learning, the level of education can be enhanced, resulting in numerous benefits for students and faculty. Personalized learning, customized to meet the unique needs and interests of each individual, is one of the most significant advantages of AI in higher education [15]. Therefore, AI is crucial for the future of higher education. Moreover, as more industries incorporate AI and machine learning into their operations, it becomes increasingly important for students to have a solid understanding of these technologies [57,58]. Many emerging jobs, particularly in the Data and AI Cluster, require proficiency in AI and machine learning. By incorporating these technologies into higher education, students can gain the necessary skills to be successful in these new and emerging fields. Overall, AI has the potential to transform education and create new opportunities for students in the future job market [15,64,66]. Our recommendations for policymakers on how AI could be implemented in faculty are:

Integration of AI in Education: Policymakers can consider integrating AI tools into the curriculum to enhance the learning experience of students. This can include personalized learning platforms that leverage AI algorithms to adapt to individual students' learning styles and paces.

1. **AI-based Student Assessment:** Policymakers can leverage AI to assess student performance and progress. AI-powered assessments can provide more accurate and objective results, making it easier to identify areas where students may need more support.
2. **AI-Powered Learning Management Systems:** Policymakers can explore the potential of AI-powered learning management systems that can provide real-time feedback to students and teachers, track progress, and recommend personalized learning paths.
3. **AI-Enabled Research and Publication:** Policymakers can encourage the use of AI in research and publication to enhance the speed and quality of research. AI algorithms can analyze vast amounts of data and identify patterns, allowing researchers to gain insights that may be difficult to discover otherwise.
4. **AI-Based Faculty Support:** Policymakers can leverage AI to support faculty members, such as by automating administrative tasks, providing personalized recommendations for professional development, or even providing AI-powered virtual assistants to help with grading and feedback.

Overall, the implementation of AI in faculty can provide numerous benefits to both students and faculty members. Policymakers can play a crucial role in facilitating the adoption of AI in education and ensuring that it is used in a responsible and ethical manner. Our study is limited to undergraduate and postgraduate students at the Faculty of Economics and Business, University of Maribor, Slovenia. Also, our study is limited to five constructs: (1) students' perception of the usefulness of Statistics and Quantitative methods, (2) student's knowledge of the meaning of artificial intelligence, (3) students'

perception of the usefulness of AI in their study, (4) students' perception on work skills for the future, (5) students' perception about emerging jobs in the Data and AI Cluster. Thus, future research could include a larger and more diverse sample of students from different faculties. We suggest possible future research related to artificial intelligence and students in investigating the ethical considerations and implications of artificial intelligence on students' education. As a possibility for future research, we recommend investigating the attitudes and beliefs of students toward artificial intelligence and how they influence their adoption and use of AI technologies.

6. Conclusions

The importance of this paper lies in its focus on understanding students' perceptions of artificial intelligence, which is a rapidly evolving field with significant social and economic implications. By examining students' perceptions of various aspects of AI, such as the usefulness of statistics and quantitative methods, their understanding and knowledge of AI, their perceptions of the usefulness of AI in their study, perceptions of job skills for the future, and their perceptions on emerging jobs in the data and AI cluster, the paper provides insights into how students perceive and engage with this technology. Furthermore, the paper goes beyond simply presenting students' perceptions by providing suggestions for improvements that faculties could incorporate into their operations. By highlighting areas where faculties could improve, such as increasing awareness and knowledge of AI and modifying curricula to include relevant AI skills, the paper offers practical guidance for educators looking to better prepare their students for the AI-driven future.

Overall, this paper is an important contribution to the literature on AI education and its impact on students' perceptions and skills. AI has the potential to bring about significant changes in the workplace, and students need to be equipped with the skills and knowledge to navigate these changes effectively. By incorporating AI-related topics and skills into the study process, students can develop the skills necessary to work with AI tools and technologies, including machine learning, data analytics, and natural language processing.

Furthermore, by improving the learning process in connection with AI, students can also become better prepared to address the ethical and societal implications of AI. They can develop critical thinking skills and engage in discussions about the ethical and social implications of AI, including issues related to privacy, bias, and the impact of AI on employment. Overall, incorporating AI-related topics and skills into the study process is essential for preparing students for the changing job market and equipping them with the knowledge and skills necessary to work with AI technologies effectively. By doing so, students can develop a deeper understanding of the potential of AI and contribute to the responsible development and use of this transformative technology. By incorporating our recommendations, professors can introduce new ways of teaching with AI into the study process and help prepare students for the changing job market and the increasing importance of AI in the workplace.

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