

Relationship Between Artificial Intelligence (AI) Usage and Academic Performance of Business Administration Students

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Abstract

Artificial Intelligence, renowned for its data interpretation, learning, and task achievement capabilities, has gained popularity in various industries and academies due to enhanced efficiency and quality. This study aims to determine the extent of AI usage among students, including functionality, availability, complexity, assessment scores, course mastery, and grading metrics. It also seeks to determine if a relationship exists between AI usage and their academic performance. The study employs a quantitative approach using a correlational design. The respondents of the study are 293 Business Administration students from Negros Oriental State University Main Campus 1, Dumaguete City. The study's findings suggest that AI usage among students is moderately prevalent in terms of functionality, availability, and complexity. However, the students' academic performance was found to be above-average, with high scores on assessments, course mastery, and excellent grades. There is no significant relationship between AI use and academic performance found. In conclusion, AI tools offer personalized learning experiences, immediate feedback, and collaborative activities, but further growth and improvement are needed, including training, accessibility, research, monitoring, and best practices sharing.

Keywords: academic performance, Artificial Intelligence (AI), business administration



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INTRODUCTION

Artificial Intelligence (AI) was established as an academic discipline in the 1950s wherein it was described as a systemic ability to interpret, learn, and achieve specific tasks from data. It was classified as “analytical, human-inspired intelligence” because of the features it contains, together with the exhibited outputs that involve cognitive, emotional, and social display. In recent developments and advancements, several platforms have popularized mainstream usage of AI as part of daily processes such as incorporation of AI in tools that are used in several industries. This has implicated the inclusion of AI systems in day-to-day usage, indicating the improved outcomes of using AI as a powerful tool to increase efficiency and quality.

Zhang & Lu (2021) described AI as a knowledge project that absorbs various information, analyzes these data, and studies the methods of expressing the outcomes. It compiles multi-disciplinary information, processes it according to categories, and displays based on commands. It was noted as a revolutionary

technology that results in efficient labor improvements, cost reduction, and optimization of human resources toward job opportunities creation. Nabila et al. (2021) explained that this “man-made brain power” has induced advances that have been subjects in academic, public, and business arrangements, promoting proficiency and efficiency in the development of processes and mechanisms. It has tapped into several societal spheres such as marketing, healthcare, and human rights (Perifanis & Kitsios, 2023).

Furthermore, Emmert-Streib (2021) discussed that technological progress, such as AI, has led to powerful mechanisms and technologies that have barged through the intricacies of several areas of knowledge including science, industries, and daily lives. This has placed a significant increase in digital traces of data that has welcomed both opportunities and challenges in the adoption of the technologies. Considered a digital revolution, these developments are subject to the scrutiny of responsible usage of these advancements, as well as the generated data from its processes. Emmert-Streib also emphasized that these advanced learning paradigms put forward the

necessity to facilitate general approaches to maximize usage while maintaining ethical and appropriate use.

In addition, Merhi (2023) found out that there are several barriers to responsible AI which can be classified into three general concepts: technology, organization, and environment. These three categories determine the context of usage and how the adoption of technology responds to its environmental needs. With this, considerations of both internal and external factors were placed, emphasizing that the use of responsible AI is context-based, and that perceived direct and indirect benefits vary on its categorical differences.

In academia, there has been a rise in the use of AI, particularly in using AI-powered tools that are used by both instructors and students. These tools have been used across various disciplines taught by educational institutions but mainly influenced developments in Information and Communication Technologies (ICT). Based on the study conducted by Crompton & Burke (2023), it was revealed that 72% of AI users in academic institutions are students who use AI as an aid to access learning materials, answer student assessments, and do self-testing purposes. Klutka et al. (2018) explained that using AI in higher education yields several benefits including increased outcomes, access, and retention; lower costs; and a substantial decrease in completion time. They emphasized that AI provides aid, not only in learning and instruction but also in absorbing this knowledge and applying them in the field.

In the Philippines, AI is relatively a new concept and has limited restrictions, regulations, and guidelines on how to appropriately and ethically use it in the academic context. Estrellado & Miranda (2023) explained that AI in education in the Philippines can provide great potential and offerings to enhance the learning experience but there remains a gap in the existing information about the reflection of AI usage in the education sector. There exists a need to identify the possible augmentation that AI can offer in the learning process and teaching strategies to achieve desired academic outcomes. With this, it is deemed necessary to

investigate the possible relationship between AI usage and academic outcomes based on educational indicators in the Philippine context. In this study, a significant portion of respondents use AI tools for academic purposes on an occasional basis. However, there is a small portion of students who rarely or never utilize AI tools for academic tasks, while others consistently rely on AI tools. Some individuals regularly use these tools to meet their academic requirements.

