From Traditional to Tech-Driven: The Role of AI in Shaping Student Engagement and Performance in Accounting Education

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ABSTRACT

The integration of Artificial Intelligence (AI) into accounting education is increasingly reshaping traditional pedagogical approaches, offering innovative tools that enhance student engagement and academic performance. Despite the growing availability of AI-driven technologies, many institutions continue to rely on conventional teaching methods, limiting the potential for personalized and interactive learning experiences. This study aims to explore how AI integration influences pedagogical innovation and ultimately improves learning outcomes in accounting education. Using a narrative review methodology, relevant literature was synthesized from peer-reviewed articles indexed in Scopus, focusing on AI applications in accounting, finance, and higher education. The proposed conceptual framework integrates the Technology Acceptance Model (TAM) and the AI Competency Adaptation Framework (AICAF) to explain how educators' perceptions of AI's usefulness and ease of use influence instructional innovation. Findings reveal that AI-powered tools such as intelligent tutoring systems, adaptive assessments, and real-time feedback mechanisms significantly improve personalization, interactivity, and alignment of curricula with industry demands. However, effective implementation is influenced by moderating factors, including faculty readiness and institutional support. This study contributes to both academic discourse and practical application by proposing a structured model that guides educators and policymakers in the strategic adoption of AI-based pedagogies. It also highlights the need for systemic reforms in teacher training and infrastructure development to ensure equitable and sustainable AI integration in accounting education.

Keywords: Artificial Intelligence (AI), Accounting Education, Pedagogical Innovation, Student Engagement, Learning Outcomes

INTRODUCTION

The rapid evolution of digital technologies has fundamentally reshaped educational paradigms, with Artificial Intelligence (AI) emerging as a pivotal force in transforming traditional learning environments into dynamic, tech-driven ecosystems. As a discipline historically characterized by structured curricula and standardized assessments, accounting education stands to benefit significantly from AI integration, which can drive transformative pedagogical change. AI-powered tools such as intelligent tutoring systems, adaptive learning platforms, and automated feedback mechanisms are redefining how students engage with complex accounting concepts and develop critical competencies (Alsharari & Habashi, 2025). As the accounting profession evolves toward data-driven decision-making and automation, equipping future accountants with both technical expertise and technological fluency become imperative.

Research highlights the growing influence of AI in enhancing student engagement and academic performance through personalized learning experiences. Radif (2024) emphasizes that AI facilitates tailored instruction by adapting content delivery to individual learner profiles, thereby increasing motivation and comprehension. Similarly, Mupaikwa (2025) underscores AI's role in fostering interactive and immersive learning environments that align with modern pedagogical goals. Furthermore, studies indicate that AI-enhanced assessments provide real-time feedback, enabling learners to identify knowledge gaps and improve their

performance more effectively (Maree et al., 2024). Despite these demonstrated benefits, there remains a need to synthesize these insights into a coherent and context-specific framework for accounting education.

However, the transition from traditional to AI-integrated teaching practices is not without challenges. Many educators face barriers such as limited digital literacy, resistance to change, and insufficient institutional support, which hinder the effective adoption of AI tools (Babo et al., 2024; Koralage et al., 2024). Moreover, while AI offers potential for enhanced collaboration and peer learning, its implementation often lacks structured guidance on how best to integrate these tools within existing curricula. These challenges limit the widespread and impactful use of AI in accounting classrooms, constraining its potential to fully enhance student engagement and learning outcomes.

To address this gap, this study proposes a conceptual framework that outlines the relationships between AI integration, pedagogical innovation, and academic performance in accounting education. Drawing upon the Technology Acceptance Model (TAM) and the AI Competency Adaptation Framework (AICAF), we aim to establish a theoretical foundation that supports educators and institutions in implementing AI-based pedagogical strategies. This paper contributes to the growing discourse on technology-enabled learning by offering a structured model that guides curriculum development, instructional design, and policy formulation in accounting education.

