RADIOLOGIC TECHNOLOGY STUDENTS' PERCEPTIONS ON THE ADOPTION OF ARTIFICIAL INTELLIGENCE IN DIAGNOSTIC IMAGING: KNOWLEDGE, ATTITUDES, AND PRACTICES

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This study examined radiologic technology students' knowledge, attitudes, and perceptions regarding the adoption of artificial intelligence (AI) in diagnostic imaging as a basis for curriculum enhancement. A quantitative descriptive-correlational approach was employed involving 87 radiologic technology students from San Pablo Colleges, representing an 84% survey retrieval rate. Data were collected using a researcher-developed, expert-reviewed questionnaire administered through Google Forms. Descriptive means and Spearman's rank-order correlation were used for statistical analysis. Findings revealed an overall knowledge mean of 3.08, indicating general familiarity with AI and its applications in diagnostic imaging. Students demonstrated positive attitudes toward AI adoption (M = 3.07), with higher ratings for perceived ease of use and accessibility (M = 3.18) than for perceived usefulness (M = 2.96). The perceived extent of AI adoption obtained an overall mean of 3.09. Significant positive relationships were identified between AI knowledge and attitudes ($\rho = .67$, $p < .01$), attitudes and perceived extent of adoption ($\rho = .74$, $p < .01$), and knowledge and perceived extent of adoption ($\rho = .49$, $p < .01$). These findings indicated that students with greater self-reported AI knowledge tended to express more favorable attitudes and perceive greater integration of AI in diagnostic imaging. However, the results also highlighted the need for stronger understanding of AI applications, clinical decision-making, and professional implications. The study concluded that integrating foundational AI education, practical applications, and ethical considerations into radiologic technology instruction could address identified learning needs and support students' preparation for evolving imaging practices.

Keywords: *artificial intelligence, diagnostic imaging, radiologic technology education, knowledge, attitudes, technology adoption, curriculum enhancement*

Introduction

Artificial intelligence (AI) has become an increasingly important technological development in healthcare, particularly in diagnostic imaging. Applications involving machine learning, deep learning, image reconstruction, automated image analysis, and clinical decision support have created opportunities to improve imaging workflows and assist healthcare professionals in identifying abnormalities. Melazzini et al. (2025) discussed developments in AI-assisted imaging, including approaches intended to improve image quality and reduce radiation exposure. Hardy and Harvey (2020) similarly emphasized the influence of technological advances on radiography practice and the evolving responsibilities of radiographers.

Despite these developments, the integration of AI into diagnostic imaging raises questions regarding professional competence, ethical accountability, patient safety, data security, and future employment. AI systems may support clinical decision-making, but their effective use requires an understanding of their capabilities and limitations. Consequently, radiologic technology education must consider how future professionals are prepared to interact critically and responsibly with emerging imaging technologies.

Previous studies have examined students' knowledge and perceptions of AI in healthcare and radiology. Amin et al. (2024) reported that many medical students demonstrated basic AI awareness but lacked comprehensive understanding of its practical applications. Similarly, Ampofo et al. (2023) identified gaps in medical imaging students' knowledge of AI despite general familiarity with the technology. These findings suggested that awareness alone may be insufficient for understanding AI-assisted clinical practice.

Studies involving radiologic technology students have also highlighted the relationship between AI knowledge and attitudes. Arif (2024) reported generally favorable perceptions of AI and emphasized the importance of education and training. In contrast, Aljoqiman et al. (2025) described how greater knowledge could coexist with concerns about AI's implications for professional practice. These findings indicated that familiarity with AI did not necessarily eliminate uncertainty about its consequences.

Attitudes toward technological adoption are also influenced by perceived usefulness and ease of use. The Technology Acceptance Model provides a framework for understanding how these perceptions may shape acceptance of emerging technologies. In diagnostic imaging, students may recognize AI as accessible and potentially efficient while remaining uncertain about its reliability, clinical applications, and effects on professional roles.

The Knowledge–Attitude–Practice (KAP) model offers a complementary perspective by examining the relationships among what individuals know, how they evaluate a particular development, and how they perceive or engage with related practices. Together, the KAP model and Technology Acceptance Model provide a conceptual basis for investigating students' perceptions of AI adoption.

