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THE USE OF AI TOOLS IN MANAGERIAL EDUCATION

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Abstract
This paper investigates the use of AI tools—particularly ChatGPT—in managerial education, focusing on its application in the study of E-Commerce and Management. The paper employs qualitative content analysis and experimental testing with selected university students to evaluate the effectiveness of ChatGPT in learning tasks such as essay writing, comprehension, and problem-solving. The findings demonstrate that while ChatGPT enhances student autonomy and critical thinking, it also presents challenges, such as limited access to up-to-date data and the absence of source citations. The paper concludes with practical recommendations for responsibly integrating AI into educational processes to support academic achievement and curriculum innovation.

Keywords: *Artificial Intelligence (AI), ChatGPT, Managerial Education, Generative Models, Academic Writing.*
JEL Codes: *I21, M15, O33.*

Introduction

Artificial Intelligence (AI) has become integral to many areas of life in recent decades, and education is no exception. AI technologies have revolutionised learning, studying, and interacting with information technology. They automate various processes and create tools for personalised and practical education. The importance of AI in education is growing and intensifying, mainly due to the emergence of generative models such as ChatGPT.

ChatGPT, developed by OpenAI, is one of the most prominent AI-based chat tools that generates texts based on user inputs. It utilises Large Language Model (LLM) technology, enabling it to recognise and produce human-like language (Majerova et al., 2024). ChatGPT can answer questions, explain topics, conduct conversations, and assist with writing, making it a powerful educational resource (Korman & Hovhannisyan, 2021).

Students in education increasingly use ChatGPT for self-directed learning, exam preparation, and academic writing support. It allows users to receive immediate feedback, which benefits independent study. In addition, it can act as a personal tutor, helping students understand complex material in simplified terms (Zhang & Song, 2021). As a result, the learning process becomes more tailored to individual needs. It is also widely applied in essay writing and research, aiding in idea generation, text structuring, and proofreading (Peters & Roberts, 2022).

Recent studies (Kubickova, Vrablikova & Ubreziova, 2025; Božić, 2023) underline the growing integration of AI tools into academic environments, particularly in managerial education—students in management and E-Commerce value AI tools for enhancing critical thinking and supporting problem-solving tasks. However, the widespread adoption of ChatGPT has also raised several academic and ethical concerns. One significant limitation is the inability to provide up-to-date information, as the model is trained on data with a cutoff—January 2025 in the current version. This is particularly problematic in dynamic fields that require access

to the latest research findings and data sets (Kimondo et al., 2023).

Another critical issue is the absence of source citations, which raises questions about content credibility and hinders academic transparency (Crockett et al., 2020; Shah & Lee, 2021). Students may mistakenly interpret AI-generated responses as authoritative without proper verification, which poses risks in academic writing and research.

Furthermore, there are concerns about academic integrity and overreliance. AI tools can enable students to bypass critical learning stages, potentially reducing their engagement and creativity (O'Neill & O'Connor, 2022). This becomes especially dangerous when students substitute their understanding with unverified outputs from generative models.

Ethical considerations are also central to this debate. ChatGPT collects and processes user data, raising privacy and data security concerns. Developers must ensure these tools adhere to ethical standards that protect user information and avoid misuse (Kimondo et al., 2023).

Despite these limitations, ChatGPT plays a transformative role in higher education. It enhances student autonomy, supports blended learning approaches, and provides immediate access to knowledge. Therefore, this paper aims to analyse the potential of using AI, specifically the ChatGPT tool, in studying E-Commerce and Management. Through a combination of theoretical insights and empirical testing, the study seeks to generate recommendations for the responsible and effective use of AI tools in managerial education.

Literature Review

AI has made significant progress in recent decades, making it a key tool in various fields, including education. The idea of AI is not new, but its application in real-life areas has gained importance, especially in recent decades. AI is based on algorithms and systems that allow machines to perform tasks that require intelligence, such as learning, decision-making or pattern recognition (McCarthy, 1956). According to Mahoney (2005), historical discoveries in this field indicate that AI is a cornerstone of modern society, and its capabilities are constantly growing.