The significance of this research lies in its potential to inform stakeholders such as educators, administrators, and policymakers about the strategic use of AI in enhancing educational outcomes. By addressing current limitations and proposing a practical framework, this work encourages the adoption of AI tools that promote inclusivity, personalization, and skill acquisition aligned with industry demands. The remainder of the paper is organized as follows: Section 2 reviews the theoretical foundations, Section 3 presents the proposed conceptual framework, Section 4 discusses implications and recommendations, and Section 5 provides concluding insights and directions for future research.

LITERATURE REVIEW

A. AI Integration

The integration of Artificial Intelligence (AI) into accounting education has become increasingly prominent as institutions seek to modernize teaching practices and align curricula with evolving industry demands. Emerging technologies such as intelligent tutoring systems, adaptive testing platforms, and learning analytics tools are being adopted to deliver personalized and interactive learning experiences (Karmakar & Das, 2024). Tools like ChatGPT and Canva are also widely used in accounting classrooms, primarily for creating instructional materials and supporting academic writing (Fachrurrozie et al., 2025). This shift toward AI-enhanced pedagogy reflects broader trends in digital transformation across higher education, where automation and data-driven decision-making are becoming central to effective teaching and learning. However, despite its growing adoption, successful implementation remains hindered by practical barriers such as faculty readiness and limited institutional infrastructure (Rizvi, 2023).

B. Pedagogical Innovation

AI is driving substantial pedagogical innovation in accounting education by enabling new forms of instruction, assessment, and learner interaction. Intelligent tutoring systems and adaptive learning platforms allow educators to customize content delivery based on individual student profiles, thereby fostering more inclusive and engaging classroom environments (Radif, 2024). These tools support collaborative learning through peer feedback mechanisms and by matching students with complementary learning styles (Alsharari & Habashi, 2025). Furthermore, AI-based simulations and virtual case studies offer experiential learning opportunities that mirror real-world accounting scenarios, effectively bridging the gap between theoretical knowledge and professional practice (Maree et al., 2024). While these advancements enhance instructional efficiency and promote active learning, their full potential can only be realized when supported by structured frameworks that guide educators in integrating AI within traditional pedagogical models.

C. Learning Outcomes

Research indicates that AI significantly enhances learning outcomes in accounting education by improving student engagement, motivation, and academic performance. AI-based learning experiences have been shown to positively influence students' self-efficacy, career commitment, and professional readiness through the development of AI literacy and digital competencies (Maulana et al., 2025). Personalized learning paths and real-time feedback mechanisms enable learners to identify knowledge gaps, track progress, and improve mastery of complex accounting concepts (Karmakar & Das, 2024). Automated grading and adaptive assessments further contribute to a responsive learning environment, providing timely and targeted support (Maree et al., 2024). Nevertheless, disparities in access to technology and the risk of overreliance on automated systems may impact equity and critical thinking development (Rizvi, 2023). Therefore, balancing technological integration with human-centered pedagogy is essential to maximize the educational benefits of AI and prepare future accountants for a digitally transformed profession.

METHODOLOGY

A. Research Design – Narrative Review Methodology

This study adopts a narrative review methodology, which is particularly suitable for synthesizing existing literature on emerging topics where conceptual clarity and theoretical development are needed (Green et al., 2023). Unlike systematic reviews that focus on quantitatively aggregating empirical evidence, narrative reviews allow for a more interpretive and thematic synthesis of diverse scholarly perspectives. This approach supports the study's aim of establishing a theoretical foundation that links AI integration, pedagogical innovation, and learning outcomes in accounting education. By analyzing conceptual and empirical studies, this method enables the identification of key themes, trends, and gaps in the literature, offering insights that inform both academic discourse and practical implementation strategies.