Existing literature has emphasized the importance of integrating AI instruction into healthcare education. Sit et al. (2020) identified students' interest in AI education and the relevance of technological preparation to future professional practice. Crotty et al. (2024) likewise emphasized incorporating AI-related learning opportunities into undergraduate medical imaging education.

However, the findings of international studies may not fully reflect the educational experiences and technological preparation of radiologic technology students in a Philippine higher education institution. Understanding students' current knowledge, attitudes,

and perceptions of AI adoption is therefore necessary for identifying context-specific curriculum enhancement priorities.

Accordingly, this study examined radiologic technology students' knowledge of AI and its applications in diagnostic imaging, attitudes concerning perceived usefulness and ease of use, and perceived extent of AI adoption. It also determined the relationships among these variables to provide evidence-based inputs for strengthening radiologic technology education at San Pablo Colleges.

Methods

The study employed a quantitative descriptive research design with correlational analysis to examine radiologic technology students' knowledge, attitudes, and perceived extent of artificial intelligence adoption in diagnostic imaging. It was conducted at San Pablo Colleges in San Pablo City, Laguna, Philippines, among students enrolled in the College of Radiologic Technology. Total enumeration was used to invite eligible students to participate, although not all responded. A total of 87 completed responses were obtained, representing an 84% retrieval rate. The respondents comprised 46 first-year, 22 second-year, 11 third-year, and eight fourth-year students. Data were collected using a researcher-developed questionnaire consisting of four-point Likert-scale items, with responses ranging from strongly disagree to strongly agree. The instrument included demographic information, ten statements assessing knowledge of AI and its applications in diagnostic imaging, twenty statements measuring attitudes through perceived usefulness and perceived ease of use and accessibility, and ten statements assessing the perceived extent of AI adoption. Two subject specialists and one language specialist reviewed the questionnaire for validity. Pilot testing was conducted among 31 radiologic technology students at Lyceum of the Philippines University–St. Cabrini. Reliability testing using Cronbach's alpha yielded coefficients of .84, .65, and .47 for the three questionnaire components, respectively. The researchers subsequently revised the

instrument based on the reliability findings and recommendations of the statistician. Permission to conduct the study was obtained from the Dean of the College of Radiologic Technology. The questionnaire was administered online through Google Forms, and completed responses were collected for statistical analysis. Descriptive means were computed to determine students' knowledge, attitudes, and perceived extent of AI adoption, while Spearman's rank-order correlation was employed to examine relationships among these variables. Before participation, respondents received information concerning the study's objectives, procedures, potential risks and benefits, confidentiality, voluntary participation, and right to withdraw. Informed consent was obtained, participation was anonymous, and access to collected data was restricted to the research team.

Results and Discussion

The study examined the knowledge, attitudes, and perceived extent of AI adoption among 87 radiologic technology students. The findings revealed generally favorable perceptions of AI, although differences were observed between students' familiarity with the technology, perceived ease of use, and perceived usefulness. Significant positive correlations were also identified among the three study variables.

Knowledge of Artificial Intelligence and Its Applications in Diagnostic Imaging

The respondents obtained an overall mean of 3.08 for knowledge of AI and its applications in diagnostic imaging. The findings indicated that students generally reported familiarity with AI concepts and recognized its relevance to medical imaging.

The highest-rated knowledge indicator obtained a mean of 3.20, reflecting students' familiarity with the basic concept of artificial intelligence. Another highly rated statement concerned AI

techniques for improving the speed and precision of image analysis (M = 3.18).

However, the lowest-rated indicator obtained a mean of 2.91, indicating comparatively weaker knowledge in a specific area of AI application. The thesis identified gaps involving the historical development of AI in medical imaging and its application to treatment planning and clinical decision-making.

These findings suggested that students possessed foundational awareness of AI but might not have developed an equally comprehensive understanding of its specialized clinical applications.

The results were consistent with Amin et al. (2024), who identified basic AI awareness alongside limited practical understanding among medical students. Ampofo et al. (2023) similarly reported that medical imaging students had general knowledge of AI but lacked deeper familiarity with its applications. Arif (2024) emphasized the importance of targeted education in preparing radiologic technology students for AI integration.

The findings highlighted the need to distinguish between self-reported familiarity and demonstrated technical competence. Because knowledge was assessed through agreement with questionnaire statements, the study did not independently verify students' ability to operate AI systems or evaluate their clinical outputs.

