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INTEGRATION OF ARTIFICIAL INTELLIGENCE (AI) ON THE SCHOOL MANAGEMENT IN THE IMPLEMENTATION OF ICT-BASED MARKETING APPROACH

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ABSTRACT

The rapid advancement of Artificial Intelligence (AI) is transforming how educational institutions manage operations, deliver instruction, and enhance learning outcomes. This quantitative descriptive-correlational study examined the relationship between the integration of AI in school management and the enhancement of ICT-based marketing implementation at the Polytechnic University of the Philippines (PUP) for the academic year 2025–2026. The respondents were selected business students from PUP. Pearson correlation analysis was employed to determine the relationship between AI integration and the implementation of ICT-based strategies. Findings revealed that AI is significantly integrated into school management, particularly in administrative processes, automation of routine tasks, AI-driven decision-making, and personalized learning experiences. AI tools are widely used for grading, attendance tracking, performance monitoring, scheduling, and instructional development. Results further indicated that AI enhances time efficiency, work quality, work quantity, and resource optimization, contributing to improved instructional delivery and management performance. Moreover, a strong and meaningful relationship was established between AI integration and the enhancement of ICT-based marketing approaches, highlighting AI's vital role in improving educational management and teaching efficiency. Despite its positive contributions, challenges such as inconsistent adoption, infrastructural limitations, and varying levels of digital literacy were identified. Overall, the study emphasizes the transformative potential of AI in optimizing school management and

instructional practices while underscoring the importance of continuous professional development and institutional support to ensure its successful and sustainable implementation.

Keywords: *Artificial Intelligence, School Management, ICT-Based Marketing, Educational Innovation, Decision-Making*

INTRODUCTION

Background of the Study

The rapid advancement of artificial intelligence (AI) is reshaping how educational institutions manage operations, deliver instruction, and engage stakeholders. In higher education, AI tools—ranging from intelligent tutoring systems and adaptive learning platforms to administrative chatbots and predictive analytics—promise to streamline school management and enhance the implementation of ICT-based curricula, including marketing courses that increasingly demand digital literacy and data-driven competencies (Bond et al., 2024; Kalniņa et al., 2024). Examining how AI can be integrated into school management to support the delivery, assessment, and scaling of ICT-based marketing courses is both timely and essential for institutions aiming to align pedagogy, administration, and industry needs (Chen et al., 2020).

Globally, research highlights how AI transforms higher education by promoting adaptive learning, intelligent assessment, and automated administrative systems (Bond et al., 2024; Kalniņa et al., 2024). These innovations foster efficiency, personalization, and data-informed decision-making in schools and universities. However, concerns regarding ethics, transparency, and institutional readiness persist, particularly in developing countries (Chen et al., 2020). While numerous studies have explored AI's role in improving educational management, there remains a lack of empirical evidence connecting AI-driven management practices directly to the implementation of specific discipline-based courses such as ICT-driven marketing programs (Bond et al., 2024).Few studies have explicitly examined how AI-enabled school management enhances instructional delivery, assessment efficiency, and student engagement in marketing-related ICT courses.

In the Philippines, the government and higher education institutions have begun exploring the use of AI in education to improve administrative processes, learning systems, and research management (Quimba et al., 2024; Rodrigo, 2024). However, implementation remains inconsistent due to digital infrastructure gaps, limited institutional readiness, and uneven teacher training. The Philippine Institute for Development Studies (PIDS) notes that while AI adoption can modernize school systems, its integration requires careful governance, upskilling, and resource investment (Quimba et al., 2024). Some pilot projects have shown improvements in administrative efficiency and teacher productivity, yet limited research examines how AI-driven management systems specifically impact ICT-based marketing education programs (Umali, 2024).There is insufficient evidence on how school management's use of AI tools—such as data analytics for course planning and virtual management systems—supports the pedagogical and institutional needs of ICT-based marketing courses in Philippine higher education (Rodrigo, 2024).