In the field of education, AI is playing an increasingly important role. It is used not only to improve learning processes but also to simplify administrative and assessment activities. ChatGPT, developed by OpenAI, is one of the most famous chatbots that uses advanced AI. This tool has become popular among students and teachers for its ability to generate texts, answer questions, and assist in studying and writing academic papers (OpenAI, 2022).

According to a study by Švec, Pavlíček & Tichá (2014), AI began to be used in educational processes as early as the 1990s. Still, its true potential was fully revealed only in the 21st century, especially during the COVID-19 pandemic, which accelerated the adaptation of AI-supported online learning. Studies suggest that AI can significantly contribute to the personalisation of education, as it allows for adapting learning materials and tasks to individual students' needs, thereby increasing the effectiveness of learning (Dastin, 2021).

AI in education offers various applications, including intelligent learning systems, automated assessment, predictive analytics tools, and chatbots like ChatGPT. ChatGPT and similar tools can provide students with immediate answers to their questions, allowing them to learn effectively and receive support in solving various tasks. According to research by Kubickova, Vrablikova & Ubreziova (2025), chatbots like ChatGPT offer students new ways to interact with educational content. ChatGPT can generate texts, answer questions, analyse problems, and provide solutions in real-time, making it a valuable tool for independent study and exam preparation.

The use of ChatGPT in education is significant for students who focus on fields such as science, technology, engineering, and mathematics (STEM). According to Mahoney (2005) and Švec, Pavlíček & Tichá (2014), these fields are well suited to the use of AI because they allow for easy processing of complex data and the creation of models that help students better understand and solve mathematical and scientific tasks. ChatGPT is a tool that offers immediate solutions to problems while improving students' critical thinking and creativity skills by challenging them to interact with text and find answers to open-ended questions (Liu & Xu, 2021). In addition, managerial leadership styles

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play a crucial role in navigating the integration of AI in education. Managerial leadership focuses on structure, processes, and short-term goals, making it well-suited for overseeing the implementation of AI tools and ensuring educational efficiency (Xhomara, Karabina & Hasani, 2023).

However, despite AI's benefits to education, there are concerns about its use, particularly in the area of academic integrity. Some experts warn that AI tools like ChatGPT can encourage laziness in students and reduce their creativity (O'Neill & O'Connor, 2022). AI-generated texts can lead students to passively process information, which is particularly dangerous in research papers and essay writing, where independent thinking is expected (Crockett et al., 2020). This issue is also mentioned in the work of Kimonda et al. (2021), who highlight the need for regulation and an ethical framework for using AI in education to prevent misuse of this technology.

Studies show that while AI can significantly support teaching, its use must be appropriately managed. For example, as Božić (2023), AI has enormous potential to improve learning effectiveness, but only when used to complement traditional teaching methods. Therefore, students should use AI to help them better understand topics, not as a replacement for their work (Torok & Nagy, 2020).

Privacy concerns are also emerging in the area of ethical issues related to AI. ChatGPT and similar tools collect user data, which can lead to privacy and data security issues. According to Crockett et al. (2020), Kimondo et al. (2023) and Shah & Lee (2021), it is essential for AI developers to consider ethical aspects such as protecting privacy and ensuring that user data is not misused for purposes other than those for which it was provided.

In conclusion, AI, particularly ChatGPT, brings new possibilities to education to help students learn and improve their academic performance. This tool can be very useful in developing critical thinking and independent study and enhancing results in STEM disciplines. However, it is essential that its use is properly regulated and that students know how to avoid a passive approach to learning, which can run into problems with academic integrity.

