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**THE IMPACT OF AI - POWERED STUDY TOOLS ON THE ACADEMIC
PERFORMANCE AND THE MOTIVATION OF HIGHER EDUCATION STUDENTS**

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CERTIFICATE OF ORIGINALITY


This is to certify that we assume full responsibility for the work titled “THE IMPACT OF AI - POWERED STUDY TOOLS ON THE ACADEMIC PERFORMANCE AND THE MOTIVATION OF HIGHER EDUCATION STUDENTS” submitted as a requirement for the degree Bachelor of Science in Business Administration at the School of Business and Management, Xavier University – Ateneo de Cagayan that the work is our own, that this is original except as specified in the acknowledgments or in the references and that this has never been submitted to this or any other school for a degree or for other requirements.



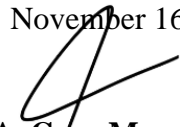
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November `16, 2024



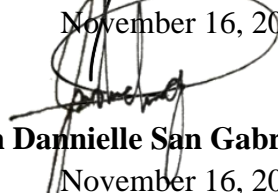
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APPROVAL SHEET

This RESEARCH PAPER titled “THE IMPACT OF AI - POWERED STUDY TOOLS ON THE ACADEMIC PERFORMANCE AND THE MOTIVATION OF HIGHER EDUCATION STUDENTS” prepared and submitted by MICABALO, ANICCO DIONNE, OFIANGA, ANGEL MAE, ORMITA, EDWY BOYD, OROLA, GEZA MAE, and ONG, JOHN DANNIELLE as a requirement for the degree of BACHELOR OF SCIENCE IN BUSINESS ADMINISTRATION has been examined and is recommended for Oral Examination.

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November 2024

ACKNOWLEDGEMENT

The researchers would like to express their gratitude and appreciation to the following people, without whose assistance and guidance this dissertation would not have been possible:

This study received support from Xavier University - Ateneo de Cagayan's School of Business and Management, and the researchers appreciate the university for providing valuable insights that enhanced the thesis content.

Dr. Jimbo A. Fuentes, our thesis advisor, deserves gratitude for enhancing this paper through his insightful reviews and consultations. The time invested in feedback and discussions has significantly refined our study. The advisor's actions embody exemplary researcher qualities.

In this research journey, family and friends played a crucial role. The researchers thank their parents for their unwavering support and Xavier University's community for sharing insights.

Lastly, the researchers acknowledge God's guidance, helping them overcome challenges. His grace allowed them to face obstacles, and they entrusted their future to Him with faith.

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CHAPTER I

THE PROBLEM

Background

Education in the 21st century has changed significantly, with new advanced methods and tools reshaping how learning takes place (Reaves, 2019). A key part of this change is the rise of artificial intelligence (AI) in education. AI refers to the capability of machines to perform tasks that mimic human thinking, such as analyzing data, understanding information, learning from experience, and making decisions. It has the potential to revolutionize the way we learn and teach, making it more personalized, engaging, and efficient (Harry & Sayudin, 2023). With recent advances in technology, AI-powered tools are becoming more accessible and common in education, helping to make learning more personalized and effective.

It is apparent that the rapid technological advancement of AI-powered tools significantly affects education and classroom practices (Thomas, Chiu et al., 2023). Nowadays, many artificial intelligence resources have been developed like the open artificial intelligence platform, ChatGPT, which is able to deliver text in reply to users' questions, claims, and information requests (Choi et al., 2023, Stokel-Walker, 2022). This tool offers students a wide range of self-learning possibilities for preparing homework, text translation, coding, or learning a new language. Although AI offers promising benefits in education, it is important to remember that it cannot replace the essential role of teachers, nor to its ability to support students in a specific learning process. Experts regard ChatGPT and perhaps other AI-powered study tools as a double-edged sword (Palal et al., 2023)

The rise of AI-powered tools has played a major role in this shift. These tools have changed the way students learn and complete their work. Nowadays, students are increasingly adapting to these advances, which are transforming both how they study and how they utilize their learning materials. This significant change improves the learning process and alters how students engage with their studies.

Research Significance

The integration of AI in education is not merely about replacing traditional learning methods but about enhancing and complimenting them (Devasena, 2024). AI-powered study tools, such as Grammarly, Quizlet, Duolingo, and other personalized learning platforms, offer a variety of benefits that cater to the needs of individual students, thereby making learning more efficient and tailored to each learner's preferences. However, while the advantages of AI-powered tools are widely recognized, there is a growing concern regarding their impact on students' motivations and overall academic performance. There still exists a gap in terms of empirical studies assessing its effectiveness in improving students' learning outcomes. As such, the purpose of this paper is to fill in this research gap, by attempting to bring a new understanding of how AI-powered study tools might influence the academic performance of higher education students (Boubker, 2024). Specifically, questions arise about how the use of these tools might affect students' critical thinking abilities, problem-solving skills, and overall learning motivation. For instance, in scenarios where students rely on AI to generate answers or solutions without actively engaging in the process, they might miss the opportunity to analyze information deeply or apply problem-solving techniques.

Thus, there is a need to determine whether these tools foster or hinder the development of independent learning skills, which are essential for academic success and personal growth.

The study by De la Vall & Araya (2023), explores the different possible consequences of integrating AI-powered study tools into the educational lifestyle of the students, particularly concerning the development of critical thinking skills. The convenience of AI-powered study tools can be beneficial in many ways, but it can also encourage “cognitive laziness” which refers to the tendency to rely on technology to perform tasks that would otherwise require active thinking and effort. For example, students using AI to automatically correct grammar in their essays might fail to understand the rules behind those corrections, thus preventing them from learning and improving their writing skills independently. It also suggests that excessive reliance on AI-powered tools might undermine the development of metacognitive skills, which is the awareness and regulation of one’s own learning processes. Metacognitive skills allow students to plan, monitor, and assess their understanding and performance, which are crucial for effective learning and academic success.

Another finding from Buçinca, Malaya, & Gajos (2021), points out that students’ who overly depend on AI are at risk of passive learning as they no longer need to think things through which makes them miss out on the opportunities to engage in critical thinking and problem-solving as AI handles much of the cognitive effort. For example, students who use AI-generated flashcards or quizzes may end up memorizing content without understanding it, thus weakening their ability to apply knowledge in more complex situations. If students increasingly rely on AI to do most of the work, there is a risk that they might not like to develop these essential skills to the same degree. This could result in a generation of learners who are proficient at using technology but less capable of thinking critically and independently.

Research Aim

This research study aims to explore the impact of AI-powered study tools on the academic performance and motivation of higher education students. By investigating how these tools influence learning outcomes and students' perceptions of AI in their educational experience, this study seeks to provide insights into the potential benefits and challenges of incorporating AI into the academic environment. Ultimately, the findings of this research are expected to contribute to a deeper understanding of how AI is shaping the future of higher education, informing educators, policymakers, and stakeholders about the impact of using AI and guiding better ways to use technology in learning. Through this exploration, we hope to encourage a balanced approach that maximizes the advantages of AI while fostering essential skills necessary for academic success and lifelong learning.

Theoretical Framework

This study is anchored on the “Self-Determination Theory (SDT)”. According to a study by Xia, Lee, et al. (2022), it explains student engagement from the need’s satisfaction perspective. SDT identifies three basic psychological needs: (1) autonomy, (2) competence, and (3) relatedness. Instructional designs that address inclusion and diversity can motivate student engagement by catering to different needs (Chui, Jong, & Mok, 2020). In the context of education, fostering intrinsic motivation is crucial for enhancing students' academic performance and positive motivations toward learning.

When it comes to AI-powered study tools, the principles of SDT are supported by offering personalized learning experiences that promote autonomy. AI is able to provide immediate, personalized, and scalable feedback on student performance and learning tasks (Naz & Robertson, 2024; Oldham, 2024; Seo et al., 2021). These tools allow students to choose their own learning paths, pace, and resources, thereby fostering a sense of control over their education. For instance, AI-Powered learning platforms can adjust content difficulty based on the learner's progress, ensuring that students are neither bored nor overwhelmed. Students can use these tools to enhance critical competencies and agentic learning in high school education. (Byers, 2024)

This theory also provides a structured framework for understanding how AI tools can facilitate relatedness by connecting students with peers, tutors, and educational communities. Higher Education institutions have increasingly turned to asynchronous online learning models, allowing students to engage with course materials and complete assignments on an alternative schedule as needed (Byers, 2024)

This study is also based on the Technology Acceptance Model (TAM), developed in 1989 by David, According to Granić and Marangunić (2019), it has been widely established that TAM

is among the most well-known models for predicting technology adoption and usage behavior. In a study by Sánchez-Prieto, Benito, et al. (2020), TAM theory understands the process of adoption of a specific technology based on two main factors: Perceived Usefulness (PU), which refers to the user's belief that technology will improve their performance, and Perceived Ease of Use (PEU), which assesses how easy it is to use the system. This study concentrates on PU and PEU, as these are the main antecedents of technology adoption (Sánchez-Prieto, Benito, et al., 2020).