Theoretical Framework. The study employs the Technological Determinism Theory as the guiding and foundation concept in which the paper is anchored from. The theory was coined by Marshall McLuhan in 1962 wherein it states that media technology influences and shapes an individual's behavior and outcomes (McLuhan, 1962). This highlights that the society operates based on the technological age it belongs to, and adopts the advancements that the era offers.

In using this theory, it helps in understanding the potential technological influence of AI in the behavior and outcomes of Business Administration students and how they respond to adoption of systematic changes in the education system. It will also help in identifying how AI helps to shape the learning process, performance, and outcomes of the learners. Moreover, it also looks into the phenomenon in a wider scope. Instead of looking at AI usage as a personal choice, it is seen in a lens wherein societal forces as aided by technological developments influenced the decision-making of the students to use AI tools for their education. It also allows speculation of the trends and development in the education sector as AI continues to develop and consider the trajectory on the relationship of AI and academic performance.

Objectives of the Study. The study aims to fulfill the following objectives:

1. Determine the extent of Artificial Intelligence (AI) usage of Business Administration Students in terms of:
 - 1.1. Functionality

- 1.2. Availability
- 1.3. Complexity
2. Determine the Academic Performance of Business Administration Students in terms of:
 - 2.1. perceived assessment scores
 - 2.2. perceived course mastery
 - 2.3. grading metrics
3. Determine if a relationship exists between AI Usage and Academic Performance of Business Administration Students.

Hypothesis

H_0 : There is no significant relationship between AI Usage and Academic Performance of Business Administration Students.

LITERATURES

AI is revolutionizing education ushering in innovative approaches that transform the traditional learning paradigm. With its capacity to personalize learning experiences, provide real-time feedback, and enhance educational accessibility, AI has become a powerful ally in the realm of education. This evolving landscape underscores the importance of understanding the dynamic relationship between AI and education.

Benefits of AI in Education. Various educational technology platforms extensively utilize artificial intelligence. One notable application is the utilization of AI as a virtual mentor, particularly in online-based educational platforms. This involves a process where AI, acting as a virtual mentor, assists learners in achieving their educational objectives. The mentor-mentee relationship, where a more knowledgeable entity aids a less knowledgeable one, is facilitated through AI providing feedback on students' learning activities and practice questions. Subsequently, it offers recommendations for revisiting specific study materials, functioning akin to a teacher or tutor. According to Klamma et al. (2020), mentoring, in this context, is a collaborative process facilitated by AI. Winarno and Hwihanus (2023) describe the Virtual Mentor (VM) as "a

multimedia integrated e-Learning environment that emphasizes interaction, personalization, and intelligence." Hence, this "Virtual Mentor (VM)" can be understood as a complex e-learning environment that incorporates multimedia elements. Its emphasis on interaction implies a dynamic and engaging learning experience. The mention of personalization suggests tailoring educational content to individual learners where it adapts to their specific needs and preferences. Additionally, the reference to intelligence indicates the incorporation of smart features, which involve data-driven insights, adaptive learning algorithms, or other advanced technologies to enhance the overall learning experience.

AI can also serve as a voice assistant. Voice Assistant technology is a widely recognized AI application utilized across various fields, including education. Some applications include well-known examples such as Google Assistant, Siri (Apple), and Cortana (Microsoft). According to Fitria (2021), its functionality enables students to effortlessly search for materials, reference questions, articles, and books by speaking or mentioning keywords. The Voice Assistant responds by displaying relevant information based on the keywords mentioned and, uniquely, can articulate and explain the information, resembling a personal assistant. Voice Assistants, acting as an interface with various learning materials, offer interaction without the need for direct communication with a teacher. Through Voice Assistant, students can comprehend information solely through voice, eliminating the need for a teacher or tutor. The integration of artificial intelligence into Voice Assistants shares similarities with virtual mentors, but Voice Assistant places a greater emphasis on voice functionality as the core of interaction and communication. This flexibility allows educational platforms to be accessible anywhere and anytime, enabling students to learn independently.

AI can be associated with "Global Courses". Users or students of Global Courses can explore and enroll in online courses from various parts of the world (Fitria, 2021; Palvia et

al., 2018). The platform intelligently recommends courses aligned with users' previously entered keywords and interests. Currently, numerous free and open courses with diverse and engaging features and content are available for exploration. Courses on platforms like MOOCs, Udemy, Google AI, Alison, Khan Academy, edX, Udacity, Coursera, among others, exemplify the integration of AI technology (Zhang, 2021). AI-powered courses include personalized components that track exam results, offer overall assessments, propose pertinent readings, and keep students updated on their progress. AI-based solutions are perfect for international programs because they allow for the design of personalized lessons that are in line with certain curricula with a guarantee that individualized learning experiences are based on variables such as students' nationality and cultural background (Anis, 2023). Additionally, the technology facilitates seamless interaction between teachers and students by improving communication with features like automatic translation and subtitles. In the midst of the recent pandemic, as the traditional methods of education were upended and replaced with online learning, the importance of AI became apparent. With AI, education can now transcend the constraints of physical space and time, allowing for learning to continue uninterrupted (Alam & Mohanty, 2023). Hence, the integration of AI in education is not solely a technological advancement, but also a fundamental tool for promoting independent learning and meeting the ever-changing needs of the education. As it is expected that individuals will embrace AI in education, it is imperative to strike a balance between technological progress and upholding the timeless values that lie at the core of effective teaching and learning.

