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**Investigating Moroccan University Students' Attitudes
towards ChatGPT as a Learning Tool and its Impact on
their Academic Performance**

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Abstract

The purpose of this study is to investigate how students at the National School of Commerce and Management (ENCG) in Oujda perceive ChatGPT as a learning tool and how it impacts their academic performance. To achieve this objective, a mixed-methods approach was implemented, encompassing data collection from the quantitative phase and the qualitative phase. The findings reveal that the majority of students hold positive attitudes towards ChatGPT as a learning tool

due to its ease of use and its ability to provide personalized support and feedback, which subsequently enhances their academic performance. However, it is crucial to note that alongside these positive perceptions, there are also significant ethical concerns to be explored. These concerns highlight the need for responsible usage and regulations to prevent misuse while realizing the benefits of this model technology.

Keywords: Artificial Intelligence, ChatGPT, Students' Attitudes, Higher Education, Academic Performance.

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1. Introduction

Due to growing technological advancements, particularly the emergence of artificial intelligence (AI), the educational system is experiencing a huge transformation. The integration of artificial intelligence in education is expected to have a transformative impact on various aspects of the educational system such as educational objectives, processes, learning materials and methods (Zhai, 2022). AI presents an opportunity for significant development and utilization in education, possibly revolutionizing the structure of modern education.

Since, this AI driven tool has attracted attention for its potential to enhance the educational experience and impact students' academic performance. This research seeks to explore the attitudes of students

towards the incorporation of ChatGPT into their academic journey that is, to analyse the extent to which students perceive ChatGPT as an effective and beneficial tool in improving their academic performance. Moreover, the research endeavours to explore the perceived impact of ChatGPT's utilization on students' academic outcomes, including their subjective assessments of changes in grades, learning achievements, and the overall educational experience. Concurrently, it aims to identify potential challenges and limitations in implementing ChatGPT as an educational tool within academic settings.

1.1. Background of the Study

The 21st century has witnessed an unprecedented fusion of technology and education, with AI-driven tools at the centre of this transformation. Tools like ChatGPT offer a novel approach to addressing the challenges students encounter during their educational journey. It holds the ability to provide immediate responses to inquiries, delivers personalized guidance, and provides invaluable assistance in writing and problem-solving tasks. It has received much attention due to its flexibility in supporting different learning preferences and styles, positioning it as a revolutionary tool in the field of education.

1.2. Problem Statement

As stated, ChatGPT has garnered significant public attention, particularly within the realm of education because of its capacity to provide personalized responses to student inquiries. Understanding the

factors affecting students' use of this technology is crucial for addressing the problem raised in this study, which relates to the incomplete examination of ChatGPT's usage in the Moroccan educational setting and its possible effects on students. Looking at the impact of ChatGPT on students' academic performance while taking into account factors including interaction, learning strategies, and possible challenges, this study aims to fill in the gap on how the implementation of AI-driven chat-bots like ChatGPT impacts the educational environment.

1.3. The Purpose, Significance, and Scope of the Study

The theme under consideration is notably fresh and has not garnered extensive research since the debut of ChatGPT was only in 2022. Thus, there is a noticeable shortage in this domain, particularly within the Moroccan context. Hence, the current study holds the potential for significance for a number of reasons. The significance firstly resides in the novelty of the subject, its capacity to influence pedagogical practices, its applicability to Moroccan educational settings, and its overall contribution to the worldwide conversation on AI in education. The study's significance extends to its potential to inform educators and institutions about the proper integration of ChatGPT in education as a learning tool. Further, the gathered insights have the potential to inform improved decision making about pedagogical practices, enhanced learning outcomes, and a deeper understanding of the possible impact of AI on the future of education.

1.4. The Research Questions

1. What are students' attitudes towards the use of ChatGPT as a learning tool?
2. To what extent does the utilization of ChatGPT impact students' academic performance, and learning outcomes?
3. What challenges do students encounter when using ChatGPT?