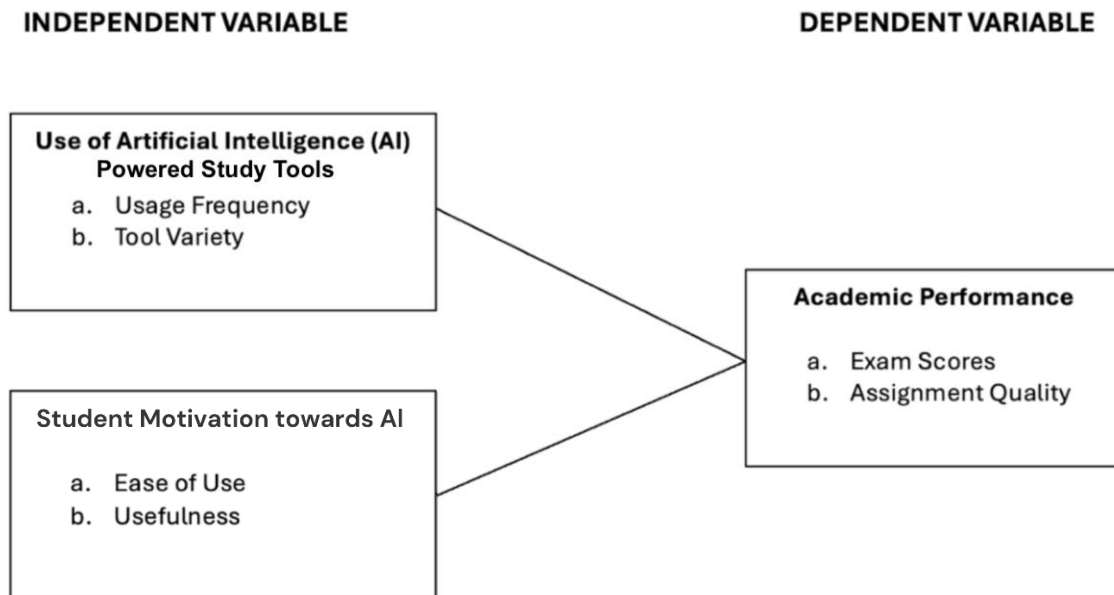
In the context of this study, TAM is chosen for this study due to its proven effectiveness in analyzing the adoption of online learning methods and AI technologies (Dahri et al., 2024). Fundamentally, “self-regulated learning” is the capacity of students to autonomously oversee and assess their learning, which is critical for successfully integrating artificial intelligence (AI) support into their academic performance (Lodge, Barba, & Broadbent, 2023). A key component of TAM is behavioral intention, which emphasizes how important it is for students to be willing and determined to use AI-Powered tools for their metacognitive self-regulated learning.

By integrating both SDT and TAM, this study establishes a framework for analyzing how AI-powered study tools impact the academic performance and motivation of higher education students.

Conceptual Framework

Figure 1 presents the visual representation of the relationship between the variables in this study. The researchers aim to examine the impact of the use of artificial intelligence (AI) powered study tools and higher education students' motivation towards AI on academic performance. The first independent variable, "Use of Artificial Intelligence (AI)", encompasses two sub-variables: (1) Usage Frequency, which refers to how often students utilize AI tools, and (2) Tool Variety, which denotes the range of AI tools employed by the students. The second independent variable, "Student Motivation towards AI", consists of two sub-variables: (1) Ease of Use, reflecting the perceived simplicity of utilizing AI tools, and (2) Usefulness, which measures the perceived effectiveness of these tools in enhancing learning. The dependent variable, "Academic Performance", is assessed through its sub-variables: (1) Exam Scores, representing students' performance on assessments, and (2) Assignment Quality, which evaluates the standard of completed course requirements. Through this study, the researchers aim to understand how the interplay between the usage and motivation towards AI-powered study tools influences students' academic performance.

Figure 1 | Schematic Representation of the study



Statement of the Problem

This study aims to examine the impact of AI-Powered tools on the academic performance of higher education students. This research seeks to address the following questions:

1. How do the students use of AI-powered study tools in terms of:
 - 1.1 Usage Frequency (daily, weekly, occasional)
 - 1.2 Tool Variety (AI-based flashcards, essay assistance, personalized quizzes)
2. How do the students perceive their motivations towards AI in terms of:
 - 2.1 Ease of Use
 - 2.2 Usefulness (effectiveness in enhancing learning outcomes, improving study habits)
3. How do the students perceive their academic performance in terms of:
 - 3.1 Exam Scores (improvements in test results, ability to retain information)
 - 3.2 Assignment Quality
4. Is there a significant impact of AI-powered study tools on academic performance (grades, critical thinking skills, retention of knowledge)?
5. Is there a significant impact of AI-powered study tools on student motivation (perceived usefulness, ease of use) and academic performance?

Statement of the Hypothesis:

H01: There is a significant impact between the use of AI on the academic performance and motivation of higher education students.

H02: The use of AI-powered tools has no significant effect on the academic performance and motivation of higher education students.

Significance of the Study

This study on the impact of AI-powered study tools on the academic performance and motivation of higher education students is significant as AI-driven technologies continue to develop, their integration into educational practices necessitates comprehensive evaluation to determine their effectiveness and this research addresses a specific gap in understanding how AI tools influence not only academic performance but also students' motivation towards learning.

Students. This study allows students to understand valuable insights into how AI-powered study tools can enhance their academic performance and positively/negatively influence their motivations toward learning. Students can use the results to make informed decisions about using AI-powered study tools moderately, leading to a well-balanced learning experience.

Parents. This study gives insights into how AI-powered study tools can enhance their children's learning. This knowledge allows them to provide informed support and encouragement, guiding students to effectively utilize these resources.

Administrators. This study provides a better understanding of how to utilize AI-powered study tools effectively into their teaching strategies. Higher education institutions can use the results to make informed decisions about investing in AI-driven platforms and supporting faculty training on their use, leading to better educational outcomes.

Policy Makers. This study can assist educational policymakers in making data-driven decisions regarding technology implementation in curricula. This can lead to improved resource allocation and support for both students and educators.

Future Researchers. This study may be used as a basis for further exploration into the efficacy of AI in education, potentially leading to innovations in study tools and methods. This also provides a framework for examining other emerging tools and their impacts on learning.

Scope and Limitations

This study aims to investigate the impact of AI-powered study tools on the academic performance and motivations of higher education students, specifically within the School of Business and Management (SBM). The research is limited to fourth-year Bachelor of Science in Business Administration (BSBA) students, majoring in Financial Management and Marketing Management, during the Academic Year 2024 - 2025. By focusing on these student groups, the research aims to provide a more targeted analysis of how AI-powered tools influence learning outcomes and students' motivations toward AI integration in their academic experiences.

The study will collect data by distributing survey questionnaires to selected students from the School of Business and Management. These surveys will be completed in person and will question students about their use of AI-powered study tools, as well as their academic performance and motivations. This method allows us to gather information directly from the students about their experiences and opinions regarding AI tools in their studies.

While the study aims to provide valuable insights, several limitations must be acknowledged. First, the research focuses only on fourth-year BSBA students majoring in Financial Management and Marketing Management, which limits how much the findings can be applied to other programs, year levels, or institutions. The insights gained from this study may not reflect the experiences of students in different fields of study or academic settings. Second, the study relies on survey questionnaires, which may introduce biases such as students overestimating or underestimating their use of AI-powered tools or their academic performance. These perceptions may not always align with actual outcomes, potentially affecting the objectivity of the findings. Additionally, the study does not account for external factors such as access to resources, personal study habits, or variations in teaching methods, all of which could influence students'

academic performance and motivations toward AI. Lastly, as AI-powered study tools are continuously evolving, their capabilities and applications may change over time. This could limit the long-term relevance of the study's results, as newer AI tools may offer different features or improvements that alter students' perceptions and usage patterns. Future studies may need to revisit the impact of these tools as they develop to ensure more up-to-date insights.

Despite these limitations, this research aims to contribute valuable knowledge to the field of educational technology by shedding light on how AI-powered study tools are currently perceived and used by higher education students in the SBM, particularly in terms of their academic performance and motivations. By doing so, it can offer guidance for educators and institutions in implementing AI-based tools effectively to enhance learning outcomes.

Definition of Terms

Academic Performance. The outcome of educational activities is measured through various academic indicators, such as exam scores, assignment quality, GPA, and overall student success in meeting the academic requirements of higher education institutions.