In Luzon, where many state colleges and private institutions offer marketing and ICT programs, the need to modernize curricula through technology-driven management is particularly strong. Some colleges have introduced AI-based systems for student recruitment, learning management, and marketing analytics; however, implementation remains uneven, and documentation is scarce (AI in Education Marketing, 2023). Although schools recognize the potential of AI to improve communication, course monitoring, and administrative transparency, few studies investigate how these tools translate into improved learning experiences and outcomes in ICT-based marketing courses (Umali, 2024).There is a limited body of research exploring how AI integration in school management influences the operational efficiency, learning engagement, and curriculum quality of ICT-based marketing courses in Luzon colleges and universities.

This study aligns with SDG 4 (Quality Education) by investigating how AI-driven school management can improve institutional capacity and enhance the quality of ICT-based marketing instruction (Bond et al., 2024). It also supports SDG 8 (Decent Work and Economic Growth) by preparing students for employment in an increasingly digital economy (Kalniņa et al., 2024). Furthermore, the study contributes to SDG 9 (Industry, Innovation, and Infrastructure) by promoting institutional innovation and technological integration in education, and to SDG 10 (Reduced Inequalities) by examining how AI systems can promote inclusive access to quality education regardless of students' socioeconomic backgrounds (Rodrigo, 2024).

The goal of this study is to examine how the integration of Artificial Intelligence (AI) in school management systems influences the implementation, instructional delivery, and learning outcomes of ICT-based marketing courses at the Polytechnic University Philippines. Specifically, it seeks to identify the enabling factors, challenges, and implications of AI adoption for enhancing institutional efficiency, educational quality, and student engagement.

Research Questions

This research explored the integration of Artificial Intelligence (AI) in school management systems influences the implementation, instructional delivery, and learning outcomes of ICT-based marketing courses at the Polytechnic University Philippines.

Specifically, research problem revolved around understanding the following key questions:

1. To what extent is the utilization of Artificial Intelligence (AI) in School Management, in terms of:
    1.1.Integration of AI in Administrative Processes;
    1.2.Automation of Routine Tasks;
    1.3. AI-driven Decision-Making; and
    1.4. Personalized Learning Experiences?
2. What is the level of school management at PUP in the implematation ICT-based marketing courses, in terms of:

    2.1.Administrative Efficiency;
    2.2.Decision-Making Efficacy;
    2.3. Leadership Effectiveness; and
    2.4.Team Collaboration and Coordination?

3.Is there a significant relationship between the extent of the utilization of Artificial Intelligence (AI) and the level of school management at PUP in the implematation ICT-based marketing courses?

METHODOLOGY

Research Design

The study is quantitative in nature, namely a descriptive-correlational to determine the relationship between the utilization of artificial intelligence and school management at PUP in the implematation ICT-based marketing courses.

According to Bhandari (2021), A correlational research design investigates relationships between variables without the researcher controlling or manipulating any of them. Further, a correlation reflects the strength and/or direction of the relationship between two (or more) variables. The direction of a correlation can be either positive or negative. Correlational research is ideal for gathering data quickly from natural settings. That helps generalize findings to real-life situations in an externally valid way.

Respondent of the Study

The respondents of the study were the selected business students at Polytechnic University of the Philippines–Open University (PUP-OU) for the academic year 2025–2026. Business students were chosen as respondents because they are directly engaged in ICT-based marketing courses where the integration of Artificial Intelligence (AI) in school management and instruction is highly relevant. Their perspectives are essential in understanding how AI-driven systems influence learning experiences, course delivery, and institutional processes within a technology-mediated academic environment.

Furthermore, selecting business students from an open university context provides valuable insights into how AI-integrated school management systems function in flexible and digital learning environments. This aligns with the study's objective to examine the extent to which AI supports academic management and the implementation of ICT-based marketing courses in higher education settings.