2. Literature review and Theoretical Framework

2.1. Overview of ChatGPT in education

ChatGPT (Chat Generative Pre-trained Transformer) is a language model that can produce text that seems natural and genuine; it was introduced in November 2022. ChatGPT is a public tool developed by OpenAI that is based on the GPT language model technology (Kirmani, 2022). This chat-bot has a high level of sophistication and can handle various text-based requests. It can not only provide simple answers, but also perform more complex tasks such as creating appreciation notes and facilitating difficult conversations about productivity challenges (Liu et al., 2023). It is capable of producing response text that is nearly indistinguishable from natural human language (Dale, 2021).

Upon analysing the development of AI virtual assistants and chat-bots for educational purposes in the literature, it can be inferred that their application in the field of education is related to, first, language

learning where chat-bots may be used by students to practice their language abilities in a secure environment. These models may be constructed to mimic real conversations and provide students immediate feedback, both of which are highly helpful for enhancing their language skills. Second, they can be utilized in developing platforms for personalized education. Chat-bots may provide personalized learning experiences that are tailored to the unique requirements and preferences of each student by evaluating data on student behaviour and learning patterns. Third, chat-bots offer immediate responses. As students work through problems or tasks, these tools provide them with instant guidance and feedback.

Additionally, ChatGPT encourages critical thinking by having students assess the responses they receive. This process is a useful exercise for polishing problem-solving methods and further developing their abilities. Overall, ChatGPT offers a platform that encourages active participation from students, encourages interactive learning, and develops their problem-solving skills (Saxena et al., 2023).

2.2. Students' Attitudes towards ChatGPT

The adoption and effectiveness of educational technology are greatly influenced by students' attitudes towards them. Previous research has revealed how students' attitudes affect their engagement, motivation, and overall learning outcomes. Therefore, it is crucial to investigate students' attitudes towards ChatGPT as it can help educators,

institutions, and policymakers better integrate AI chat-bots into educational environments. In a study carried out by Malmström (2023), a survey was conducted among students to assess their usage of and attitudes towards AI for educational purposes. In general, the majority of students exhibited a positive attitude regarding the utilization of chat-bots and other AI language tools in the context of education. They often asserted that AI enhances their effectiveness as learners.

Likewise, Bonsu and Baffour-Koduah (2023), aimed to investigate the perceptions and intentions of students in a Ghanaian university regarding the use of ChatGPT. According to the findings students expressed a strong intention to use ChatGPT and advocated for its integration into education, as their personal experiences facilitated its utilization. The study also revealed that students hold a positive perception of ChatGPT, highlighting its ease of use, accuracy, and ability to generate improved results.

2.3. ChatGPT's Impact on Students

The implementation of chat-bots in educational environments has significantly improved student engagement, motivation, and learning outcomes. In providing a more individualized and dynamic learning experience, these AI-powered tools have sparked learners' interest and enthusiasm. The opportunity to receive rapid support and real-time feedback from chat-bots encourages students to search for responses, overcome obstacles, and explore topics in greater depth. ChatGPT and

other chat-bots' accessibility enhance learning beyond of the traditional classroom setting.

Feedback from practitioners has shown how effective ChatGPT is at increasing student motivation and engagement. In a study by Liu, Y et al. (2023), it was discovered that teachers may provide their students with more individualized support by using ChatGPT, leading to increased levels of student engagement and motivation. Likewise, students that used ChatGPT as part of their online learning environment also indicated more engagement with their studies and expressed contentment while interacting with the program (Liu, Y et al., 2023). Another study conducted by Liu, B (2023) examined the attitudes and perceptions of Chinese university students regarding using ChatGPT for learning English. Based on the findings most students had positive perceptions and understanding of ChatGPT, believing that it could improve their English skills and motivation.

Additionally, one of the frameworks that provide insights into the impact of technology on students is the Technology Acceptance Model (TAM), developed by Davis in 1989, it is a theory that looks into the relationship between technology and academic performance. It addresses the need to understand why technology is accepted or rejected as it becomes a part of users' everyday life. This model explores individuals' attitudes, perceptions, and intentions towards adopting and using technology, making it particularly relevant in

understanding how students and educators embrace and integrate technology in educational settings.