Artificial Intelligence (AI) Powered Tools. Technological applications that use artificial intelligence to assist students in learning and studying more efficiently. These tools can provide personalized learning experiences, generate study materials, and offer feedback, helping students understand complex concepts and improve their academic performance.

Assignment Quality. Refers to how well students complete their academic assignments, including accuracy, clarity, and meeting the given requirements. In this study, assignment quality looks at how using AI-powered study tools affects the overall standard of students' work.

Ease of Use. Describes how simple and easy AI-powered study tools are for students to use. It measures how quickly and comfortably students can learn and use the tools in their studies.

Exam Scores. The numerical or graded results that students achieve in formal assessments, which serve as a quantitative measure of their knowledge and academic performance

Higher Education Students. Individuals enrolled in post-secondary institutions, such as colleges or universities, pursuing undergraduate or graduate degrees to advance their knowledge and professional skills.

Student Motivation. The perspective or mindset of a student towards AI-powered study tools, which can affect their willingness to use these technologies. This includes perceptions of ease of use, usefulness, and relevance to their learning process.

Tool Variety. Refers to the different types of AI-powered study tools that students use, such as tools for notetaking, problem-solving, or research. In this study, it measures how many different tools students have access to and use.

Usage Frequency. Describes how often students use AI-powered study tools, whether daily, weekly, or occasionally. This term measures how regularly students rely on these tools for their studies.

Usefulness. Refers to how helpful students find AI-powered study tools in completing academic tasks, such as improving their understanding or performance. This study looks at how effective students think these tools are for their learning.

CHAPTER 2

REVIEW OF RELATED LITERATURE

This chapter provides an in-depth review of the existing literature on the impact of AI-powered study tools on higher education students' academic performance and motivations. It aims to build a theoretical framework, highlight research gaps, and identify the significance of the current study. By analyzing previous research, this chapter deepens the understanding of the topic and explores its broader implications.

In understanding the impact of AI-powered study tools on student performance and motivations, it is essential to base the current research on relevant psychological and educational theories. One such framework is the Self-Determination Theory (SDT), which emphasizes the importance of fulfilling fundamental psychological needs in promoting motivation and well-being. According to Byers (2024), SDT highlights three core needs: autonomy, competence, and relatedness as critical for student engagement and overall academic success.

Supporting this concept, a study by Xia et al. (2022), notes that "self-determination theory (SDT) can explain student engagement from the needs satisfaction perspective." Such research demonstrates that when students perceive their psychological needs are met, particularly in the context of AI learning environments, they are more likely to develop a positive motivation towards their studies. This aligns with the principle that AI-powered study tools should be designed to enhance student engagement and performance. The findings from Xia et al. (2022) further illustrate that when teachers provide SDT-based needs support, students not only feel more satisfied but also become intrinsically motivated to engage in learning. This suggests that when AI-powered tools support students' needs for autonomy, competence, and relatedness, their engagement and intrinsic

motivation are likely to increase, thereby fostering better academic outcomes and more positive motivations toward AI-enhanced learning.

On a different note, the findings of Hui-Ching, et al. (2019) study, challenges the potential positive advantages of AI-powered study tools since it indicates autonomy is one of the factors in developing student motivation and positive learning outcomes. Previous studies, one of which from De la Vall & Araya (2023), stated *"it can also encourage cognitive laziness which refers to the tendency to rely on technology to perform tasks that would otherwise require active thinking and effort."* indicating the negative impact AI-powered study tools have on students. This is extremely significant to be considered in the current study, as the impact of AI-powered study tools, whether positive or negative.

Moreover, the study by De Vreede, Raghavan, and De Vreede (2021), where the effect of the three needs as described by SDT (competency, autonomy, relatedness) were explored in terms of their association with user satisfaction, user engagement, decision-making accuracy, and efficiency when users are being assisted by a chatbot to make decisions. The researchers' carefully designed experiment provides compelling evidence that virtual agents that satisfy these three needs are significantly related to user engagement and user satisfaction. Moreover, it was found that perceptions of autonomy are negatively related to decision accuracy and efficiency. Finally, it was found that perceptions of competence are positively related to accuracy but are negatively related to efficiency.

The Technology Acceptance Model or TAM encompasses two factors that determine whether a computer system will be accepted by its potential users: (1) perceived usefulness, and (2) perceived ease of use. The key feature of this model is its emphasis on the perceptions of the potential user (Thompson, 2019). That is, while the creator of a given technology product may believe the product is useful and user-friendly, it will not be accepted by its potential users unless the users share those beliefs. This is especially essential in this study as a framework as it focuses on the user's perspective on the integration of AI-powered study tools in educational settings.

The study by Saif et al. (2024), highlights a significant relationship between students' stress and the adoption of AI-powered solutions, particularly Chat-GPT, in managing academic tasks. This relationship is crucial for understanding how AI tools can serve as interventions to enhance student engagement and performance, especially in high-stress educational environments. The findings suggest that the perceived ease of use and usefulness of Chat-GPT are significant factors shaping students' motivations toward its adoption, thereby aligning with the Technology Acceptance Model (TAM).

In a study by Li (2023), the findings may generate some implications for the application of AI-based systems among college students. This study could be a starting point for future research regarding technology acceptance of AI-based systems in the educational setting, especially for higher education. These were found to positively affect students' learning interest. As such, for future research regarding the application of AI-based systems to motivate students' learning behavior, the enhancement of students' learning interest could be one of the focusing points. (Li, 2023)

Use of AI-Powered Study Tools. A study by Marx (2023), indicated that these tools are utilized by pupils and students to reflect on scientific practices, to optimize their texting, to have texts proofread or even to act as tutors for exam preparation. However, in another study by Albrecht (2023), he indicated that these opportunities are also countered by risks—from security concerns to misinformation. Open AI, for example, admits that ChatGPT can sometimes generate plausible-sounding, but erroneous and incorrect answers (OpenAI, 2022). Furthermore, with regard to use, there are risks in the collection of usage data, the more difficult assessment of the results, the unclear authorship, as well as the unreflective and abusive use of chatbots (Mohr et al., 2023). Additionally, there is the potential for unreflective and abusive use of chatbots or AI-powered learning tools, which can lead to over-reliance on technology rather than fostering independent critical thinking skills. Ultimately, while these tools offer valuable educational support, it is crucial to address these risks to ensure a safe and effective learning environment.

Usage Frequency. In other words, frequency of use, refers to how often a user engages with a particular tool. In the context of this study, it pertains to the regularity with which students utilize AI-powered learning tools to aid their academic activities. A study by Tiwari et al. (2024), aims to explore the various factors that influence students' adoption and usage of ChatGPT, a sophisticated AI language model. As technology continues to advance, educational tools like ChatGPT are becoming increasingly integrated into academic settings. This investigation seeks to understand why students are drawn to this technology and how they are utilizing it in their educational pursuits. Supporting this, is a study by Chan (2023), where it explored how students perceive the integration of generative AI in their academic environment through gathering insights directly from them to understand their views on how AI impacts their learning experience.

Findings showed that the usage frequency of the sample was high, ranging from 4-5 times per week, and would potentially continue to grow as AI technologies rapidly evolve and become integral to educational systems worldwide. As institutions seek to integrate AI responsibly and effectively, the demand for comprehensive research on these topics remains strong, driving a continuous stream of academic inquiry and publication (*Humanit Soc Sci Commun* 11, 912 (2024)).

Tool Variety. Studies below explore the variety of tools integrated into artificial intelligence (AI) technologies in educational settings to enhance the learning experience for students. According to the study by Saija (2024), it was analyzed how AI tools can be used to create personalized and adaptive learning environments that cater to the unique needs and learning styles of each student. The study delves more into the potential uses and implications of integrating AI-powered platforms such as ChatGPT, an advanced AI language model, into the academic and research landscapes. It was greatly noted that the chatbot was convenient and efficient to use, giving answers to any possible question or “prompt” the user may input. This was further investigated by the study of Rawas, 2024, where it provided a comprehensive overview of how ChatGPT might transform higher education and research, offering insights into both its benefits and challenges. It was also pointed out that more tools would only be introduced by these AI-powered platforms, which would only broaden the question of its impact. The transformative role of artificial intelligence, specifically ChatGPT, in modernizing the educational landscape is one out of many AI - powered tools out there. Most of them, however, were designed to “*facilitate and enhance the learning experience for students and educators alike*” (Aithal & Aithal, 2023).

Student Motivation Towards AI. Defines the perspective or mindset of a student towards AI-powered study tools, which can affect their willingness to use these technologies. These motivations are shaped by various factors, including perceptions of AI's usefulness and ease of use. Research by Huang et al. (2021) indicates that students who recognize the benefits of AI tools—such as personalized learning experiences and efficient study techniques—are more likely to develop positive motivations toward these technologies. This sentiment is echoed in a study by Chen et al. (2022), which found that when students perceived AI as a valuable resource for improving grades and learning efficiency, their likelihood of adoption increased significantly. Even so, A study by Al-Rahmi et al. (2020) highlights that students often hesitate to engage with complex AI systems, which can lead to negative motivations and reluctance to use these technologies. Overall, student motivations toward AI-powered study tools are complex and significantly influenced by their perceptions of usefulness and ease of use.