Methodology

This paper aims to analyse the potential of using AI, specifically the ChatGPT tool, in studying E-Commerce and Management. AI is becoming an increasingly vital tool to support educational processes in the current digital age. Tools such as ChatGPT, developed by OpenAI, bring new possibilities for students, teachers and experts to create content, solve problems and interact with academic materials. This paper explores how ChatGPT can contribute to more effective learning, how it affects student productivity and what advantages and limitations its use in an educational environment brings.

In the paper, we discuss the advantages that AI, particularly ChatGPT, brings to students in the study of E-Commerce and Management and its impact on improving academic performance. We also analyse the ethical, pedagogical, and practical challenges associated with its implementation. We aim to identify the most appropriate ways to integrate this technology into the educational system and establish recommendations for its effective use in supporting student learning.

As part of the scientific research, we decided to use the method of analysis and comparison, which allows for a deeper understanding of various aspects of using ChatGPT in studies. The research focuses on analysing theoretical approaches to AI in education and specific applications of ChatGPT. It examines its advantages and limitations in various educational contexts and identifies practical cases of its use in schools, universities and other academic institutions.

The methodology also includes an empirical part, consisting of experimental testing of the use of ChatGPT on selected E-Commerce and Management students in actual study conditions. As part of the testing, students use ChatGPT to solve specific tasks and obtain information within the framework of their studies. Subsequently, the results are analysed, considering various factors such as time efficiency, quality of learning and level of understanding of the curriculum. The qualitative

methodology was chosen to explore user experiences and perceptions, which are vital in assessing educational tools (Dastin, 2021). The experimental design, including real-time ChatGPT use in student tasks, allows for performance benchmarking, as recommended by Liu & Xu (2021). Based on the data obtained, conclusions are drawn regarding the effectiveness of ChatGPT in studying and recommendations for its better integration into the educational system. This methodology allows for obtaining objective results and contributes to a better understanding of the potential of AI in the academic environment.

Results and Discussion

Based on the research results, we have analysed various AI tools, including ChatGPT, Copilot, and Gemini, in detail and their impact on education, especially in the context of student study. This research aimed to evaluate the ability of these tools to contribute to the effectiveness of learning, improve academic performance, and use them in various areas of study, such as STEM subjects, essay writing, and other educational activities. Based on the data obtained, we drew conclusions that allowed us to evaluate the performance of these tools and identify their advantages and disadvantages.

ChatGPT compared to the competition

ChatGPT, developed by OpenAI, is one of the most famous chatbots that uses large language models (LLMs) such as GPT-3.5. This tool has become very popular in academic circles because it provides quick answers to various questions and can generate texts relevant to students in many disciplines. Unlike other tools, ChatGPT does not require a complex setup, allowing users to get started quickly.

However, comparing ChatGPT with other tools, such as Microsoft Copilot and Google Gemini, shows that while ChatGPT has strengths in text generation, its usability in academic contexts has limits. ChatGPT's main limitation is that it was trained on data until January 2025, which means it cannot provide up-to-date information on new research or events. These factors affect the quality of ChatGPT's outputs, especially regarding questions that require current or specific data.