Nevertheless, the literature reviewed has shown that chat-bots like ChatGPT can have a significant impact on learning outcomes. These AI-powered chat-bots help to improve academic achievement and enhance students' motivation by offering individualized support and guidance. As ChatGPT bears the capacity to significantly alter the educational landscape, much like computers and the internet have done in the past. It provides an alternative to the occasionally overwhelming task of browsing and searching for precise links on search engines, by giving seamless access to vast pools of knowledge.

2.4. Challenges of ChatGPT in Education

In light of the technological advancements, the fields of education and research have undergone significant transformations throughout the years. ChatGPT is among the technologies that will bring changes in higher education and research. Its impact on the educational sphere is likely to be significant. It has been labelled by some experts as a potential game-changer for internet search (Yanduri & Majid, 2022).

As stated earlier, there are many concerns about the ethical and responsible use of ChatGPT, including the potential of cheating in exams, as it was found that students may easily use ChatGPT to cheat, causing them to lose their original thoughts and be incapable of developing valid arguments. Other concerns lie in privacy and security

issues, and the limitations of chat-bots in terms of language and originality (Alkhaqani, 2023). Students have reportedly been found cheating in a number of cases by using ChatGPT as a source to create scripts and other ways for their assignments. This incident is only one of several that have occurred since the chat-bot was launched. The majority of the literature reviewed showed that ChatGPT's challenges encompass concerns regarding academic integrity, issues surrounding reliability, over dependency on the tool, difficulties in evaluating and enhancing graduate skill sets, limitations in assessing learning outcomes, and the presence of potential biases and falsified information.

3. Method

The aim of this research is to investigate the attitudes of students towards the utilization of ChatGPT as a learning tool and the impact it has on their academic performance. The investigation includes students of ENCG, Oujda. Accomplishing this goal proved to be an intricate process that required considering a variety of aspects. The first aspect addresses the question: "What are students' attitudes towards ChatGPT as a learning tool?" Meanwhile, the second aspect delves into the impact this tool has on their academic performance. Thus, the research at hand calls for a deeper understanding, extending beyond what one method can achieve. To attain richer insights, it is essential to underlie the importance of employing a balanced and integrated approach.

3.1. Sample / Participants

This study aims at exploring students' attitudes towards ChatGPT as a learning tool, with the selection of participants playing a role in shaping the study's insights. The effort to carefully choose the suitable group of individuals for this research is driven by the goal to obtain a deep understanding of how ChatGPT influences their learning experiences. Thus, the National School of Commerce and Management in Oujda encompassing all departments serve as the optimal location for this investigation. Focusing on a single site allows the study to gain specificity, and a thorough investigation into students' attitudes and experiences within this specific educational environment.

This study opted for non-probability sampling, specifically convenience and snowball sampling, due to limitations associated with random sampling. Challenges like time constraints, student inaccessibility, unwillingness to participate, and data collection during exam week hindered the feasibility of random sampling. Consequently, practical constraints led to the transition to snowball sampling in this research.

3.2. Instrument(s)

To explore students' attitudes towards ChatGPT as a learning tool, this study incorporates a survey and interviews as the primary instruments for data collection. The survey serves as a quantitative tool,

systematically gathering data from a large number of participants and providing standardized measurements for statistical analysis. The interviews, on the other hand, provide a qualitative approach, by delving into students' experiences and attitudes towards ChatGPT as a learning tool.

3.3. Data collection procedures

The data collection procedure adheres to the explanatory sequential mixed-methods approach, ensuring an in-depth investigation of students' attitudes towards ChatGPT. The study is divided into two distinct phases. In the initial phase, a survey is distributed among students of the National School of Commerce and Management in Oujda. This quantitative data collection aims to acquire an overview of students' perspectives on ChatGPT. Once the quantitative data is collected and analysed, the study proceeds to the second phase, which involves conducting interviews. This qualitative data collection approach delves deeper into students' experiences, motivations, and perceptions towards ChatGPT.