Ease of Use. Defines how simple and easy AI-powered study tools for students to use. It measures how quickly and comfortably students can learn and use the tools in their studies. In the context of AI-powered study tools, visual appeal is vital in improving user experience and engagement. A well-designed interface with effective visuals can help reduce cognitive load by organizing information clearly. This allows students to focus on learning rather than struggling to navigate a cluttered or poorly designed interface (Sweller, 2021). It is also important that AI-powered study tools are consistent with their visual elements and branding because with that it fosters familiarity and ease of use. Branding elements, such as logos and color palettes, help create a cohesive experience, making the tool more recognizable and appealing (Feng et al., 2022). Overall having a positive experience from AI-powered study tools interface and visual appeals

correlates with greater user satisfaction. When students enjoy using a tool visually, they are more likely to continue using it and recommend it to peers (García et al., 2021).

Usefulness. Defines how helpful students find AI-powered study tools in completing academic tasks, such as improving their understanding or performance. Research indicates that students who view AI as beneficial to their educational pursuits are more likely to adopt and use these technologies (Alshahrani et al., 2022). For instance, AI can provide personalized learning experiences, adaptive feedback, and resources that cater to individual learning styles, which significantly enhances its perceived value (Deng et al., 2021). Study shows students who utilize AI-powered study tools experienced better learning outcomes due to personalized support and efficient study methods (Zhou et al., 2021) which creates a more positive motivation towards AI-powered study tools which leads to repeat tool usage.

Academic Performance. In a study by Arshad et al. (2020), it was pointed out that AI-powered study tools play a transformative role in improving study habits, personalizing learning experiences, enhancing access to resources, and providing timely feedback. These tools can potentially address some of the challenges identified in the study, ultimately leading to improved academic outcomes for students. For instance, a study by Liu et al. (2021) found that adaptive learning systems, which utilize AI to tailor content to individual student needs, resulted in higher levels of student satisfaction and improved retention rates. This personalization not only fosters a deeper understanding of the material but also encourages students to take ownership of their learning journey (Liu et al., 2021). Research by Chen and Huang (2022) emphasizes the role of AI in facilitating collaborative learning environments. Their findings suggest that AI tools can

enhance peer interactions and provide personalized feedback, thereby promoting a sense of community among learners. This collaborative approach not only aids in knowledge retention but also cultivates essential skills such as teamwork and communication, which are crucial for academic success (Chen et al.,2022).

Exam Scores. Defines quantitative assessments that reflect a student's performance on a particular test or examination. The study by Smith and Doe (2022) is that the integration of AI in educational practices can significantly improve student performance, as evidenced by higher exam scores among users of these AI-powered tools. The findings suggest that leveraging technology in education can provide substantial benefits, particularly in terms of personalized learning and timely feedback (Smith et al., 2022). Additional research underscores the positive impact of technology on academic performance. For instance, a study by Johnson and Lee (2023) found that students who utilized AI-based tutoring systems not only scored higher on mathematics assessments but also reported greater confidence in their problem-solving abilities. (Johnson et al., 2023). Similarly, a study conducted by Thompson et al. (2024) demonstrated that the use of interactive educational software in science classes significantly enhanced students' understanding of complex concepts, resulting in higher exam scores. The researchers noted that these tools facilitate active learning, which is crucial for student success in standardized testing scenarios (Thompson et al., 2024).

Assignment Quality. Al-Freigh et al. (2023), defines the relationship between well-designed assignments in online courses and students' sense of belonging. It highlights how assignments that are clear, purposeful, and aligned with course goals can positively impact engagement and the overall learning experience. Quality assignments provide meaningful learning experiences and foster a deeper connection between students and the course content, which enhances their sense of being part of a learning community (Al-Freih et al., 2023). Further the impact of assignment clarity on graduate students' learning experiences in online environments. Their findings indicated that well-structured assignments enhance student motivation and foster a stronger sense of community among peers, ultimately contributing to improved academic performance (Anderson et al., 2022). Additionally, this study highlighted the importance of assignment design in cultivating student engagement. The research found that assignments that are meaningful and relevant to students' academic and professional goals can significantly enhance their sense of belonging in online courses, which is crucial for sustaining motivation and achieving learning outcomes (Zhao et al., 2021).

The existing body of research on AI-powered study tools provides valuable insights into their potential benefits and challenges, particularly concerning student engagement, motivation, and academic performance. However, despite the progress made, several gaps in the literature remain, creating opportunities for further investigation.

Many studies, including those by Xia et al. (2022) and Byers (2024), have primarily examined the positive impact of AI-powered tools on students' psychological needs—autonomy, competence, and relatedness—through the framework of Self-Determination Theory (SDT). These studies demonstrate that AI tools can enhance intrinsic motivation and engagement among students. However, one significant limitation is that the consistency of these effects across various

educational contexts and student populations has not been thoroughly explored. The current literature largely overlooks how students from diverse socioeconomic backgrounds or those with unequal access to technology experience these tools, which may influence their perceptions and usage patterns.

In addition to this gap, the concern about over-reliance on AI tools is gaining attention, as noted by De la Vall & Araya (2023) and De Vreede et al. (2021). These studies raise important questions about the potential for AI tools to foster cognitive laziness. However, there is a dearth of research on the long-term consequences of this reliance, particularly in terms of students' critical thinking skills and their capacity for independent learning. Addressing this gap is crucial, as it touches on the broader educational implications of integrating AI into academic settings. Furthermore, the Technology Acceptance Model (TAM) has frequently been employed to explore students' perceptions of AI tools, as seen in the work of Saif et al. (2024) and Li (2023).

While these studies provide valuable insights into the factors driving the use of AI-powered tools—such as perceived usefulness and ease of use—they often fail to distinguish between short-term and long-term adoption behaviors. Another critical aspect that has not been thoroughly examined relates to the ethical considerations surrounding AI-powered study tools. Although scholars like Albrecht (2023) and Marx (2023) have highlighted security concerns and the risks of misinformation, more comprehensive research is needed on the ethical implications of AI use, particularly regarding data privacy and the potential biases embedded in AI algorithms. These biases could disproportionately impact certain student demographics, a topic that remains significantly under-researched.

While the existing literature has provided a foundational understanding of the advantages and challenges of AI-powered study tools, key areas remain underexplored due to it being a broad

concept. Future research should focus on the long-term effects on cognitive development, the ethical dimensions of AI integration, and the diverse impacts on different student demographics, ensuring a more holistic understanding of the role these tools play in education.

CHAPTER 3

METHODOLOGY

This chapter presents the method to be used by the researcher in conducting the study. The following are considered: the research design, research environment, respondents and sampling procedures, research instrument, and ethical considerations which will be used for accurate data analysis and interpretation.

Research Design

The research design used in this study is a **Descriptive Research Design**. Descriptive research is a type of research design that describes a population, situation, or phenomenon that is being studied (Blog, 2020). It focuses on answering the how, what, when, and where questions on a research problem, it primarily focuses on describing the nature of a demographic segment, without focusing on why a particular phenomenon occurs (McCombes, 2020). Descriptive research uses surveys to gather data about varying subjects. This data aims to know the extent to which different conditions can be obtained among these subjects.