AI is extensively utilized for online automatic assessment and question correction and streamlining the process of quiz and test preparation for teachers and tutors (Babitha et al., 2022). The implementation of such features eliminates the manual effort required for question creation and correction. A practical example is the Google Form, offering quiz creation and automatic correction features. In

this form, teachers can easily create quizzes by specifying subject type, difficulty level, and other parameters, then share the quiz link for online completion by students. The automated system records student results, including scores, correct and incorrect questions, and discussions (Google, 2024). This alleviates the burden on teachers, allowing them more time for monitoring student progress and refining teaching techniques. AI technology not only handles repetitive administrative tasks but also adapts to user habits (Libai et al., 2020). These offer personalized recommendations for further study. The autonomous functioning of the AI system, based on programmed instructions and user habits, extends to English-aided education systems. This strategic deployment enhances and humanizes various functions of the English teaching system, aiming to improve the quality and effectiveness of English instruction (Bin & Mandal, 2019). Thus, AI simplifies administrative duties, saving teachers valuable time spent searching for educational resources and freeing them up to concentrate on teaching.

Negative Effects of AI. The incorporation of AI into education, although advantageous, presents some drawbacks. One main issue is the potential decline in interpersonal communication between students and instructors (Luan et al., 2020). The valuable relationship and deep comprehension that human teachers offer could be compromised. Furthermore, there is a possibility of widening existing inequalities as students without access to technology or from financially disadvantaged families may encounter obstacles in utilizing AI-based educational resources (Goralski & Tan, 2023). These result in a digital gap.

The integration of AI in education, particularly in chatbot programs like ChatGPT, presents also negative implications. One significant issue is the risk of cheating, where students may submit unoriginal texts (Ibrahim, 2023). Proactive measures are needed to prevent such fraud, with ongoing discussions exploring methods to detect AI-generated text. Inaccurate answers are another challenge, as ChatGPT lacks real-time information, leading to potential

inaccuracies in responses to events after 2021 (Abdullah et al., 2021). Hence, overreliance on technology poses a threat to the development of critical thinking skills. Excessive dependence on AI might hinder students' ability to cultivate problem-solving skills and navigate real-world challenges. While AI can enhance educational processes, it should not replace human judgment and intervention entirely.

Legal issues arise, as texts produced by ChatGPT may lack the quality of human-authored work which spark debates about the legal standing of AI-generated content (Rane et al., 2023). The use of AI in education also presents ethical challenges that require careful consideration. Ethical concerns arise due to the lack of ethical thinking awareness in ChatGPT, as its response-oriented nature introduces the risk of undesirable results. AI systems may also unknowingly adopt biases present in the data they are trained on (Schwartz et al., 2022). If the training data contains biases, the AI algorithms can learn and reproduce these biases, potentially leading to unfair or biased outcomes when the AI is used in real-world situations.

Teachers' Perspectives toward AI. The study of Kaplan-Rakowski et al. (2023) investigated how educators view open generative AI (GAI) in the classroom. Regardless of their teaching approach, 147 teachers from Canada in total expressed positive opinions in the survey they completed. Teachers' views got more optimistic the more often they utilized GAI. Given that instructors' initial opinions influence the integration and spread of technology, the findings have implications for how GAI might be included into teaching and learning methods.

Polak et al. (2023) posit that teacher integration of AI education into lessons is crucial, with a focus on user empowerment and skill improvement. Digital competencies are seen as a prerequisite for AI literacy and are essential for both teachers and students. Teachers need to gain digital competencies to use digital tools like the envisioned AI education platform. Teachers' perception of their current skills is more important than their full proficiency in the topic. The survey shows no significant difference in attitude towards AI education

between teachers with high and low digital competence levels. Will is the most important factor, followed by skill.

The AI-based Scaffolding System (AISS) for scientific writing in STEM education has garnered excellent feedback from teachers based on a study conducted by N. Kim and Kim (2022). They gave the system high marks for offering well-written examples, tailored feedback, and guidance on logical reasoning, argumentation, and thinking. The AISS supports learner-centered instructional approaches in STEM fields by emphasizing problem-solving and self-directed learning. Nonetheless, questions have been raised regarding the teacher-student mediator role, which may lessen their influence. Teachers are aware of the potential advantages of AI in STEM education, especially in terms of improving scientific writing abilities, notwithstanding these reservations. Additionally, they recognize that in order to successfully incorporate AI into educational settings, professional development is necessary.