Sampling Technique

The study employed **simple random sampling** to ensure that each student in the target population had an equal and unbiased chance of being selected. This method minimizes selection bias and enhances the representativeness of the sample, thereby improving the validity and generalizability of the findings (Etikan & Bala, 2017; Taherdoost, 2022). Simple random sampling is particularly suitable when the population is relatively homogenous in terms of academic background and exposure to ICT-based courses, as it allows for the collection of unbiased data that accurately reflects the views of the student body (Creswell & Creswell, 2018).

Research Instrument

The researcher utilized an adopted survey questionnaire from the study of Umali (2024) to gather relevant data on the integration of Artificial Intelligence (AI) in school management and

the implementation of ICT-based marketing courses. Adopting an existing, validated instrument ensures that the tool possesses established reliability and validity, which are essential for producing accurate and consistent research findings (Creswell & Creswell, 2018). Utilizing a pre-tested questionnaire also enhances the comparability of results across studies and minimizes measurement errors that may arise from developing a new instrument from scratch (Saunders et al., 2019).

Prior to data collection, the adopted instrument was contextually modified to suit the specific academic and institutional setting of the Polytechnic University of the Philippines–Open University (PUP-OU). This process of adaptation is crucial to ensure cultural and contextual relevance, as instruments developed in different environments may require revisions in wording, structure, or content to maintain validity (Taherdoost, 2016). Furthermore, the survey items were reviewed by field experts to ensure content validity and to confirm that they accurately measure the intended constructs related to AI integration in school management and ICT-based education.

The use of a structured questionnaire facilitates the systematic collection of quantitative data and allows for efficient analysis of participants' perceptions and experiences (Sekaran & Bougie, 2020). It also aligns with the study's objective to determine the extent of AI integration in academic processes through a measurable and standardized approach.

Data Gathering Procedure

To ensure reliable and authentic findings, the researcher will adhere to a methodology that aligns with the objectives of their inquiry.

Initially, the study's implementation l required the endorsement of the president and dean of the College of Business through the affixation of their respective signatures on a formal document.

An additional letter of authorization was dispatched to the school district superviors, and to the . To ensure the accuracy of the data collected for this study, a survey questionnaire was utilized, developed, and assessed. The researcher intends to employ a total enumerationand random sampling technique by utilizing self-generated random number tables to select participants for the study.

Prior to the conduct of the study, the research proposal shall undergo ethical considerations. The researcher sought for approved clearance to conduct the study from the office of the PUP.

Provided that the health protocol is adhered to, the investigator will initiate the dissemination of the Survey Questionnaire via face to face manner. Ultimately, the outcomes derived from the distributed survey questionnaire will be compiled, assessed, and analyzed.

Data Analysis

Upon the culmination of the study, the collected data will be systematically arranged, presented in tabular form, subjected to rigorous analysis, and subsequently interpreted. Consequently, the statistical techniques outlined in Chapter I was utilized to address the aforementioned issues.

Initially, the Mean statistical measure was employed to calculate the the extent of the utilization of Artificial Intelligence (AI) in School Management, and the level of school management at PUP.

On the other hand, Pearson r Correlation was also employed to calculate the significant relationship between the extent of the utilization of Artificial Intelligence (AI) and the level of school management in implementation of ICT-Based Marketing courses at PUP.

Scope and Delimitation

This study focused on exploring how the integration of Artificial Intelligence (AI) in school management systems influences the implementation, instructional delivery, and learning outcomes of ICT-based marketing courses at the Polytechnic University of the Philippines (PUP) during the academic year 2025–2026. Specifically, the research examined the extent to which AI-driven tools and processes—such as automated administrative systems, predictive analytics, adaptive learning platforms, and digital communication channels—affect the effectiveness and efficiency of teaching and learning in ICT-related marketing programs. The study concentrated on the perspectives and experiences of business students enrolled at PUP Open University, as they represent the primary stakeholders directly exposed to AI-integrated academic and management systems.