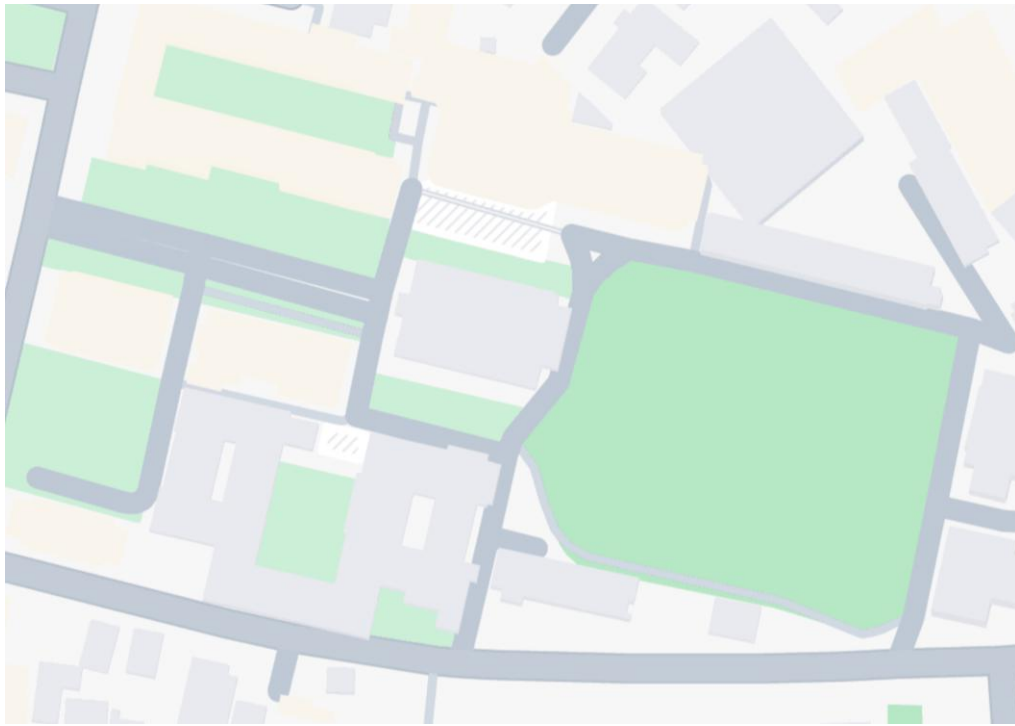
The researchers decided to choose this design mainly because it is predominant to have a proper understanding of what the research problem is about before investigating why it exists in the first place. The purpose of this design is to describe, as well as explain, or validate some sort of hypothesis or objective when it comes to a specific group of people. This research design will be used to accumulate the information needed to examine the impact of AI-powered study tools on students' academic performance and motivations in higher education. This includes understanding student perceptions, motivations, and academic outcomes associated with using AI-based study tools.

This study also uses **Quantitative Research Design** since it allows researchers to measure and analyze data numerically, which is ideal for assessing impact on academic performance. It facilitates the use of statistical techniques to test hypotheses about relationships between AI tool usage and academic outcomes, such as grades or GPA. A quantitative approach is particularly useful in identifying correlations and potential causal relationships, such as whether frequent use of AI-powered tools correlates with improved academic performance. This design supports hypothesis testing, allowing researchers to determine the significance and strength of relationships between variables.

The research instrument used in this study is a **Survey Questionnaire**. Survey Questionnaire can be easily distributed to many participants across various higher education institutions, ensuring a more representative sample. Quantitative surveys can include scaled questions like likert scale, which is used in this study, to capture students' motivations toward AI-powered tools in a structured way. Analyzing motivations quantitatively helps to identify trends and patterns in students' perceptions, usefulness, and overall acceptance of these tools. Survey questionnaires are time-efficient for both researchers and participants. They allow data collection on multiple variables simultaneously, and the data can be quickly and systematically analyzed using statistical software.

Research Environment

This study was conducted at a higher education institution known for its integration of digital learning platforms and commitment to advancing educational technology, providing a suitable environment for investigating the impact of AI-powered study tools on student performance and motivations. The primary data collection occurred within classrooms, study spaces, and libraries where students typically use their study tools. The institution provides both on-campus computer labs and digital study spaces with high-speed internet access, allowing students to access various AI-powered tools. This is a map showing the location of the data collection:



Research Respondents and Sampling Procedures

This study will employ a “Purposive Sampling” method to select participants from among fourth-year undergraduates (Academic Year 2024-2025) enrolled in the Bachelor of Science in Business Administration (BSBA) programs, majoring in Financial Management and Marketing Management, at a university in Cagayan de Oro City. The total population of fourth-year BSBA students in this study is approximately 150, from which a sample size of 109 respondents will be drawn. This sample size was determined using the Raosoft calculator with a 5% margin of error, a 95% confidence level, and a 50% response rate.

The purposive sampling method is chosen to concentrate specifically on the experiences of fourth-year BSBA students, who are at a pivotal stage in their academic journey. This approach enables a more detailed analysis of how AI-powered study tools impact academic performance and motivations as students near graduation, providing valuable insights into the effectiveness and potential challenges of these tools within specialized academic disciplines. By carefully selecting respondents through purposive sampling, this study aims to contribute to a deeper understanding of the benefits and limitations of AI-powered study tools in higher education, specifically within the fourth year of the BSBA program.

Research Instrument

This research instrument is organized into three sections. The first section gathers demographic information from the respondents, including their name, age, and sex. The second section comprises forty (40) statements aimed at evaluating the two independent variables: "Usage of AI" and "Student Motivation towards AI," specifically related to the use of AI-powered study tools, capturing respondents' perceptions and experiences. The final section focuses on the dependent variable, "academic performance", aiming to gather how students perceive their academic achievements in relation to their usage of AI tools. In total, the questionnaire comprises sixty (60) Likert-scale indicators, where respondents rate their level of agreement or disagreement with each statement.

Cronbach's Alpha Result

The researchers conducted pilot testing with a sample of 30 respondents in Xavier University - Ateneo de Cagayan enrolled in the 1st semester A.Y. 2024 - 2025. Cronbach's Alpha was applied through the use of a pilot test. An Alpha Value of 0.98 was obtained and it is considered to be an excellent internal consistency.

Table 1. Cronbach's Alpha Reliability Test

DESCRIPTION	VALUES	INTERNAL CONSISTENCY
No. of Test Items	60	
Sum of the Item Variance	32.49	EXCELLENT
Variance of the Total Score	897.75	

$$\alpha = 0.98$$

Data Gathering and Procedures

This study will use a digital survey on Google Forms, conducted on-site at Xavier University - Ateneo de Cagayan. The survey link will be shared with class beadies or section leaders, and each respondent is expected to complete it within 5 minutes. Respondents will first review a cover page detailing the study, the researchers, and its purpose, and provide consent by selecting “I agree” to participate. Once data collection is complete, researchers will organize responses, calculate scores, and apply statistical analyses to interpret the findings.

Using a quantitative approach, this study systematically gathers and examines numerical data to uncover patterns, test hypotheses, and explore relationships among variables. Structured tools like surveys ensure consistency, enhancing the reliability and validity of the results (Fowler, 2020). A key strength of this method is its ability to turn complex information into manageable data, allowing for precise statistical analysis. This enables researchers to draw insights about cause-and-effect relationships, assess correlations, and generalize findings to larger populations.

Descriptive and inferential statistics will help summarize the results and provide insights applicable to broader contexts. By grounding findings within existing literature and theories, researchers can clarify their significance and implications for future studies, supporting evidence-based decision-making (Bryman, 2021).

Scoring Guidelines

Each item in the survey uses a Likert scale to measure the responses, ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). This scoring guide helps interpret the overall responses and assess trends in students' motivations, usage, and perceived impact of AI-powered study tools on their academic performance.

The interpretation of the Usage of AI-powered Study Tool will be as follows:

Range	Quantitative Description	Interpretation
1.00 - 1.75	Strongly Disagree	Very Low
1.76 - 2.50	Disagree	Low
2.51 - 3.25	Agree	High
3.26 - 4.00	Strongly Agree	Very High

The interpretation of the Students Motivation towards AI will be as follows:

Range	Quantitative Description	Interpretation
1.00 - 1.75	Strongly Disagree	Very Low
1.76 - 2.50	Disagree	Low
2.51 - 3.25	Agree	High
3.26 - 4.00	Strongly Agree	Very High

The interpretation of the Academic Performance will be as follows:

Range	Quantitative Description	Interpretation
1.00 - 1.75	Strongly Disagree	Very Low
1.76 - 2.50	Disagree	Low
2.51 - 3.25	Agree	High
3.26 - 4.00	Strongly Agree	Very High

Statistical Treatment of Data

After the collection of data, the researchers analyzed and interpreted the gathered responses to obtain frequency distributions, percentage distributions, mean, and standard deviation values. These measures provided insight into general trends, central tendencies, and variances within the data.

For assessing reliability, Cronbach's Alpha was employed to confirm the consistency and reliability of the survey instruments. To test hypotheses and examine relationships between variables, regression analysis was conducted. This statistical method allowed the researchers to evaluate the predictive influence of students' usage and perception of AI-powered study tools on their academic performance outcomes. Through these statistical methods, the researchers were able to objectively analyze and interpret the data, drawing conclusions that contribute to the study's aims and guiding further recommendations.

Through these detailed statistical methods, the researchers could analyze and understand the data clearly. The results from their analysis were important for the study's goals and provided basic future suggestions on how to improve the use of AI-powered study tools in education.

Validity and Reliability

This study has undergone expert validation to ensure the relevance, clarity, and accuracy of its variables: Usage Frequency, Tool Variety, Ease of Use, Usefulness, Exam Scores, and Assignment Quality. Through feedback from field experts, each variable's specific set of questions was evaluated and refined to enhance the validity of the research instruments. This rigorous validation process ensures that the study's measurements align with academic standards and accurately reflect the impact of AI-powered tools on student performance and motivation.

The signature below indicates the professor's endorsement and validation of the research instrument, affirming its quality and relevance for the study.