Mandal and Mete (2023) examined the views of both students and teachers on AI integration into the curriculum, a common thread emerges: the shared interest in and enjoyment of learning about AI. A significant majority believes that AI should be a compulsory subject, indicating a consensus on its importance in education. However, opinions diverge when it comes to the role of AI in promoting self-learning habits. While students generally see AI as a tool for self-learning, teachers exhibit mixed views on this aspect. Additionally, there is a collective stance against confining AI education to higher classes, emphasizing its relevance across various educational levels. The unanimous agreement between students and teachers lies in recognizing the practical applicability of AI knowledge in real-life situations, extending its utility beyond the classroom. Addressing future scenarios, students, in majority, do not anticipate the replacement of human teachers by mechanical ones.

Teachers generally support the integration of AI in education, emphasizing the importance of

digital capabilities for AI literacy. They are eager to learn about AI-related issues and emphasize the need for professional development. Both teachers and students are interested in AI, but have differing opinions on its usefulness in encouraging self-learning behaviors. Both sides disagree with limiting AI education to upper-level courses and recognize its value beyond the classroom.

In summary, the benefits of AI in education are multifaceted. AI plays a pivotal role in education by serving as a virtual mentor which may offer personalized feedback and recommendations to learners, thereby enhancing the learning experience. It facilitates independent learning by enabling students to access educational materials through voice commands. It also contributes to making online learning accessible on a global scale by providing personalized recommendations. Furthermore, AI's involvement in online assessment not only streamlines processes but also alleviates the administrative burden on teachers. Despite these advantages, the integration of AI in education raises concerns, including potential declines in interpersonal communication, the risk of biases, and ethical challenges. Students and teachers share a collective interest in learning about AI, with some variations in opinions on its role in self-learning and future scenarios. Striking a balance between technological progress and timeless teaching values is deemed crucial for responsible AI use in education.

MATERIALS AND METHODS

The study focused on the determination of the existence of the relationship between AI usage and academic performance of Business Administration students. Additionally, this study looked into the potential implication of AI-powered tools in the learning process and application of students towards achieving learning outcomes. With this, the study employed a quantitative approach using correlational design. This type of design allows the quantified measurement of the variables and the assessment of statistical relationships without controlling the variables. It also

emphasized that it does not predict any causal relationship between the variables, but only focuses on determining the existence and significance of the relationships (Price et al., 2020). The discussion, analysis, and presentation of data will follow the structure of this design. The conclusions and recommendations were based on the statistical data provided upon the application of appropriate treatment.

The respondents of the study are Business Administration students from Negros Oriental State University (NORSU) Main Campus 1, Dumaguete City. Based on the latest University data, a total of 1,692 students comprised the Business Administration population of NORSU Main Campus 1, Dumaguete City. Among these are 471 freshmen, 413 sophomores, 451 juniors, and 357 senior students. In this population, only 1,221 are eligible to participate in the study, excluding freshmen since they do not fit the participant criteria listed below:

1. Must be a bonafide Business Administration student at Negros Oriental State University Main Campus 1, Dumaguete City for at least one full term/semester.
2. Must have used AI tools (e.g. ChatGPT, LMS, Chatbots) during the semester in at least three courses: Human Resource Management, Administrative and Office Management, and Franchising.
3. Must have received a numeric grade from the courses in which AI tools were used.

For the sampling method since the correlational design requires a non-experimental and non-controlled population environment, random sampling was conducted in the data-gathering procedure. To make sure that the correlational analysis will not omit variables and sufficient data will be used in the analysis, a total of 293 are required to be surveyed. This is based on the computation of a sufficient sample size based on a 95% confidence interval.

To gather data, a survey method was employed wherein a questionnaire was administered

randomly to the randomly selected participants which contained the necessary components needed for the correlation analysis. The questionnaire, found in Appendix C, is divided into three parts.

The first part of the questionnaire is intended to gather basic information about the participants and to make sure that they meet the criteria. This included the demographic and student profile of participants to determine their eligibility. The second part focused on the AI usage of students, including three domains - functionality, availability, and complexity. This also determined the type of academic assessments, school materials, and learning methods in which they applied the use of AI. The last part included a description of the participants' academic performance wherein they rated their academic performance and outcomes based on the questions presented. In both parts II and III, a Likert scale format was followed for ease of data quantification and inputting on the statistical software that will be used. The scale used a range spanning five items to assess the respondents' level of utilization of the questions in AI usage and the level of their academic performance. Below is a table showing the interpretation of the scales used.