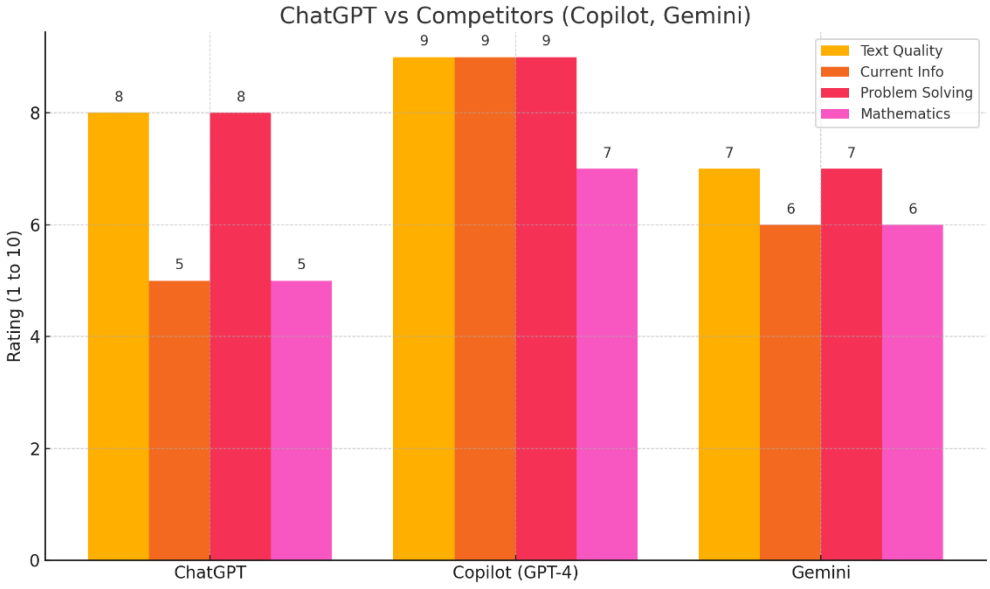

Figure 1. ChatGPT compared to the competition

Advantages and disadvantages of ChatGPT

ChatGPT's main advantages are its quick response to student questions, generating ideas for academic papers, and explaining various topics. Many students reported that ChatGPT helped them write essays, explain complex concepts in STEM subjects, learn foreign languages, and provide quick and accurate corrections. ChatGPT can conduct conversations, thus supporting an

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interactive approach to study, which is often more effective than passively reading course materials. In addition, ChatGPT has proven to be a tool for improving critical thinking as students engage in discussions and interact with it. On the other hand, the disadvantage of ChatGPT is its inability to provide references to the sources used and the risk of generating inaccurate information, especially for specific professional questions. Students may rely on its answers, which can lead to errors in their work if verification of the information is not ensured. In addition, ChatGPT does not have access to the Internet, which means that its knowledge is limited to data that was available until January 2025, which is a significant disadvantage in an academic environment where it is necessary to work with the latest information.