Expert Validation

Name: EDGARDO A. PALACAN

Signature: 

Date: 11 | 8 | 2024

Ethical Consideration

The study's ethical considerations are covered in this section. These guidelines ensure that research participants' participation is voluntarily made, informed, and secure.

Research Details. This study investigates the impact of AI-powered study tools on the academic performance and motivation of higher education students, examining key factors like transparency, security, accessibility, and ease of use. By analyzing these factors, the research seeks to uncover how AI tools shape students' learning experiences and academic outcomes. Additionally, the findings are intended to support institutions, educational technology developers, and financial organizations in enhancing digital services to align with student needs. These insights may guide improvements in AI-driven resources, with a focus on user-centric features that foster academic success and address students' expectations for secure and transparent study tools.

Details of the Respondents. The primary respondents of this study are undergraduate students, from diverse academic standings and varying levels of familiarity with AI study tools, offering a representative sample of higher education students' perspectives. By focusing on this demographic, the study aims to generate insights relevant to undergraduate students' adoption and perceptions of AI tools in academic settings.

Risk and Risk Management. The Participants in this study were assured that their involvement would only require them to complete a survey, taking about 5 to 10 minutes of their time. They were informed that answering the questionnaire would not involve any additional pressure, risk, or discomfort. Researchers provided their contact information for any questions or clarifications about the questionnaire or the study. Additionally, participants were free to disregard the survey if they chose not to participate, as there was no pressure to respond.

Confidentiality and Anonymity. All data collected for this study will be stored in a Google Drive folder and used solely for research purposes, in accordance with Republic Act 10173, the Data Privacy Act of 2012.

Informed Consent. Participants will be fully informed about the study's purpose and their right to participate voluntarily. By selecting "I agree," respondents confirm their consent, acknowledging their understanding and freedom to withdraw from the study at any time without consequences.

Voluntary Participation: Allow participants to withdraw at any stage without any consequences.

REFERENCES:

- Aithal, Sreeramana & Aithal, Shubhrajyotsna. (2023). *Application of ChatGPT in Higher Education and Research – A Futuristic Analysis. International Journal of Applied Engineering and Management Letters. 168-194. 10.47992/IJAEML.2581.7000.0193.*
- Alamri, M. M., Al-Rahmi, W. M., Yahaya, N., Al-Rahmi, A. M., Abualrejal, H., Zeki, A. M., & Al-Maatouk, Q. (2019). *Towards adaptive e-learning among university students: By applying technology acceptance model (TAM). e-learning, 7(10).*
- Al-Adwan, A.S., Li, N., Al-Adwan, A. *et al.* (2023). “*Extending the Technology Acceptance Model (TAM) to Predict University Students’ Intentions to Use Metaverse-Based Learning Platforms*”. *Educ Inf Technol* 28, 15381–15413.
- <https://doi.org/10.1007/s10639-023-11816-3>
- Albrecht S (2023) *ChatGPT and other computer models for language processing—Foundations, potential applications, and possible impacts. TAB Background Paper 26.*
- <https://doi.org/10.5445/IR/1000158070>
- Al-Freih, M., & Schaffer, R. (2023). *The role of quality assignment design in online courses: Connections with graduate students’ sense of belonging. Journal of Online Learning Research and Practice, 5(1), 1-16.*

- Al-Rahmi, W. M., Othman, M. S., & Alzahrani, A. M. (2020). *Students' acceptance of e-learning systems: A literature review. International Journal of Technology Enhanced Learning, 12(3), 239-258.*
- Alshahrani, S. M., Aldhafeeri, F. M., & Alzahrani, S. M. (2022). *Student Perceptions of Artificial Intelligence in Higher Education: The Role of Usefulness and Ease of Use. International Journal of Educational Technology in Higher Education, 19(1), 34.*
- Alzahrani, L. (2023). *Analyzing students' attitudes and behavior toward artificial intelligence technologies in higher education. International Journal of Recent Technology and Engineering (IJRTE), 11(6), 65-73.*
- Al-Zahrani, A.M., Alasmari, T.M.(2024) *Exploring the impact of artificial intelligence on higher education: The dynamics of ethical, social, and educational implications. Humanit Soc Sci Commun 11, 912 (2024). <https://doi.org/10.1057/s41599-024-03432-4>*
- Anderson, M. S., & Lee, H. (2022). *The impact of assignment clarity on graduate students' learning experiences in online courses. Journal of Online Learning, 16(1), 55-72.*
- Annamalai, N., Ab Rashid, R., Hashmi, U. M., Mohamed, M., Alqaryouti, M. H., & Sadeq, A. E. (2023). *Using chatbots for English language learning in higher education. Computers and Education: Artificial Intelligence, 5, 100153.*

- Arshad, M., Iqbal, F., & Tariq, U. (2020). *Factors Influencing Academic Performance of University Students: A Case Study of University of Sargodha, Pakistan. Journal of Education and Practice, 11(4), 73-82. DOI:10.7176/JEP/11-4-09.*
- Boubker, O. (2024). *From chatting to self-educating: Can AI tools boost student learning outcomes?. Expert Systems with Applications, 238, 121820.*
- Buçinca, Z., Malaya, M. B., & Gajos, K. Z. (2021). To trust or to think: cognitive forcing functions can reduce overreliance on AI in AI-assisted decision-making. *Proceedings of the ACM on Human-computer Interaction, 5(CSCW1), 1-21.*
- Bryman, A. (2021). *Social research methods* (6th ed.). Oxford University Press.
- Byers, C. M. (2024). *AI-Powered Educational Tools and Their Effect on Student Motivation in Online Learning Environments: A Preliminary Study.*
<https://scholarworks.umt.edu/cgi/viewcontent.cgi?article=13506&context=etd>
- Chan, C.K.Y., Hu, W.(2023) *Students' voices on generative AI: perceptions, benefits, and challenges in higher education. Int J Educ Technol High Educ 20, 43.*
<https://doi.org/10.1186/s41239-023-00411-8>
- Chen, C. M., Cheng, I. L., & Huang, Y. M. (2022). *Exploring students' attitudes towards the use of AI in education. Computers in Human Behavior, 128, 107074.*

- Chen, Z., & Huang, R. (2022). *Enhancing collaborative learning through AI: A framework for improving academic performance. Computers & Education, 175, 104304.*
- Choi, Jung Jae Lee, Mu-Hsing Ho, Jojo Yan Yan Kwok, Kris Yuet Wan Lok. (2023). *Chatting or cheating? The impacts of ChatGPT and other artificial intelligence language models on nurse education, Nurse Education Today, Volume 125, 105796, ISSN 0260-6917, <https://doi.org/10.1016/j.nedt.2023.105796>.*
- Chui, Jong, & Mok. (2020). *Sustainable curriculum planning for artificial intelligence education: A Self-Determination Theory perspective. <https://www.sciencedirect.com/science/article/abs/pii/S0360131522001531>*
- Dahri, Yahaya, Al-Rahmi, Almutairy, Shutaleva, & Soomro. (2024). *Extended TAM based acceptance of AI-Powered ChatGPT for supporting metacognitive self-regulated learning in education: A mixed-methods study. [https://www.cell.com/heliyon/fulltext/S2405-8440\(24\)05348-9#](https://www.cell.com/heliyon/fulltext/S2405-8440(24)05348-9#)*
- De la Vall, R. R. F., & Araya, F. G. (2023). *Exploring the benefits and challenges of AI language learning tools. International Journal of Social Sciences and Humanities Invention, 10(01), 7569-7576.*
- Deng, Z., Wang, Y., & Jiang, Q. (2021). *Exploring the Factors Influencing College Students' Attitudes Towards AI in Learning. Educational Technology Research and Development, 69(3), 919-940*

- Devasena, R. (2024). *Artificial Intelligence in Education: An Alternative to Traditional Learning*. *Journal of English Language Teaching*, 66(1), 13-21.
- De Vreede, T., Raghavan, M., & De Vreede, G. J. (2021). *Design foundations for AI assisted decision making: A self determination theory approach*.
- Feng, Y., Wu, M., & Zhao, Y. (2022). *Personalization in AI-Powered Learning: A Systematic Review of Current Trends and Future Directions*. *Computers in Human Behavior*, 127, 106964
- García, J. M., Salcedo, J., & Sánchez, J. (2021). *User Experience in Online Learning: A Study of Student Satisfaction*. *Educational Technology Research and Development*, 69(3), 723-743.
- Granić, Andrina & Marangunić, Nikola. (2019). *Technology acceptance model in educational context: A systematic literature review*. <https://doi.org/10.1111/bjet.12864>
- Harry, A., & Sayudin, S. (2023). *Role of AI in Education*. *Interdisciplinary Journal and Hummanity (INJURITY)*, 2(3), 260-268.
- Huang, T. C., Liu, T. H., & Wu, H. H. (2021). *The impact of AI technology on students' learning behavior*. *Educational Technology & Society*, 24(2), 25-37.