Table 1
Likert Scale on the Level of Utilization on AI Usage

Level of Utilization	Scale	Range	Interpretation	Description
5	Always	4.21 - 5.00	Maximized Utilization	Respondents fully embrace AI technology and use it extensively throughout their work processes.
4	Often	3.41 - 4.20	Highly Utilized	AI usage contributes significantly to the respondents' overall productivity and efficiency.
3	Sometimes	2.61 - 3.40	Moderately Utilized	Respondents frequently moderately employ AI tools and technologies in their work, but it is not the primary driving force behind their tasks.
2	Rarely	1.81 - 2.60	Minimally Utilized	AI plays a minor role in the respondents' work, and they only use it sparingly for specific purposes without significant integration into their daily tasks.
1	Never	1.00 - 1.80	Not Utilized	Respondents do not utilize AI in any aspect of their work and relies entirely on non-AI methods for their tasks.

Table 2
Likert Scale on the Level of Academic Performance

Level of Academic Performance	Scale	Range	Interpretation	Description
5	Very Good/ 1.0 - 1.5	4.21 - 5.00	Excellent	Respondents' academic performance are outstanding, reflecting a high level of knowledge, skills, and expertise in their studies.
4	Good/ 1.6 - 2.0	3.41 - 4.20	Above Average	Respondents' academic performance indicate a commendable level of proficiency and understanding in their studies.
3	Fair/ 2.1 - 2.50	2.61 - 3.40	Average	Respondents' academic performance indicate that they meet the expected requirements but may benefit from further development and enhancement in certain areas.
2	Poor/ 2.6-3.0	1.81- 2.60	Below Average	Respondents' academic performance need further effort and improvement in their studies.
1	Very Poor/ 5	1.00 - 1.80	Poor	Respondents' academic performance are significantly below average, indicating a need for improvement in various areas of their studies.

Table 3
Instrument Internal Validity Results

Items	Cronbach's Chronbach's Alpha
Functionality	0.8125
Availability	0.7306
Complexity	0.8648
Perceived assessment scores	0.757
Perceived course mastery	0.8961
Grading metrics	0.9113

The Cronbach's alpha test was utilized to evaluate internal consistency, determining the degree to which the elements of the tool align with one another and assess the same underlying concept (Doval et al., 2023). Table 2 provided Cronbach's alpha coefficients for a variety of items related to AI usage. The results were based on the responses of the pilot study employing ten students who did not participate in the study. These coefficients hold great importance as they ensure consistency in measuring different aspects. The category of functionality is indicated by a high Cronbach's alpha of 0.8125. A moderate level of reliability is observed for the availability category with a coefficient of 0.7306. The complexity category has a strong reliability among other items with

a coefficient of 0.8648. Similarly, the perceived assessment scores category shows a moderate internal consistency with a coefficient of 0.757. The findings show that the perceived mastery of the course is exceptionally high, with a score of 0.8961, the second highest among the values. Particularly noteworthy is the internal consistency of the grading metrics, which has a high Cronbach's alpha of 0.9113. This demonstrates the exceptional reliability of the items used to assess performance based on grading metrics.

The data collected from the population was subjected to statistical treatment. To gather the collective responses, both descriptive and inferential statistics were applied. Descriptive statistics include quantification through averages, percentages, and computation of the weighted mean of each scale to describe the responses and the outliers. The Spearman Correlation Coefficient was used to determine the existence and significance of the relationship between AI usage and Academic Performance. To compute the correlation, the statistical software Stata was used.

RESULTS AND DISCUSSION

In this section, the results of this research on the usage of artificial intelligence (AI) and its impact on academic performance are presented. This section provides a detailed overview of the findings, highlighting implications that emerge from this research.

Table 4
Extent of Students' AI Usage in terms of Functionality

Functionality	Never	Rarely	Sometimes	Often	Always	Mean	Interpretation
I use AI tools because it makes my academic requirements easier.	5	39	216	5	28	3.04	Moderately Utilized
I use AI tools in supporting my initial draft of my academic requirements	13	61	171	5	43	3.01	Moderately Utilized
I use AI tools whenever I feel my output is lacking or inadequate	8	41	150	15	79	3.40	Moderately Utilized
I use AI tools whenever I encounter a low or failing grade in my previous submissions.	33	76	138	5	41	2.81	Moderately Utilized
I use AI tools to finish my requirements quicker and more efficiently.	18	41	185	0	49	3.07	Moderately Utilized
Total	77	258	860	30	240	3.07	Moderately Utilized

For the extent of AI usage level for the functionality domain, the third statement, "I use AI tools whenever I feel my output is lacking or inadequate" received a mean score of 3.40, which had the highest rating among the functionality dimension. The mean score of 3.4 suggests a moderate level of utilization. Participants tend to employ AI tools when they perceive their work output as lacking or inadequate. This could imply a somewhat proactive approach to improving the quality of their work by leveraging AI assistance. The focus is on the quality of work. Individuals are likely to use AI tools as a means to elevate the standard or excellence of their output. This indicates a conscious effort to produce work that meets higher standards or aligns more closely with their expectations or the expectations set by their academic or professional environment. According to Dwivedi et al. (2021), AI has the potential to significantly transform various aspects of human tasks and activities across industrial, intellectual, and social applications. The rapid pace of change in this AI technological era presents opportunities for innovation. The impact of AI extends across diverse industries such as finance, healthcare, manufacturing, retail, supply chain, logistics, and utilities, potentially disrupting traditional practices.