For curriculum enhancement, the results supported introducing foundational instruction on machine learning, deep learning, AI-assisted image processing, clinical decision support, and the limitations of automated imaging technologies.

Attitudes Toward AI Adoption in Diagnostic Imaging

Students demonstrated an overall positive attitude toward AI adoption, with a composite mean of 3.07. However, differences

emerged between perceived usefulness and perceived ease of use and accessibility.

Perceived usefulness of AI in improving diagnostic accuracy and efficiency. This dimension obtained a composite mean of 2.96, indicating generally favorable but comparatively cautious perceptions.

The highest-rated indicator obtained a mean of 3.15, while the lowest obtained a mean of 2.66. The results suggested that students recognized potential benefits of AI while expressing reservations about certain applications and implications, including future employment.

These findings were compatible with Arruzza (2024), who reported that radiography students generally recognized the potential value of AI while remaining uncertain about its implications for employment. Botwe et al. (2021) likewise described favorable attitudes toward AI integration accompanied by concerns about technical expertise, data privacy, and potential errors.

The findings suggested that positive attitudes toward AI should not be interpreted as unquestioning acceptance. Students may appreciate its potential contributions while recognizing the importance of professional judgment, ethical safeguards, and human oversight.

Perceived ease of use and accessibility of AI technologies. This dimension obtained a higher composite mean of 3.18, suggesting that students generally perceived AI technologies as accessible and manageable.

The highest-rated indicator obtained a mean of 3.37, while the lowest obtained 3.02. These results indicated that students expressed greater confidence in the accessibility and usability of AI than in its practical usefulness.

The difference between these dimensions was consistent with the Technology Acceptance Model, which distinguishes perceived ease of use from perceived usefulness in understanding technology acceptance.

The findings suggested that students' willingness to engage with AI might be supported by perceptions of accessibility, but meaningful adoption would also require confidence in its clinical value, reliability, and appropriate application.

For curriculum enhancement, AI education should therefore move beyond basic familiarity with technological interfaces. Instruction should also include realistic clinical examples, critical interpretation of AI-generated outputs, and discussions of professional accountability.

Perceived Extent of AI Adoption in Diagnostic Imaging

The respondents obtained an overall mean of 3.09 for the perceived extent of AI adoption in diagnostic imaging.

The highest-rated indicators obtained means of 3.15, reflecting students' recognition of AI's growing relevance to diagnostic imaging and radiologic practice.

These findings suggested that students perceived AI as an increasingly important component of contemporary imaging technologies and workflows.

The results were consistent with Pedersen et al. (2024), who discussed radiographers' generally favorable perceptions of AI integration despite limitations in education and training. They also complemented Sit et al. (2020), who emphasized the relevance of AI education to students' preparation for technologically evolving healthcare environments.

However, the measured variable represented students' perceptions of AI adoption rather than independently documented

implementation in clinical facilities. The study did not assess the actual number of AI-enabled imaging systems, institutional adoption rates, or frequency of AI use in healthcare establishments.

The findings therefore highlighted the importance of aligning students' perceptions with accurate knowledge of how AI is currently used, validated, monitored, and supervised in diagnostic imaging.

For curriculum enhancement, students may benefit from demonstrations of actual AI-supported imaging applications, discussions of clinical workflows, and supervised exposure to appropriate technologies when available.

Relationship Between Knowledge of AI and Attitudes Toward Adoption

Spearman's rank-order correlation revealed a significant positive relationship between students' AI knowledge and attitudes toward adoption, $\rho = .67$, $p < .01$.

This finding indicated that students who reported greater knowledge of AI also tended to express more favorable attitudes toward its integration into diagnostic imaging.

The result was consistent with Arif (2024), who identified favorable attitudes among students with greater AI awareness. However, Aljoqiman et al. (2025) reported that greater knowledge could also be associated with more critical perspectives, particularly regarding professional uncertainty.

Together, these findings suggested that knowledge and attitudes were related but that the nature of students' perceptions could depend on the content and depth of their understanding.

The observed correlation did not establish that increasing AI knowledge would necessarily cause more favorable attitudes. Nevertheless, it supported examining educational opportunities

that promote accurate, balanced, and clinically relevant understanding of AI.

Relationship Between Attitudes and Perceived Extent of AI Adoption

A strong positive correlation was identified between attitudes toward AI adoption and the perceived extent of its integration into diagnostic imaging, $\rho = .74$, $p < .01$.