The scope of the research was limited to AI applications within school management and academic delivery contexts, particularly those supporting curriculum implementation, student performance monitoring, and digital instruction in marketing courses. The study did not include a technical evaluation of AI algorithms or infrastructure but instead emphasized the educational and managerial implications of AI use in higher education. Moreover, the investigation was restricted to one academic institution, which may limit the generalizability of findings to other universities with different technological capacities, management structures, or cultural contexts.

Additionally, the study did not cover other academic disciplines beyond ICT-based marketing or external factors such as socioeconomic background, personal motivation, or internet accessibility that may indirectly affect students' learning outcomes. Despite these delimitations, the findings are expected to provide valuable insights into how AI integration can enhance institutional management and improve the quality of instruction in digitally driven academic programs, thereby contributing to the broader discourse on educational innovation and digital transformation in the Philippines.

RESULTS AND DISCUSSIONS

The rapid advancement of artificial intelligence (AI) is reshaping how educational institutions manage operations, deliver instruction, and engage stakeholders.The study was quantitative in nature, namely a descriptive-correlational to determine the relationship between the integration of artificial intelligence in school management, and the enhancement of ICT-Based Marketing strategic implementation at PUP. This study's respondents were the selected business college students at PUP for academic year 2025-2026.

Initially, the Mean statistical measure was employed to calculate the extent of the Integration of Artificial Intelligence (AI) in School Management, and level of the enhancement of ICT-Based Marketing strategy. On the other hand, Pearson r Correlation was also employed to

calculate the significant relationship between the extent of the utilization of Artificial Intelligence (AI) and the level of school management in the ICT-Based Marketing class.

The results indicate that Artificial Intelligence (AI) is significantly integrated into school management, particularly in administrative processes, automation of routine tasks, AI-driven decision-making, and personalized learning experiences. Across the various categories, respondents generally agreed on the effectiveness of AI tools, with mean scores ranging from 3.5 to 4.162. AI is widely utilized in external communication, document processing, data management, grading, attendance tracking, performance monitoring, and scheduling. AI-driven decision-making plays a crucial role in student performance analysis, teacher development planning, and budget forecasting. Additionally, AI enhances personalized learning experiences by assisting in assignment creation, instructional material development, and research proposal writing. However, some challenges remain, such as variability in adoption across schools, resistance to change, and technical limitations. These findings align with existing literature, which emphasizes AI's potential in streamlining school administration, improving efficiency, and enhancing decision-making processes while highlighting the need for further refinement and support for seamless implementation.

Also, results highlight the positive impact of Artificial Intelligence (AI) on the implementation of the ICT-based approach, particularly in terms of time efficiency, work quality, work quantity, and resource optimization. AI tools significantly reduce the time required for lesson planning, scheduling, decision-making, and feedback provision (M = 3.916), while also enhancing assessment accuracy, instructional alignment, and teaching strategies to improve work quality (M = 3.862). Moreover, AI-driven automation allows educators to handle more administrative tasks efficiently, multitask, and increase their output of lesson materials and assessments (M = 3.865). In terms of resource optimization (M = 3.881), AI plays a crucial role in managing instructional materials, tracking school resources, minimizing waste, and ensuring cost-effective technology use. Despite these benefits, variability in responses suggests that factors such as institutional readiness, digital literacy, and infrastructure influence the effectiveness of AI integration. Overall, the results emphasize that while AI enhances curriculum implementation, continuous efforts are needed to address implementation challenges and maximize its potential in education.

Also, the result reveals a strong and statistically significant relationship between the extent of integration of Artificial Intelligence (AI) in school management and the enhancement of the ICT-Based approach, with a correlation coefficient of r = 0.875, which is significantly higher than the p-value of 0.096 at the 0.05 level of significance. This indicates that the use of AI in school management has a substantial impact on improving the implementation of the ICT-Based Curriculum, suggesting that AI plays a critical role in facilitating more effective educational practices, resource allocation, and decision-making in schools.