4. Results

The primary objectives of this study are to investigate students' attitudes towards using ChatGPT as a learning tool and to assess its impact on their academic performance. The data collection process involved employing a mixed-methods approach to gather insights

from students. The main results aimed to address the research questions, which are:

1. What are students' attitudes towards the use of ChatGPT as a learning tool?
2. To what extent does the utilization of ChatGPT impact students' academic performance, and learning outcomes?
3. What challenges do students encounter when using ChatGPT?

Table 1
Interaction with ChatGPT

Frequency of ChatGPT Usage	Percentage of Participants
Few times a week	48%
Nearly every day	23%
Rarely	26%
Every second	1.5%
Two or three times	1.5%

Correspondingly, the first inquiry focuses on understanding the frequency of ChatGPT's usage among students. These results showcase the extent to which students integrate ChatGPT into their learning routine

Table 2
Satisfaction with ChatGPT as a Learning Tool

Satisfaction Level	Percentage of Participants
Satisfied	66.7%
Neutral	31.8%

Dissatisfied

1.5%

The following question aims to directly explore students' satisfaction towards the use of ChatGPT to gauge the effectiveness and acceptance of this AI-based learning tool in the educational context.

Table 3

Perceived benefits of ChatGPT as a learning tool

Perceived Benefit	Number of Participants
Time and effort saver	59
Enhances knowledge and skills	22
Motivates to learn more	26
Enjoyable and fun	26
Boosts confidence and self-esteem	13
Facilitates efficient searching	3
Fosters outside-the-box thinking	3
Outperforms human assistance	3

The query regarding the perceived benefits of ChatGPT as a learning tool, aims to assess ChatGPT's impact on students' educational journey and reveal how it enhances their learning process compared to traditional methods.

Following the analysis of students' attitudes towards ChatGPT as a learning tool, the following question intends to evaluate the perceived impact of this tool on students' academic performance. It examines whether ChatGPT enhances students' understanding, knowledge retention, and overall grades or if it is perceived as challenging in its

use. The data demonstrate that 57.6% of students perceive ChatGPT to have a positive impact on their academic performance, while 25.8% do not observe any significant impact. Additionally, 16.7% perceive ChatGPT to have a negative impact on their academic performance.

Table 4
Challenges of ChatGPT as a Learning Tool

Aspects	Percentage of Participants
Untrustworthy and Non-credible	56.1%
Availability and Accessibility	50.0%
Irrelevant or Inappropriate	28.5%
Ethical Concerns	9.1%
Distraction from Essential Tasks	16.7%
Lack of Precision in Answers	4.5%
Hindrance to Creativity	1.5%
Inconsistent Effectiveness	1.5%

Having examined the perceived benefits of ChatGPT as a learning tool, another question is posed to identify its potential drawbacks and limitations that might impede its effectiveness. Given that ChatGPT relies on massive data sets for its reliability and accuracy, it often produces replies that are not entirely relevant or applicable to the specific learning context.

5. Discussion

The first research question in this study focuses on investigating students' attitudes towards ChatGPT as a learning tool. Before delving into this question, it is crucial to first examine students' interactions

with the tool, including their frequency of use and usage patterns. Through an investigation of ChatGPT's usage patterns and frequency of use among students, it becomes evident that students exhibit different levels of engagement with the tool.

The survey data revealed a majority of respondents utilizing ChatGPT on a routine basis, reflecting a prominent assimilation of the tool within their learning approaches. This underlines ChatGPT's major role in students' learning routines, which indicates that the tool is regarded by students as a tool to enhance their conventional study techniques, this preference could also be attributed to the many received benefits of ChatGPT. Moreover, the prevalence of ChatGPT's use demonstrates the extent to which students value its ability to improve their educational experiences. It signifies a huge acceptance towards the tool, as it is integrated into their academic endeavours, because it holds the capacity to address specific educational requirements, and offer valuable support.