This was the strongest of the three reported relationships.

The result indicated that students with more favorable attitudes toward AI tended to perceive a greater extent of its adoption in radiologic practice.

The finding was compatible with the Technology Acceptance Model, which emphasizes the relationship between users' perceptions of technology and their acceptance of it.

It also complemented literature discussed in the thesis concerning the role of favorable perceptions in students' expectations of AI-assisted clinical practice.

However, the relationship involved two self-reported perceptual measures. It did not establish that favorable attitudes increased actual AI adoption or that respondents had directly experienced more AI-enabled clinical procedures.

The finding supported the importance of addressing both the potential benefits and limitations of AI during radiologic technology instruction.

Relationship Between Knowledge and Perceived Extent of AI Adoption

A moderate positive correlation was found between AI knowledge and perceived extent of adoption, $\rho = .49$, $p < .01$.

The result indicated that students reporting greater knowledge of AI tended to perceive more extensive integration of the technology into diagnostic imaging.

This relationship was weaker than the associations between knowledge and attitudes and between attitudes and perceived adoption.

The finding was consistent with the literature discussed by Sit et al. (2020), which emphasized the relevance of AI education and exposure to students' understanding of its professional applications.

It suggested that knowledge was associated with students' perceptions of technological integration, although other factors not examined in the study could also influence those perceptions.

The findings supported providing opportunities for students to examine actual applications of AI in diagnostic imaging rather than relying exclusively on general descriptions of emerging technologies.

Implications for Radiologic Technology Curriculum Enhancement

Collectively, the findings indicated that radiologic technology students demonstrated general AI familiarity and favorable attitudes but also expressed reservations concerning practical usefulness and professional implications.

The three statistically significant correlations suggested that knowledge, attitudes, and perceived adoption were related dimensions of students' understanding of AI.

These findings provided a basis for reviewing AI-related instruction within the radiologic technology curriculum. Potential priorities included foundational AI literacy, clinical applications in imaging, critical evaluation of AI-generated information, data

privacy, algorithmic limitations, and the continuing responsibilities of radiologic technologists.

Curriculum enhancement should also address the distinction between AI as a supportive clinical tool and the professional judgment required for safe patient care.

Because the study used a cross-sectional survey, the findings did not establish that a particular educational intervention would improve AI competence or acceptance. Proposed curriculum changes would require subsequent implementation and evaluation.

Conclusion

The study revealed that radiologic technology students at San Pablo Colleges demonstrated general familiarity with artificial intelligence and favorable attitudes toward its adoption in diagnostic imaging. Students obtained an overall knowledge mean of 3.08, an attitude mean of 3.07, and a perceived adoption mean of 3.09. Perceived ease of use and accessibility ($M = 3.18$) was rated more favorably than perceived usefulness ($M = 2.96$), indicating that students recognized the accessibility of AI technologies while expressing comparatively greater reservations about their clinical applications and professional implications. Significant positive relationships were identified between knowledge and attitudes ($\rho = .67$), attitudes and perceived adoption ($\rho = .74$), and knowledge and perceived adoption ($\rho = .49$), all at $p < .01$. These findings indicated that students' knowledge, attitudes, and perceptions of AI integration were associated, although the study did not establish causal relationships. The results emphasized the relevance of strengthening AI-related education through foundational knowledge, clinical applications, ethical considerations, and critical evaluation of emerging technologies. The study provided context-specific evidence for curriculum enhancement within the College of Radiologic Technology.

Recommendations

The College of Radiologic Technology should consider integrating structured AI-related learning activities into the existing curriculum, covering the fundamentals of artificial intelligence, machine learning, deep learning, and their applications in diagnostic imaging. Instruction should include AI-assisted image processing, clinical decision support, workflow efficiency, and the limitations of automated systems. Ethical considerations involving patient confidentiality, algorithmic bias, accountability, and the continuing responsibilities of radiologic technologists should be emphasized. Seminars, workshops, demonstrations, and interdisciplinary learning activities may provide opportunities for students to examine realistic AI applications. Faculty development should also be considered to support effective delivery of AI-related instruction. Curriculum revisions should be evaluated through appropriate measures of student knowledge, practical competence, and critical understanding. Future research may include multiple institutions, larger samples, and objective assessments of AI literacy to determine whether educational interventions improve students' readiness for AI-supported diagnostic imaging.

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