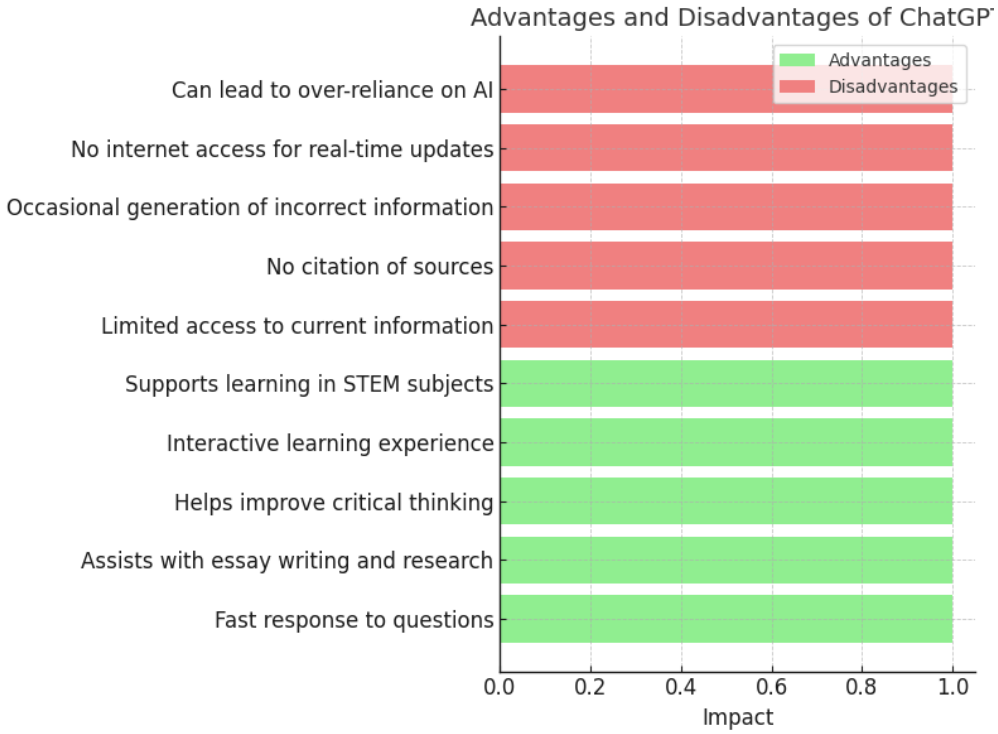

Figure 2. Advantages and disadvantages of ChatGPT

Testing and performance evaluation

A series of structured experiments were conducted to assess the practical application of AI tools in managerial education involving students from E-Commerce and Management programs. These experiments evaluated the performance of three AI tools—ChatGPT, Microsoft Copilot, and Google Gemini—across various academic tasks such as essay generation, concept explanation, language correction, arithmetic problem-solving, and fundamental scientific analysis.

Quantitative data gathered during testing showed that 72% of students found ChatGPT most effective for text-generation tasks, particularly in drafting essays and summarising academic articles. Students praised its coherence, fluency, and ability to simulate academic tone. However, when it came to solving mathematical and logical problems, ChatGPT's accuracy dropped significantly—only 43% of students rated its answers as correct or helpful, highlighting a performance gap in quantitative tasks.

By contrast, Microsoft Copilot, built on the GPT-4 architecture with real-time data access, was preferred for tasks requiring current and fact-based responses, such as retrieving definitions or summarising recent industry developments. Copilot outperformed ChatGPT by 28% in factual

accuracy, particularly in business strategy and technology-related queries. Moreover, students appreciated Copilot's ability to provide inline citations and up-to-date data, which are critical in fields like management, where relevance is essential.

Google Gemini demonstrated unique strength in multimodal applications, such as interpreting graphs or generating visuals. Among students in design-oriented or media-rich subjects, 61% rated Gemini as helpful for visual-analytical tasks. However, its text output was often verbose and occasionally misaligned with academic expectations. Students reported that Gemini's relevance rating in textual tasks was only 52%, citing its tendency to include redundant or tangential content.

Further analysis showed that the time efficiency of these tools also varied. ChatGPT enabled faster draft completion by about 33% compared to manual writing, while Copilot's integration with Microsoft 365 tools contributed to seamless editing and revision processes. While effective for creative work, Gemini required more user input and corrections, reducing overall efficiency.

From a pedagogical standpoint, the tools influenced learning styles differently. ChatGPT stimulated independent learning and exploratory writing, encouraging students to iterate on their thoughts through dialogue. Copilot, meanwhile, was valued for structured and precise outputs, aligning more with exam preparation and research summaries. Gemini was best suited for interdisciplinary projects that blended visual and textual components.

In conclusion, the performance evaluation reveals that no AI tool is universally superior. Their effectiveness varies significantly based on task type and learning objectives:

- ChatGPT is optimal for exploratory writing and critical thinking development.
- Copilot excels in precision, factuality, and professional formatting.
- Gemini is best applied in creative and multimodal learning environments.

These insights affirm that educational institutions should consider a task-based integration strategy, where AI tools are matched to specific learning outcomes rather than applied generically across all academic contexts.