B. Key Steps in Conducting a Narrative Review

The narrative review was conducted through a series of structured steps to ensure rigor and relevance. First, a comprehensive search strategy was developed to identify peer-reviewed publications related to AI in accounting and finance education. The search was limited to articles indexed in the Scopus database due to its broad coverage of multidisciplinary research and high indexing standards. After an initial screening based on titles and abstracts, full-text documents were reviewed to assess their alignment with the study's objectives. Articles were included if they addressed AI technologies, pedagogical practices, curriculum design, or learning outcomes within accounting or finance-related educational contexts. Inclusion criteria prioritized recent publications (2018–2025) to reflect current developments, while seminal works with foundational relevance were retained regardless of publication date (Tranfield et al., 2022). Figure 1 illustrates the key stages of the review process.

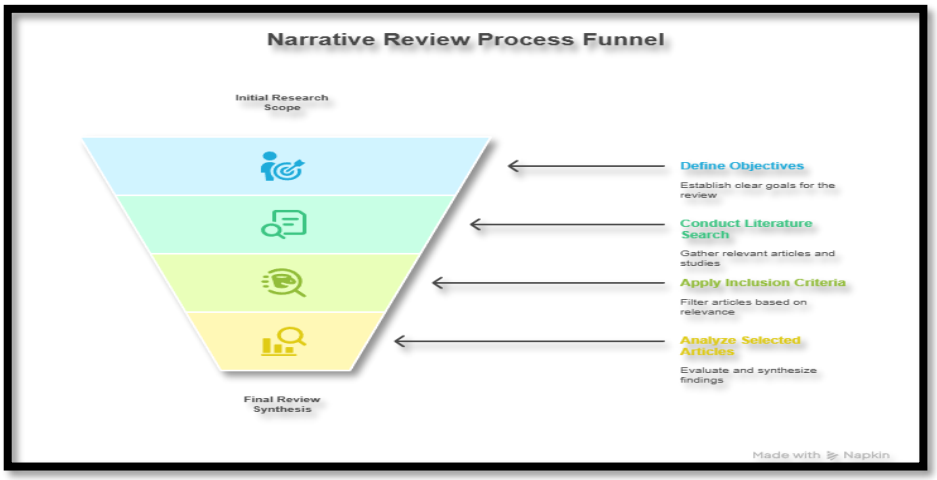

Fig.1 Key Steps in Conducting Narrative Review

C. Data Collection and Review Strategy

Data collection was executed using a structured Boolean search string applied to the Scopus database:

("artificial intelligence" OR "ai" OR "machine learning" OR "deep learning") AND ("accounting" OR "finance" OR "bookkeeping" OR "audit") AND ("education" OR "learning" OR "training" OR "instruction") AND ("curriculum" OR "pedagogy" OR "assessment" OR "evaluation") AND ("technology" OR "tools" OR "software" OR "applications")

This multi-concept search ensured broad coverage across AI applications in financial disciplines and pedagogical innovation. A total of 62 peer-reviewed articles were identified after applying inclusion and exclusion criteria. An integrative thematic analysis approach was employed to analyze the selected literature. This involved coding the content to identify recurring themes, concepts, and theoretical perspectives related to AI adoption in accounting education. The identified themes were synthesized into a coherent narrative structure that informed the development of the conceptual framework presented later in the paper (Braun & Clarke, 2022).

D. Key Findings from the Narrative Review

The narrative review revealed several key findings, summarized in Table 1 below. These findings highlight how AI is reshaping teaching and learning in accounting education, emphasizing the central role of pedagogical innovation as a mediator between technology use and educational outcomes.

Collectively, these findings demonstrate that AI significantly influences accounting education by enabling personalized instruction, streamlining assessment, and fostering pedagogical innovation. However, despite its transformative potential, effective adoption remains contingent upon overcoming practical implementation challenges. The integration of AI into curricula not only improves learning outcomes but also prepares students for evolving industry demands, underscoring the need for institutional support and faculty training. These insights collectively reinforce the necessity of developing a robust conceptual framework to guide educators and policymakers in leveraging AI effectively within accounting pedagogy.