Hui-Ching, K. H., Wang, C. V., & Levesque-Bristol, C. (2019). *Reexamining the impact of self-determination theory on learning outcomes in the online learning environment.*

Education and Information Technologies, 24(4), 2159-2174.

<https://doi.org/10.1007/s10639-019-09863-w>

Johnson, R., & Lee, M. (2023). *The impact of AI-based tutoring systems on mathematics*

performance and student confidence. Journal of Educational Technology, 15(2), 45-59.

Le, A. B., Bui, M. T., & Le, B. D. (2022). *Factors influence students' attitudes toward AI-based innovative solutions.* In *ICRMAT* (pp. 21-26).

Lee, J., Kim, J., & Choi, J. Y. (2019). *The adoption of virtual reality devices: The technology acceptance model integrating enjoyment, social interaction, and strength of the social ties.* *Telematics and Informatics*, 39, 37–48. <https://doi.org/10.1016/j.tele.2018.12.006>.

Li, K. (2023). *Determinants of college students' actual use of AI-based systems: An extension of the technology acceptance model.* *Sustainability*, 15(6), 5221.

Liu, X., Hu, X., & Chen, Y. (2021). *Impact of adaptive learning systems on student engagement and learning outcomes in higher education.* *Journal of Educational Technology*, 38(3), 123-136.

Lodge, J. M., de Barba, P., & Broadbent, J. (2023). *Learning with Generative Artificial*

Intelligence Within a Network of Co-Regulation. Journal of University Teaching & Learning Practice, 20(7). [https://doi.org/ 10.53761/1.20.7.02](https://doi.org/10.53761/1.20.7.02)

Marx JPS (2023) *ChatGPT in Studies: The Top 10 Commands for Effective Learning. shrike!*.

<https://shrike.de/chatgpt-studium/>. Accessed 7 June 2023

Mohr G, Reinmann G, Blüthmann N et al. (2023) *Overview of ChatGPT in the Context of*

University Teaching. Hamburg Center for University Teaching and Learning (HUL).

<https://www.hul.uni-hamburg.de/selbstlernmaterialien/dokumente/hul-chatgpt-im-kontext-lehre-2023-01-20.pdf>. Accessed 31 July 2023

Naz, I., & Robertson, R. (2024). *Exploring the feasibility and efficacy of ChatGPT3 for*

personalized feedback in teaching. The Electronic Journal of e-Learning, 22(2), 98–111.

<https://doi.org/10.34190/ejel.22.2.3345>

Oldham, J. H. (2024). ChatGPT: The co-teacher we need? *English Journal*, 113(4), 53– 60.

<https://doi.org/10.1145/3457607>

OpenAI (2022) *Introducing ChatGPT*. <https://openai.com/blog/chatgpt/>. Accessed 7 June 2023

Palal D, Ghonge S, Jadav V, Rathod H. (2023). *ChatGPT: A Double-Edged Sword? Health*

Services Insights.;16. doi:10.1177/11786329231174338

Rawas, S.(2024) *ChatGPT: Empowering lifelong learning in the digital age of higher education.*

Educ Inf Technol 29, 6895–6908. <https://doi.org/10.1007/s10639-023-12114-8>

Reaves. (2019). *21st-Century Skills and The Fourth Industrial Revolution: A*

Critical Future Role for Online Education.

<https://onlineinnovationsjournal.com/streams/immersive-online-education/4f6fa2666b8cd098.html>

Saif, N., Khan, S. U., Shaheen, I., ALotaibi, F. A., Alnfiai, M. M., & Arif, M. (2024). *Chat-GPT;*

validating Technology Acceptance Model (TAM) in education sector via ubiquitous learning mechanism. Computers in Human Behavior, 154, 108097.

Sajja, R.; Sermet, Y.; Cikmaz, M.; Cwiertny, D.; Demir, I. (2024). *Artificial Intelligence-*

Enabled Intelligent Assistant for Personalized and Adaptive Learning in Higher Education. Information 2024, 15, 596. <https://doi.org/10.3390/info15100596>

Sánchez-Prieto, J. C., Cruz-Benito, J., Therón Sánchez, R., & García-Peñalvo, F. J. (2020).

Assessed by machines: Development of a TAM-based tool to measure AI-based assessment acceptance among students. International Journal of Interactive Multimedia and Artificial Intelligence, 6(4), 80

Seo, K., Tang, J., Roll, I., Fels, S., & Yoon, D. (2021). *The impact of artificial intelligence on*

learner–instructor interaction in online learning. International Journal of Educational Technology in Higher Education, 18(54). <https://doi.org/10.1186/s41239-021-00292-9>

Sharawy, Farah S. *The Use of Artificial Intelligence in Higher Education: A Study on Faculty*

Perspectives in Universities in Egypt. 2023. American University in Cairo, Master's Thesis. AUC Knowledge Fountain. <https://fount.aucegypt.edu/etds/2095>

Smith, J., & Doe, A. (2022). “*The Impact of AI-Powered Study Tools on Student Performance.*”

Journal of Educational Technology, 15(3), 45-60.

Sweller, J. (2021). *Cognitive Load Theory: A Research Agenda. Educational Psychology*

Review, 33(2), 407-419.

Tiwari, C.K., Bhat, M.A., Khan, S.T., Subramaniam, R. and Khan, M.A.I. (2024), “*What drives*

students toward ChatGPT? An investigation of the factors influencing adoption and usage of ChatGPT”, *Interactive Technology and Smart Education, Vol. 21 No. 3, pp. 333-355. <https://doi.org/10.1108/ITSE-04-2023-0061>*

Thomas K.F. Chiu, Qi Xia, Xinyan Zhou, Ching Sing Chai, Miaoting Cheng.(2023). *Systematic*

literature review on opportunities, challenges, and future research recommendations of artificial intelligence in education, Computers and Education: Artificial Intelligence, Volume 4, 100118, ISSN 2666-920X, <https://doi.org/10.1016/j.caeai.2022.100118>.

Thompson, L., Garcia, E., & Patel, S. (2024). *Enhancing student understanding in science*

through interactive educational software: Effects on exam performance. International Journal of Science Education, 36(3), 120-135.

Thompson, P. 2019. *Foundations of Educational Technology*.

<https://open.library.okstate.edu/foundationsofeducationaltechnology/chapter/2-technology-acceptance-model/>

Von Garrel, J., Mayer, J. *Artificial Intelligence in studies—use of ChatGPT and AI-based tools*

among students in Germany. Humanit Soc Sci Commun 10, 799 (2023).

<https://doi.org/10.1057/s41599-023-02304-7>

Xia, Q., Chiu, T. K., Lee, M., Sanusi, I. T., Dai, Y., & Chai, C. S. (2022). *A self-determination*

theory (SDT) design approach for inclusive and diverse artificial intelligence (AI) education. *Computers & Education*, 189, 104582.

Zhao, Y., & Tynjälä, P. (2021). *Designing assignments for engagement: The role of relevance*

and meaning in online learning. *International Journal of Educational Technology*, 12(3), 205-221.

Zhou, Y., Liu, S., & Xu, J. (2021). *Factors Influencing Student Attitudes Towards AI in Higher*

Education. *Journal of Computer Assisted Learning*, 37(5), 1280-1290.

APPENDIX A

Instrument

The table below are the questions needed to conduct data gathering and collect informations:

Good day!

We are fourth-year students from Xavier University's Marketing program conducting research on *The Impact of AI-Powered Study Tools on the Academic Performance and Motivations of Higher Education Students*. This study specifically targets fourth-year students pursuing a Bachelor of Science in Business Administration (BSBA), majoring in Financial Management and Marketing Management, for the Academic Year 2024-2025.

Our objective is to understand how AI-powered study tools influence students' academic performance and motivations.

This survey consists of sixty (60) brief statements. Your insights are valuable to our research, and we would greatly appreciate your participation!

Thank you very much!

Demographic

Full Name/Optional:_____

Sex:_____

- ☐ Male
- ☐ Female
- ☐ Prefer not to say
- ☐ Other_____

Age:_____

	Strongly Disagree	Disagree	Agree	Strongly Agree
Usage of AI-powered Study Tools (IV)				
1. I frequently use AI-powered tools (e.g., ChatGPT, Grammarly) to assist with my studies.				
2. I use an AI-powered tool on a daily basis.				
3. I depend on AI-powered tools for most of my academic tasks.				
4. I use AI tools consistently throughout the semester.				
5. I frequently use AI-powered tools when I have assignments or incoming exams.				
6. I rely on AI-powered tools to organize my study schedule every day.				
7. I use AI-powered tools even for small academic tasks.				
8. I tend to increase my use of AI tools when I have multiple assignments.				
9. I find myself using AI-powered tools regularly into my weekly study routine.				
10. I often start my study sessions by opening AI-powered tools.				
11. I use a variety of AI-powered study tools regularly.				