However, the fourth statement received the least value of a mean score of 2.81. This implies that respondents are less inclined to rely on AI tools solely as a response to poor grades. It is worth noting that AI tools should not be seen as a quick fix for low grades. While they can offer assistance and support, addressing the underlying issues that led to low grades, such as a lack of understanding or insufficient effort, may require more comprehensive approaches, such as seeking guidance from teachers or engaging in additional study or practice (Chew & Cerbin, 2021).

Based on the survey results, the overall functionality of AI received a mean score of 3.07, indicating that respondents moderately utilized AI. The moderate utilization of AI suggests that respondents recognize the value and benefits of AI technology in various aspects of their

academic requirements but do not heavily rely on AI. AI offers a wide range of functionalities that can support and enhance different tasks, such as generating ideas, proofreading, data analysis, and providing suggestions for improvement (Dwivedi et al., 2023). By leveraging AI tools, students may be able to allocate their time and energy to other aspects of their academic work, such as analyzing and synthesizing information or engaging in critical thinking.

Table 5
Extent of Students' AI Usage in terms of Availability

Availability	Never	Rarely	Sometimes	Often	Always	Mean	Interpretation
I use AI tools because they are accessible.	5	54	160	5	69	3.27	Moderately Utilized
I can easily access and use AI tools without struggling.	10	59	150	15	59	3.18	Moderately Utilized
I can use AI tools anytime.	10	69	117	10	87	3.32	Moderately Utilized
I can use AI tools in any type of academic requirement.	20	66	138	13	56	3.06	Moderately Utilized
I can use AI tools in any type of device (e.g. smartphone, laptop, tablet, etc.)	5	48	102	15	123	3.69	Highly Utilized
Total	50	296	667	58	394	3.31	Moderately Utilized

For the second domain which is availability, the survey results indicate that the fourth statement, "I can use AI tools in any type of academic requirement." received the lowest rating of 3.06. This implies that the respondents find AI tools moderately useful across various academic requirements. This then indicates that while individuals acknowledge some degree of usefulness for AI tools in academic tasks, it is not perceived as highly essential or extensively employed. It implies a middle-ground assessment which suggests a balanced and moderate integration of AI tools into academic requirements. The rating of 3.69, the highest among the items for the availability dimension, for the last statement, suggests that the respondents perceive AI tools to be compatible with various devices, including smartphones, laptops, and tablets. This compatibility across different devices enhances the flexibility and accessibility of AI tools which enable users to leverage them regardless of the device they prefer or have access to. Hence, AI tools are convenient and effective to employ across a range of devices (Merenda et al., 2020). This further means a widespread and significant

adoption of AI tools in different technological environments.

Overall, the survey results indicate a moderately positive perception of the accessibility and utilization of AI tools. With an average rating of 3.31, it can be concluded that while the respondents generally find AI tools accessible and usable, there may still be room for improvement in enhancing their accessibility and usefulness, especially in specific academic requirements. Therefore, the survey results indicate a moderately positive perception of the accessibility and utilization of AI tools. According to Chen et al. (2020), the advancement of AI technology on mobile devices has taken mobile education to the next level, which accomplishes interactive and customized learning and offers students convenience by assisting them in less time. While the respondents find AI tools accessible to some extent, there is room for improvement to enhance their accessibility, ease of use, and compatibility with different academic requirements and devices.

Table 6
Extent of Students' AI Usage in terms of Complexity

Complexity	Never	Rarely	Sometimes	Often	Always	Mean	Interpretation
I watched tutorial videos on how I can maximize AI usage.	83	88	75	7	40	2.43	Moderately Utilized
I customized the functions and settings to tailor AI tools based on my academic needs.	61	87	117	8	20	2.45	Moderately Utilized
I used AI tools to guide or assist me when I encountered academic difficulties.	10	41	161	15	66	3.29	Moderately Utilized
I use AI tools to simplify terms and concepts that I have a hard time understanding.	8	43	140	13	89	3.45	Highly Utilized
AI tools are easy to navigate	5	48	148	18	74	3.37	Moderately Utilized
Total	167	307	641	61	289	3.00	Moderately Utilized

For the dimension of complexity for AI usage, the majority of respondents reported watching tutorial videos to learn how they can make the most out of AI, with an average rating of 2.43. This suggests that while they have engaged with tutorial videos, they may not have fully explored the potential of AI tools. Simply, they do not view watching tutorial videos for maximizing AI usage as highly essential. They may engage in this activity occasionally or selectively, but it may not be a top priority or a routine part of

their strategy for optimizing their use of AI tools.