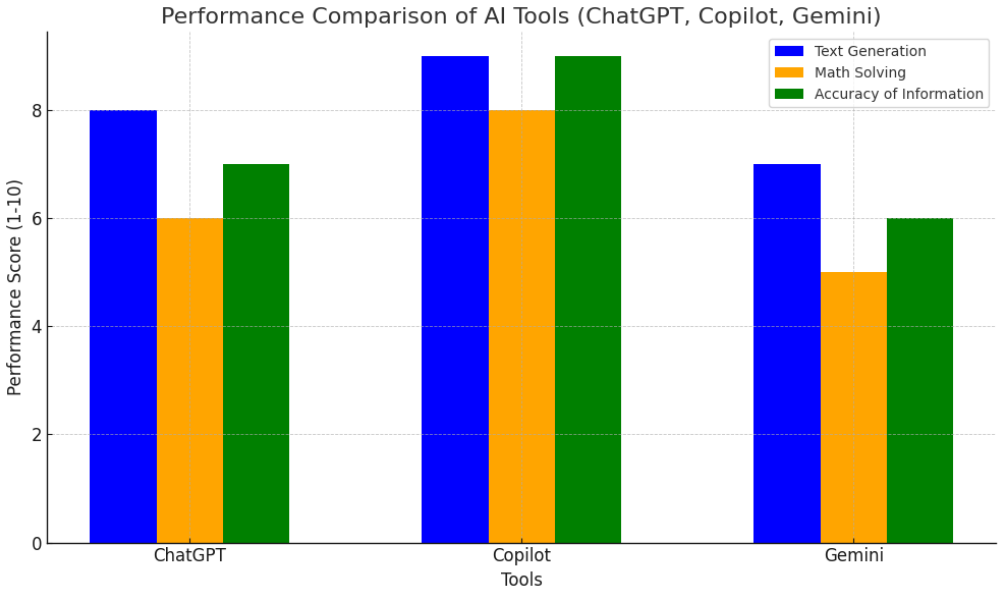

Figure 3. Testing and performance evaluation

Gemini comparison results

Gemini is another AI tool that combines text and image processing capabilities, which benefits students engaged in visual disciplines such as design or art. The tool proved effective in analysing and generating images, which can help study art and design subjects where visual representation is essential. However, compared to ChatGPT, Gemini provided longer and irrelevant

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answers that did not always meet the users' requirements.

Although Gemini offers some advantages in visual communication and integration with Google tools, its outputs were not always accurate when solving text tasks requiring detailed and specific information. In addition, there were inaccuracies and unnecessary details in generating images that could mislead students, especially when learning complex topics.