12. I use different AI tools for different subjects or tasks.				
13. I utilize AI tools that help me take notes, prepare flashcards, or review content.				
14. I switch between multiple AI-powered tools based on my academic needs.				
15. AI-powered tools I use cover a wide range of academic functions (e.g., writing, studying, organizing).				
16. I explore new AI-powered study tools frequently.				
17. I use specialized AI tools for complex subjects.				
18. My academic tasks require me to use multiple AI-powered tools.				
19. I adapt my tool usage depending on the subject's requirements.				
20. I am comfortable using multiple types of AI tools for different learning styles.				
Students Motivation towards AI (IV)				
1. AI-powered tools are easy to use.				
2. I feel confident using AI-powered tools for my studies.				
3. I can quickly learn to use new AI-powered tools for my				

studies.				
4. AI tools are user-friendly and simple to understand.				
5. I rarely need assistance when operating AI-powered tools.				
6. I encounter minimal issues when using AI-powered study tools.				
7. I find AI-powered tools reliable for academic tasks.				
8. I trust the information provided by AI-powered tools.				
9. AI-powered tools are convenient for completing tasks quickly.				
10. Using AI-powered tools for my studies is generally hassle-free for me.				
11. AI-powered tools are effective in helping me understand complex topics.				
12. I believe AI-powered tools enhance my overall academic performance.				
13. AI-powered tools improve the quality of my assignments.				
14. AI-powered tools help me retain information better.				
15. I find AI tools useful in completing academic tasks efficiently.				
16. AI-powered tools make it easier to meet deadlines.				

17. I feel that AI tools help me perform better on exams.				
18. AI-powered tools assist in organizing my study materials effectively.				
19. AI tools improve my focus by streamlining tasks.				
20. AI-powered tools significantly contribute to my academic success.				
Academic Performance (DV)				
1. My grades have improved since using AI-powered study tools.				
2. I feel more prepared for exams due to AI-powered tools.				
3. AI tools improve my ability to retain information for exams.				
4. AI-powered tools have improved the quality of my assignments.				
5. I am more confident in taking exams due to AI-powered study aids.				
6. I rely on AI-powered tools to review and reinforce exam content.				
7. AI tools help me understand topics covered in exams more thoroughly.				
8. AI-powered tools aid me in tracking topics I need to study				

for exams.				
9. I achieve higher exam scores when I use AI tools to study.				
10. I find it easier to recall information during exams with the help of AI-powered tools.				
11. AI-powered tools have improved the quality of my assignments.				
12. I am able to complete assignments more accurately with AI support.				
13. AI-powered tools help me produce well-organized assignments.				
14. My problem-solving skills have improved due to using AI-powered tools				
15. AI tools improve the clarity and coherence of my written work.				
16. I am able to meet deadlines more easily with AI-powered tools.				
17. My assignments contain fewer errors due to AI-powered tools.				
18. AI tools help me generate ideas and content for my assignments.				
19. AI-powered tools enhance my ability to find reliable sources for assignments.				
20. AI-powered tools ensure my				

assignments meet academic standards.				
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APPENDIX C

This section presents the Curriculum Vitae, providing an overview of the academic and professional background relevant to this research.

ANNICO DIONNE C. MICABALO

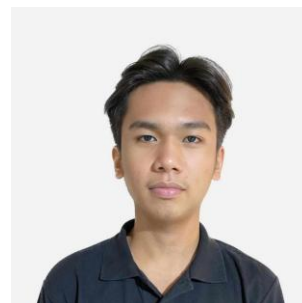
Tecla Roa Cosin Road, Poblacion, Tagoloan, Misamis Oriental

Gender: Male

Civil Status: Single

Religion: Born Again Christian

Date of Birth: June 5, 2002

**EDUCATION****Xavier University - Ateneo de Cagayan**

*73 Corrales Ave., Cagayan de Oro City, 9000
BSBA Major in Marketing Management*

2021 - Present

Xavier University - Senior High School

*73 Corrales Avenue, Cagayan de Oro City 9000
Science, Technology, Engineering and Mathematics (STEM) Strand*

2019 - 2021

Gusa Regional Science High School - X

*Gusa, Cagayan de Oro City
Secondary Education*

2016 - 2019

Tagoloan Central School

*Poblacion, Tagoloan, Misamis Oriental
Elementary Education*

2010 - 2016

ORGANIZATIONS**Player for Call of Duty Mobile**

XU - Xavier Campus Esports and Entertainment Development

2022 - 2024

Staff of Social Outreach Department

XU - Junior Marketing Association

2022 - 2023

ANGEL MAE M. OFIANGA

J. Rosales Avenue, Purok 6 Doongan Butuan City, Agusan del Norte

Gender: Female

Civil Status: Single

Religion: Roman Catholic

Date of Birth: May 18, 2003

**EDUCATION****Xavier University - Ateneo de Cagayan**

Corrales Ave., Cagayan de Oro City, 9000

BSBA Major in Financial Management

2021 - Present

Agusan National High School - Senior High School

A.D. Curato St, Butuan City, 8600 Agusan Del Norte

Humanities and Social Sciences (HUMSS) strand

2019 - 2021

Agusan National High School

A.D. Curato St, Butuan City, 8600 Agusan Del Norte

Secondary Education

2015 - 2019

Butuan Central Elementary School

A.D. Curato St, Butuan City, 8600 Agusan Del Norte

Elementary Education

2009 - 2015

ORGANIZATIONS**Creative Staff**

XU SBMSC - Department of Sports and Student Welfare

2023 - 2024

EDWY BOYD L. ORMITA

Blk. 4 Lot 1 Phase, Citihomes, Cagayan De Oro City 9000

Gender: Male

Civil Status: Single

Religion: Roman Catholic

Date of Birth: March 10, 2003

**EDUCATION****Xavier University - Ateneo de Cagayan**

Corrales Ave., Cagayan de Oro City, 9000

BSBA Major in Marketing Management

2021 - Present

Xavier University - Senior High School

Corrales Avenue, Cagayan de Oro City

Accounting, Business and Management (ABM) strand

2019 - 2021

St. Mary's Academy of Carmen

FJJJ+W67, Villarin St, Cagayan de Oro

Secondary Education

2016 - 2019

Bongbongon Elementary School

NHA, Cagayan de Oro, 9000 Misamis Oriental

Elementary Education

2010 - 2016

ORGANIZATIONS

N/A

GEZA MAE A. OROLA

153 Justo Ramonal St., Barangay 32, Cagayan De Oro City 9000

Gender: Femlae

Civil Status: Single

Religion:

Date of Birth: April 10, 2002

**EDUCATION****Xavier University - Ateneo de Cagayan**

Corrales Ave., Cagayan de Oro City, 9000

BSBA Major in Financial Management

2021 - Present

Capitol University - Senior High School

Corrales Ext, Cagayan de Oro City

STEM - Nursing Aide

2019 - 2021

Misamis Oriental General Comprehensive High School

Don Apolinar Velez St, Cagayan de Oro City

Secondary Education

2014 - 2018

Cagayan de Oro Christian School

Claro M Recto Avenue, Julio Pacana St, Cagayan de Oro City

Elementary Education

2008 - 2014

ORGANIZATIONS**Office Director**

XU CSG - Office of Internal Affairs

2024 - 2025

Department Head

Association of Xavier University Oro Scholars - Department of Leadership Formation

2024 - 2025

Director

Volunteer Iskolar Leaders Program - Advocacy Programs

2024 - 2025

Executive President

Association of Xavier University Oro Scholars

2023 - 2024

Executive Treasurer

Association of Xavier University Oro Scholars

2022 - 2023

JOHN DANNIELLE S. ONG

Blk. 1 Lot 16 Melecia Homes, Macasandig, Cagayan De Oro City 9000

Gender: Male

Civil Status: Single

Religion: Roman Catholic

Date of Birth: August 8, 2003

**EDUCATION****Xavier University - Ateneo de Cagayan**

Corrales Ave., Cagayan de Oro City, 9000

BSBA Major in Marketing Management

2021 - Present

Xavier University - Senior High School

Corrales Avenue, Cagayan de Oro City

Accounting, Business and Management (ABM) strand

2019 - 2021

Xavier University - Junior High School

Corrales Avenue, Cagayan de Oro City

Secondary Education

2016 - 2019

City Central School

Velez, Cagayan de Oro City

Elementary Education

2010 - 2016

ORGANIZATIONS**Head of Communications**

XU CSG - Commission on Accountability and Transparency

2023 - 2024

Director of Internal Communications

XU - Junior Marketing Association

2022 - 2023