Moreover, respondents reported utilizing AI tools to simplify terms and concepts that they find difficult to understand, with an average rating of 3.45, the highest among the items in the complexity dimension. This suggests that AI tools are perceived to have been effective in aiding comprehension and overcoming learning obstacles. This implies an intentional use of AI tools as aids for enhancing their understanding of challenging content. AI often provides a quicker and more efficient way to process and simplify complex information (Haleem et al., 2021). Users may intentionally leverage these tools to save time and streamline the learning process, allowing them to grasp challenging concepts more expediently.

Taking into account all the responses, the average rating for the participants' utilization of AI tools is 3.00, indicating a moderate level of usage due to its complexity. This implies that while the participants have engaged with AI tools to some extent, there is room for improvement and further exploration to maximize the benefits these tools can offer.

Table 7.
Academic Performance of the Students Based on their Assessment Scores

Assessment Scores	Very Poor	Poor	Fair	Good	Very Good	Mean	Interpretation
Rate your overall academic performance based on your general weighted average in the previous term/semester	0	2	81	176	34	3.83	Above Average
Consistency in achieving high final grades in different courses	0	5	136	136	16	3.56	Above Average
Performance trends in assessment scores from the previous term/semester	0	2	120	145	26	3.67	Above Average
Describe the feedback received from instructors from the previous term/semesters	0	0	85	165	43	3.86	Above Average
Describe the assessment performance (e.g. exams, recitations, papers) from the previous term/semester	3	10	104	158	18	3.61	Above Average

The survey results provide a comprehensive overview of the individual's academic performance. According to the responses, the individual rates their overall academic performance based on their general weighted average in the previous term/semester as 3.83 or above average. This indicates that they have achieved a commendable performance in their

studies. Furthermore, the survey reveals that the respondents demonstrated consistency in achieving high final grades in different courses, with a rating of 3.56, the lowest value of mean among the items. This further suggests that the students have been able to maintain a high level of performance across various subjects. Moreover, the feedback received from instructors in the previous term or semester is described as 3.86, the highest mean among the items. This implies that the instructors have provided positive feedback regarding the individual's academic performance. Respondents have met or exceeded teachers' expectations in their coursework. In general, the survey results depict a strong and above-average academic performance, with a total of 3.706. While there may be some areas for improvement, the results indicate that the respondents perceived that they performing well academically. They have then the potential to continue excelling in their studies.

Table 8.
Academic Performance of the Students Based on their Course Mastery

Course Mastery	Very Poor	Poor	Fair	Good	Very Good	Mean	Interpretation
Describe your confidence in the mastery of concepts from the courses in the previous term/semester	0	26	123	136	8	3.43	Above Average
Describe your understanding of the core concepts, competencies, and skills from the courses in the previous term/ semester	3	8	101	163	18	3.63	Above Average
Describe your ability to practice and apply the skills taught in the courses in the previous term/semester	0	10	96	171	16	3.66	Above Average
Describe the retention of the major theories and general applications of the courses from the previous term/semester	0	21	122	150	0	3.44	Above Average
Describe the level of preparedness for the higher courses connected to the courses taken from the previous term/semester	0	13	122	148	10	3.53	Above Average

Based on the survey results, the respondents expressed above-average confidence in their mastery of concepts from the courses in the previous term/semester, with an average rating of 3.43, which is the least value among the items. This indicates that most individuals felt relatively secure in their understanding of the material covered. In terms of the ability to apply and practice the skills taught in the previous term or semester, respondents rated themselves an average of 3.66, the highest among the items in the course mastery

dimension, indicating an above-average mark. They perceive that they exhibited a reasonable level of proficiency in applying the knowledge gained from the courses and were able to put it into practice successfully.

Generally, when considering all aspects measured in the survey, the respondents' total average rating was 3.54, which is above average. This suggests that the respondents felt positive about their overall learning experience and perceived themselves as having a satisfactory level of mastery, understanding, application, retention, and preparedness for future courses. It reflects a positive assessment of their overall learning outcomes and indicates a commendable level of achievement in the surveyed group.

When students have a positive view of their learning experience, being content with their grasp of the material, comprehension, application, remembering, and readiness for future courses, it ultimately results in a surge of motivation and elevated self-assurance and belief in one's abilities (Sihite et al., 2024). In other words, when students feel assured in their comprehension and proficiency, they are more inclined to have the determination to fully participate in learning exercises, contribute to classroom discussions, and approach difficult tasks with enthusiasm. It will then help improve academic accomplishments, and create better retention of information, active participation, optimistic attitudes toward learning, and heightened well-being (Rafiola et al., 2020). This optimistic cycle creates a sturdy basis for continual success in academic pursuits.