Based on the findings regarding students' overall attitudes toward ChatGPT as a learning tool, students appear to display positive attitudes. This suggests that students view ChatGPT as an assisting tool that enhances their knowledge of a variety of subjects. Approximately half of the respondents find ChatGPT easy to use, which suggests that students are proficient in navigating and using ChatGPT effectively. A significant portion of students concurred that

ChatGPT enhances their academic studies, indicating that they perceive the tool as beneficial.

These results show that students hold a positive view of ChatGPT's capabilities and its potential to enhance students' learning. Several factors might have influenced these attitudes towards the tool, including the good quality of explanations it provides, the ease of use, natural conversation style, and its educational usefulness. The factors that impact students' behavioral intention to use this specific technology are related to the Technology Acceptance Model (TAM), which claims that the intention to utilize technology is influenced by the perceived usefulness and ease of use of the technology. This is an indication that ChatGPT has garnered acceptance and acknowledgement within the student community.

This is consistent with a recent study conducted by Liu, B (2023), which investigated the attitudes and perceptions of Chinese university students concerning the utilization of ChatGPT. The outcomes of the study revealed that the majority of students exhibited positive perceptions and a comprehensive understanding of ChatGPT. The literature examined in this study across various studies focusing on students' attitudes toward the utilization of ChatGPT in educational contexts consistently reflects positive perceptions and attitudes. This alignment resonates with the underlying hypothesis of this current research. Given that a majority of students exhibit a positive attitude

towards this tool, the findings pertaining to its impact on their academic performance appear to be also positive.

Through the exploration of students' perceived impact of ChatGPT on their academic performance, an understanding can be gained regarding how they perceive the tool's contributions to their learning journey. The main objective of this investigation is to evaluate students' perspectives on how ChatGPT impacts their academic performance. Upon analyzing the responses, a prevalent pattern is revealed; that is, the majority of students affirm that ChatGPT exerts a positive impact on their academic performance. The findings align with the expectations that ChatGPT positively impacts students' learning. The majority of participants express positive views regarding this chat-bot's impact. It motivated students to complete their tasks more quickly, ask further questions and save time. This result reveals a substantial number of students who find value in ChatGPT's assistance, especially in improving their comprehension of courses, aiding in knowledge retention, and potentially leading to improved grades.

The qualitative findings support this stance; numerous participants attest to ChatGPT's constructive impact on their grades and overall academic outcomes. They credit their improved performance to the tool's assistance with tasks and assignments. Participants cite ChatGPT's quick responses and accurate information allowed them to complete tasks with efficiency. They further claim that ChatGPT

averted academic failures and increased their motivation to complete tasks. However, certain participants stressed the necessity of wise usage to avoid laziness. They emphasized that while ChatGPT may yield positive outcomes in academic performance; such achievement isn't always connected to personal development or comprehension without active engagement.

If ChatGPT indeed enhances the learning experience for students, should its use be permitted? After all, the primary objective of education is to provide a learning environment that is interactive and enjoyable, facilitating knowledge retention and comprehension. The collected findings showcase that the incorporation of ChatGPT contributes to a sense of interactivity and enjoyment in the learning process. However, the challenge lies in striking a harmonious balance between the use of ChatGPT and fostering independent thinking skills. While the integration of ChatGPT can undoubtedly enhance engagement and facilitate information absorption, the development of autonomous problem-solving skills and critical thinking skills must not be neglected.

The investigation into the potential challenges and constraints associated with ChatGPT as a learning tool reveals the difficulties that could impede its effectiveness within learning environments. The results revealed a variety of potential drawbacks and limitations associated with ChatGPT as a learning tool. These include challenges related to relevance, accessibility, ethics, academic integrity,

distraction, precision, and creativity. In relation to creativity, students' cognitive approach to using ChatGPT is shown in the results of whether students engage in critical thinking while using the tool.