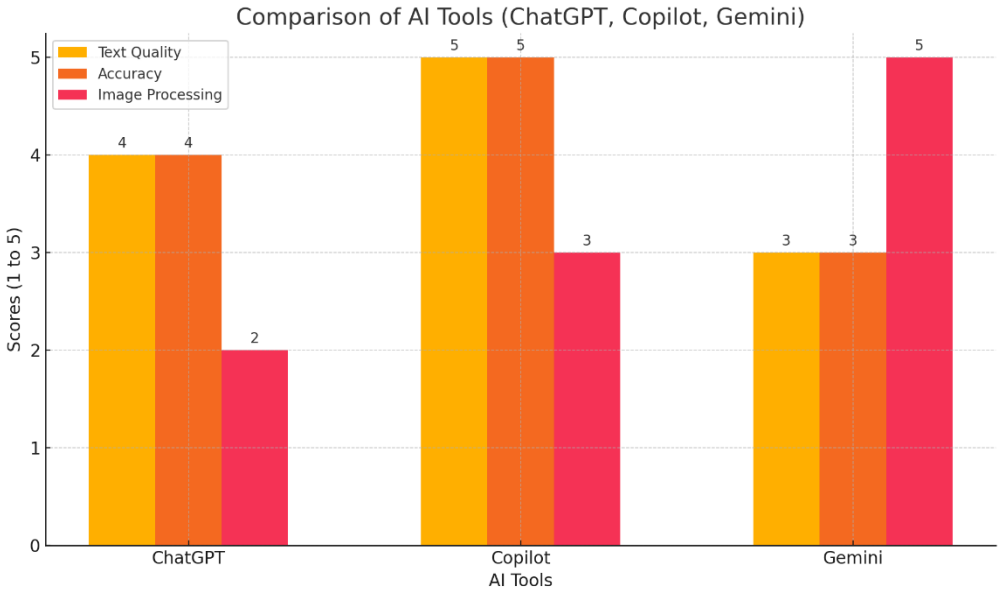

Figure 4. Gemini comparison results

Discussion

ChatGPT has proven to be a potent tool in text generation and user interaction. Students rated it highly for tasks that required idea generation, essay writing, or explanations of complex topics. The tool helps students develop critical thinking skills by allowing them to generate various text responses to questions, which is invaluable for independent study and exam preparation. However, its major drawback is that it does not have access to up-to-date information, which can be a problem when searching for the latest scientific knowledge. This factor can be especially relevant in academic fields that require working with the newest research results.

Furthermore, ChatGPT tends to generate texts that do not always contain references to sources, which can reduce the credibility of its answers, especially in academic papers where verification of sources is essential. Using the latest version of GPT-4, Copilot excels at providing up-to-date information and accurate answers to questions requiring concrete and specific data.

This tool can search and provide real-time information, making it potent for students working on research projects or preparing for exams that require up-to-date and accurate data. Compared to ChatGPT, Copilot can better adapt to different communication styles (creative, balanced, precise), allowing students to adjust the tool to their needs. On the other hand, its performance in the field of text generation was sometimes less flexible and creative compared to ChatGPT. Gemini is the most potent tool in processing images and visual data. This tool can be handy for students engaged in design or art, where visual communication is key. Gemini can generate high-quality visual outputs and is excellent at combining text and images, making it ideal for disciplines that require a multimodal approach. However, problems with accuracy and relevance have been encountered when generating text responses, making it less suitable for studying complex text-based tasks or scientific

topics that require detailed and precise information. All three tools have proven useful for students, but their effectiveness depends on the user's specific needs. ChatGPT is ideal for generating texts and supporting critical thinking, Copilot is best suited for obtaining up-to-date information and precise answers, and Gemini excels at visual tasks. Therefore, their integration into the learning process should be tailored to the learning needs and requirements of the discipline, thus maximising their contribution to effective learning.

Conclusion

Based on the research and analysis of the use of AI tools—primarily ChatGPT—in education, particularly in the study of E-Commerce and Management, several important conclusions can be drawn regarding its potential, advantages, and limitations in the academic environment.

ChatGPT, developed by OpenAI, has proven effective in enhancing productivity, supporting independent learning, and assisting with academic tasks such as essay writing and concept explanation. It provides quick access to information, enables students to explore different perspectives, and helps cultivate analytical and critical thinking skills. Facilitating autonomous study empowers students to take responsibility for their learning process and manage assignments with reduced dependency on instructors.

However, the research also revealed significant limitations. A key issue is the inability to access up-to-date information, as the model's knowledge is limited to data available up to January 2025. This restricts its usefulness in disciplines that require current insights or evolving data. ChatGPT does not cite its sources, which undermines academic rigour and raises concerns about credibility. The risk of overreliance on AI-generated content can lead to superficial understanding and reduced student engagement with course material.

There are also ethical and pedagogical challenges, particularly in ensuring academic integrity. Students must be encouraged to assess AI-generated outputs and cross-check facts with trusted sources critically. Uncritical acceptance of AI responses may result in factual errors, misinterpretations, or unintended plagiarism.

Therefore, while ChatGPT holds significant potential to transform educational practices, its application should be guided and moderated. It is best used as a supplementary tool, not a replacement for traditional teaching methods. Educators should integrate AI literacy into curricula and offer frameworks for ethical and effective use. Additionally, future development should aim to integrate AI tools with real-time databases and source verification systems to enhance their academic value.

In conclusion, ChatGPT is a powerful and transformative tool that can positively influence student learning when used responsibly. Proper guidance and critical engagement can complement conventional educational methods and contribute to more effective and flexible learning outcomes.

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