Table 9.
Academic Performance of the Students Based on the Grading Metrics

Grading Metrics	1.0 - 1.5	1.6 - 2.0	2.1 - 2.50	2.6-3.0	5	Mean	Interpretation
Describe the usual grades received from assessments wherein AI tools were used	89	175	29	0	0	4.20	Above Average
Describe the grades received from assessments in the preliminary term	95	183	15	0	0	4.27	Excellent
Describe the grades received during midterms	80	192	18	3	0	4.19	Above Average
Describe the final grades received	121	154	18	0	0	4.35	Excellent
Describe your current general weighted average	135	137	16	5	0	4.37	Excellent
Total	520	841	96	8	0	4.28	Excellent

Based on the survey results, respondents achieved above-average grades during midterms, with an average rating of 4.19, the lowest value of mean among the items. Although slightly lower than the preliminary term grades, this still indicates a strong performance in the assessments conducted during the middle of the term. It suggests that they maintained a solid level of understanding and proficiency throughout the semester. Overall, respondents reported an excellent current general weighted average of 4.37, further indicating outstanding academic performance. This suggests that their overall academic achievements have consistently been of a very high standard. These results indicate a strong level of understanding, application, and overall academic success among the respondents.

Table 10.
Correlation Test Result of Students' AI Usage and their Academic Performance

		AI_Usage	Academic_Performance
Spearman's rho AI_Usage	Correlation Coefficient	1.000	0.0404
	Sig. (2-tailed)		0.4916
	N	293	293
Academic_Performance	Correlation Coefficient	0.0404	1.000
	Sig. (2-tailed)	0.4916	
	N	293	

For the relationship between AI usage and the academic performance of the students, a factor loading was created, and the results were correlated. The correlation coefficient is found to be 0.0404 indicating a very weak positive correlation. This means that there is a slight tendency for higher usage of AI tools to be associated with slightly better academic performance. However, the magnitude of the correlation is quite small, suggesting that the relationship between AI usage and academic performance is not substantial. The p-value of 0.4916 is higher than the significance level of 0.05. In this case, the high p-value suggests the observed correlation coefficient of 0.051 could have occurred by chance. Therefore, the null hypothesis that there is no significant relationship between AI usage and academic performance is not rejected. It is important to note that a non-significant correlation does not necessarily imply that there is no direct

relationship between the variables. It simply means that the observed correlation is not statistically significant, and any apparent association between AI usage and academic performance may be due to random chance or other factors not accounted for in the analysis.

CONCLUSION AND RECOMMENDATION

AI is a game-changing technology that increases labor efficiency, lowers costs, and optimizes human resources for job development. This has resulted in breakthroughs in academic, public, and commercial settings which will then encourage competency and efficiency in process development. The study aimed to investigate the relationship between AI implementation and students' academic performances, while also exploring the broader implications for educational practices. The results of the study suggest that the use of Artificial Intelligence (AI) among students is moderately prevalent in terms of its functionality, accessibility, and complexity. Despite this moderate use, the student's academic performance was found to be of an above-average standard, with high scores on assessments, mastery of courses, and excellent grades. This indicates that there is potential for further growth and improvement in the integration of AI tools into educational settings. Additionally, the absence of a significant correlation between AI use and academic performance raises queries about the role and implications of AI in the educational process. Although AI tools may not be directly associated with academic performance, they may still offer other advantages, such as the ability to create personalized learning experiences, provide immediate feedback, or facilitate collaborative activities.

The study suggests several recommendations for enhancing AI integration in education. Firstly, educators and institutions should provide adequate training and support to students and teachers to ensure they are proficient in using AI technologies effectively. Additionally, AI tools should be made more accessible and user-friendly to encourage increased utilization. Secondly, further research is needed to explore the specific

impacts and potential benefits of AI in the learning process. This should include exploring the nuanced roles of AI tools, such as personalized learning experiences, instant feedback, and collaborative activities. Lastly, a holistic educational approach should be adopted, considering multiple factors influencing academic performance. AI tools may not be the sole determinant of success, but they can complement other factors like effective teaching methods, student motivation, and individual learning styles. Institutions should establish mechanisms to monitor and evaluate the impact of AI tools on student learning outcomes, collecting data on variables such as student engagement, satisfaction, and performance. Finally, sharing best practices and experiences among educators and institutions regarding AI integration can be encouraged through conferences, workshops, or online platforms, fostering collaboration and knowledge sharing, ultimately contributing to the continuous improvement of AI usage in the educational context.

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