The ease of information generated by the tool poses a risk of heavy reliance on it by learners, potentially hindering their critical thinking and problem-solving abilities. This concern resonates with the existing literature, which highlights various challenges students might encounter when utilizing such tools, including issues related to originality, creativity, and innovation. However, it is notable that students demonstrate an awareness of these challenges and recognize the potential pitfalls that ChatGPT could pose. This awareness itself indicates a level of critical thinking, as students don't simply employ the tool without consideration. Many of them stress the value of maintaining independent thought and warn against over-dependence.

So the question remains, could the use of ChatGPT be considered as a major threat to learning or academic integrity? As ChatGPT continues to gain prominence within the educational environments, its utilization necessitates a foundation rooted in principles of responsible and ethical use. There should be an urge for educators and institutions to start thinking about how ChatGPT can effect education and address the challenges that come with the use of this AI tool as well as a focus on how to maintain academic integrity.

6. Implications, Recommendations and Conclusions

The debates surrounding ChatGPT and its connection to education is still in its infancy, as the emergence of these AI-driven tools, such as ChatGPT, can open up new ways for learning and engagement. However, questions arise about the effect of these technologies on the values and principles of education. The study under consideration provides valuable insights into participants' perceptions and attitudes towards this AI tool and its impact on boosting students' academic achievement, shaping education, while also highlighting the challenges it presents. This new AI transformation has implications for education, where integrating AI can change the traditional teaching methods and engagement strategies. The use of ChatGPT in education necessitates the need to integrate critical thinking, creativity, problem-solving and digital literacy skills within educational curricula as well as the ethical considerations to maintain academic integrity.

The current study seeks to capture not only students' attitudes but also the personal experiences and the challenges they encounter while using ChatGPT in their learning journey. Thus, this study offers significant and crucial insights into the overall viewpoint of how students perceive and interact with ChatGPT as a part of their educational experience. This could additionally assist educators in becoming aware of students' utilization of this technology, prompting them to explore ethical and appropriate ways for students to use this tool. Educators can now be informed that students are indeed employing this technology, which may lead them to take precautions

when evaluating students' work and constructing assignments that encourage enhanced critical thinking and creativity.

Chiefly, the study's investigation aims to provide a comprehensive view of how ChatGPT can potentially impact both cognitive and academic dimensions. While the primary focus is on examining students' attitudes and perceptions, the research does not directly assess students' performance and outcomes. Instead, the study explores the indirect impact on these aspects through the lens of attitudes, skills enhancement, and the overall learning experience.

The insights extracted can significantly contribute to discussions on the wider integration of AI tools within education for improved learning experiences. It provides an understanding of the ways in which such technologies might shape the educational landscape in the years ahead. Given the absence of similar studies in the Moroccan context, this research could contribute to bridging the existing gap by offering concrete data that deepens the understanding of the subject matter.

7. Limitations & Directions for Future Research

Despite the valuable insights provided by this study concerning students' attitudes towards ChatGPT, its perceived impact on their academic performance and the challenges associated with its use, there are limitations that must be addressed that call for further research. One of the main limitations is related to the sample size. The sample size was relatively small, restricting the generalizability of the results with a sample size of 66 participants in the questionnaire and

14 participants in the interviews. While these participants provided valuable responses. This limited sample size may not be representative of the wider student population, and the findings may not be generalizable. A small sample size in research might have drawbacks and have an impact on how generalizable the findings are.

Another constraint to consider is that this research did not investigate the viewpoints and attitudes of educators toward ChatGPT. Taking into account the possibility of perceptual differences between students and instructors, investigating both perspectives could have provided a more comprehensive understanding of ChatGPT's role in education. This broader perspective might have produced recommendations and implications for the tool's use.

Besides, a recommendation concerning the longitudinal studies is required. Since, attitudes are dynamic in nature, longitudinal studies possess the capacity to trace participants' interactions with ChatGPT over an extended period of time. Researchers might obtain insights by tracking the changes in attitudes and outcomes over time that can be hidden in shorter-term studies. This strategy provides a more accurate depiction of the long-term effects of AI integration in education, while also widening the study's scope by obtaining views on this technology from various fields to bring in diverse perspectives on the multifaceted implications of AI integration in education.

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