Conclusion

The following conclusions were made in light of the study's findings:

AI is widely utilized in administrative tasks, decision-making, and personalized learning, enhancing efficiency in grading, attendance tracking, and performance monitoring.

AI improves curriculum implementation by streamlining lesson planning, assessment, and decision-making while optimizing resources and enhancing instructional quality.

A strong correlation confirms AI's crucial role in improving educational practices, resource allocation, and data-driven decision-making in schools.

Recommendations

In the light of the findings, the following were recommended

1. PUP may develop comprehensive policies and guidelines for integrating AI in school management, ensuring alignment with the PUPs curriculum. This includes establishing clear protocols on AI-driven decision-making, data utilization, and staff training to enhance administrative efficiency and personalized learning experiences.
2. Curriculum developers can design AI-supported instructional materials tailored to the ICT-Based Curriculum's objectives. They can ensure that AI tools align with curriculum standards, enhance work efficiency, and promote resource optimization while maintaining a balance between technology integration and traditional pedagogical approaches.
3. School administrators may invest in AI tools that optimize administrative processes and support data-driven decision-making. They can also ensure that teachers and staff receive continuous professional development and technical support to effectively use AI in enhancing curriculum implementation, resource allocation, and instructional strategies.
4. Profesors can actively engage in AI training programs to develop competencies in utilizing AI for personalized learning experiences. By integrating AI-assisted tools in lesson planning, assessment, and student progress tracking, teachers can improve work quality, optimize instructional time, and enhance student learning outcomes under the ICT-Based pedagogy.
5. Future Researchers may explore the long-term impact of AI integration on school management and curriculum implementation. Studies may examine how AI-driven innovations influence teaching methodologies, student engagement, and overall educational effectiveness to provide data-driven recommendations for policy improvements.

Compliance with Ethical Standards

Ethical principles were strictly observed throughout the conduct of the study to ensure integrity, respect, and the protection of participants' rights. Before data collection, the researcher sought approval from the Polytechnic University of the Philippines (PUP) Research Ethics Committee to guarantee that the research design complied with institutional and national ethical standards for studies involving human participants (Resnik, 2020).

Informed consent was obtained from all participants prior to their inclusion in the study. Each respondent was provided with a clear explanation of the study's purpose, procedures, potential risks, and benefits. Participation was entirely voluntary, and respondents were informed of their right to withdraw at any time without any form of penalty or academic consequence (Creswell & Creswell, 2018). To ensure full understanding, the consent form was written in plain and comprehensible language, accommodating participants with different levels of English proficiency.

Confidentiality and anonymity were upheld throughout the research process. Personal identifiers were excluded from the survey instrument, and responses were encoded and analyzed in aggregate form only. All data collected were securely stored in password-protected files accessible solely to the researcher, ensuring compliance with data protection and privacy regulations (Fouka & Mantzorou, 2011).

Additionally, the study adhered to the principle of non-maleficence, ensuring that participants experienced no psychological, social, or academic harm during their involvement. Since the topic involved perspectives on Artificial Intelligence in academic management systems, care was taken to frame all questions neutrally to prevent bias or discomfort (Israel, 2015).

The researcher also ensured intellectual honesty and academic integrity by properly citing all sources of information and avoiding plagiarism in both conceptualization and manuscript preparation. All findings were presented objectively, without manipulation or fabrication of data.

Finally, the study aligned with the ethical standards set by the American Psychological Association (APA, 2020) and the Philippine National Ethical Guidelines for Health and Social Research (2017), ensuring transparency, accountability, and respect for participants' autonomy.

Declaration AI Tools Utilization

I do hereby declare the use AI tools, such as Chat GPT and Grammarly for grammar checking and sentence organization purposes only.

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