Table 1 Findings from the Narrative Review

Key Finding	**Description**
AI Enhances Personalized Learning	AI tools such as intelligent tutoring systems and adaptive learning platforms provide tailored educational experiences, improving student engagement and comprehension (Radif, 2024; Karmakar & Das, 2024).
Pedagogical Innovation Through AI Tools	Technologies like ChatGPT and Canva support content creation and writing, enabling innovative teaching methods and interactive classroom environments (Fachrurrozie et al., 2025).
Improved Assessment and Feedback Mechanisms	AI automates grading and provides real-time feedback, helping learners track progress and improve performance (Maree et al., 2024).
Development of AI Literacy and Competencies	Exposure to AI-based learning enhances students' digital competencies, self-efficacy, and career readiness (Maulana et al., 2025).
Implementation Challenges in AI Adoption	Barriers such as faculty readiness, technical preparedness, and institutional infrastructure significantly affect the successful integration of AI in accounting education (Rizvi, 2023).

Theoretical Framework

The theoretical foundation of this study is anchored in the Technology Acceptance Model (TAM) and the AI Competency Adaptation Framework (AICAF), both of which provide valuable insights into how AI is

integrated into educational settings and its subsequent impact on pedagogical innovation and learning outcomes (Davis, 1989; Arise & Moloi, 2025). TAM explains user acceptance of technology based on perceived usefulness and ease of use which are factors that significantly influence educators' willingness to adopt AI tools in accounting instruction. Meanwhile, AICAF offers a structured approach to curriculum design by identifying core competencies required for students to thrive in an AI-driven professional environment. Together, these frameworks help contextualize the adoption and effectiveness of AI technologies in higher education, particularly within accounting disciplines where digital transformation is reshaping professional expectations.

Applying these theories to the context of accounting education, the proposed conceptual model integrates key constructs such as AI integration, pedagogical innovation, and learning outcomes. Drawing from TAM, the model assumes that when AI tools are perceived as useful and easy to use, they are more likely to be adopted by instructors, thereby facilitating innovative teaching practices. These innovations enhance student engagement through personalized learning experiences, real-time feedback, and interactive assessments (Radif, 2024; Karmakar & Das, 2024). The AICAF further enriches the framework by emphasizing the development of AI literacy, critical thinking, and problem-solving skills, which are competencies essential for future accountants navigating a technologically evolving profession (Maulana et al., 2025). By synthesizing these perspectives, the framework provides a multidimensional lens to analyze how AI shapes educational processes and outcomes in accounting education.

The practical implications of this integrative framework are significant for educators, institutional leaders, and policymakers aiming to implement AI-based pedagogical strategies effectively. It offers a structured guide for designing AI-integrated curricula, selecting appropriate tools, and assessing their impact on teaching and learning. Furthermore, it underscores the need for faculty training and institutional support to overcome barriers such as resistance to change and lack of technical expertise (Rizvi, 2023). In conclusion, this framework not only contributes to academic discourse on AI in education but also provides actionable insights for stakeholders seeking to align accounting education with the demands of Industry 4.0 and beyond.

Given the preceding discussions, Figure 2 illustrates the proposed conceptual framework of the study:

Fig. 2 Proposed Conceptual Framework

A. Proposition Development

1) AI Integration and Pedagogical Innovation

The integration of Artificial Intelligence (AI) into accounting education is increasingly recognized as a catalyst for pedagogical innovation, transforming traditional instructional methods into dynamic, learner-centered experiences. Technologies such as intelligent tutoring systems, adaptive learning platforms, and automated feedback mechanisms enable educators to design personalized and interactive learning environments that respond to individual student needs (Radif, 2024; Mupaikwa, 2025). These innovations enhance instructional efficiency while fostering active learning, critical thinking, and problem-solving, which are competencies essential for success in modern accounting practice. Furthermore, AI-driven tools support curriculum redesign by embedding digital literacy and analytical reasoning into teaching practices, aligning pedagogical strategies with evolving industry expectations (Arise & Moloi, 2025). The AI Competency Adaptation Framework (AICAF) highlights that successful AI integration requires a rethinking of teaching methodologies to ensure they promote both technical proficiency and higher-order cognitive skills (Maulana et al., 2025). As AI reshapes how content is delivered, assessed, and experienced, it fundamentally transforms the educator's role from knowledge transmitter to facilitator of technology-enhanced learning. Given these developments, AI

plays a pivotal role in advancing pedagogical innovation within accounting education. Thus, this study proposes the following proposition:

Proposition 1: AI Integration has a positive and significant effect on Pedagogical Innovation in accounting education.

2) **The Mediating Role of Pedagogical Innovation**

Pedagogical Pedagogical Innovation serves as a critical mediator in translating AI integration into measurable improvements in student learning outcomes. By leveraging AI-driven tools such as adaptive assessments, intelligent feedback systems, and immersive simulations, educators can tailor instruction to individual learning styles, thereby enhancing comprehension and retention (Alsharari & Habashi, 2025). These innovations enable real-time performance tracking and personalized interventions, allowing learners to identify knowledge gaps and improve at their own pace (Maree et al., 2024). Furthermore, AI-enabled collaborative platforms support peer interaction and problem-based learning, which are key components in developing practical accounting competencies (Koralage et al., 2024). As these pedagogical enhancements become embedded in teaching practices, they directly influence key learning outcomes such as academic performance, engagement, motivation, and career readiness (Radif, 2024; Maulana et al., 2025). Therefore, while AI provides the technological foundation, it is through pedagogical innovation that its full educational impact is realized. Based on this analysis, the following proposition is proposed:

Proposition 2: Pedagogical Innovation mediates the relationship between AI Integration and Learning Outcomes in accounting education

3) **The moderating role of Faculty Readiness and Institutional Support**

The successful integration of AI into accounting education is not solely dependent on technological capabilities but is also significantly influenced by organizational and contextual factors. Among these, Faculty Readiness plays a critical moderating role, as educators must possess both the technical proficiency and pedagogical understanding necessary to effectively utilize AI tools in instruction (Fachrurrozie et al., 2025). Similarly, Institutional Support, including digital infrastructure, professional development programs, and supportive policy frameworks, determines the extent to which AI can be adopted at scale across educational settings (Rizvi, 2023). Without adequate institutional backing, even the most advanced AI tools may fail to produce meaningful pedagogical outcomes. These moderating factors collectively shape the effectiveness of AI integration and the resulting pedagogical innovation, ultimately influencing how learning outcomes are achieved in AI-enhanced environments. Therefore, the following proposition is developed:

Proposition 3: Faculty Readiness and Institutional Support moderate the relationship between AI Integration and Pedagogical Innovation in accounting education

Table 2 Summary of Propositions

Proposition	**Statement**	**Theoretical Basis**
P1	AI Integration has a positive and significant effect on Pedagogical Innovation in accounting education.	TAM, AICAF
P2	Pedagogical Innovation mediates the relationship between AI Integration and Learning Outcomes in accounting education.	TAM, AICAF
P3	Faculty Readiness and Institutional Support moderate the relationship between AI Integration and Pedagogical Innovation in accounting education.	TAM, Institutional Theory

CONCLUSION AND IMPLICATIONS

This study highlights the transformative role of Artificial Intelligence (AI) in reshaping accounting education by fostering pedagogical innovation and improving student learning outcomes. The integration of AI tools such as intelligent tutoring systems, adaptive assessments, and real-time feedback mechanisms has demonstrated significant potential in personalizing instruction, enhancing engagement, and supporting more effective teaching practices. Drawing upon the Technology Acceptance Model (TAM) and the AI Competency Adaptation Framework (AICAF), this paper proposes a conceptual framework that links AI integration, pedagogical innovation, and learning outcomes, emphasizing the moderating roles of faculty readiness and institutional support.

As a conceptual study relying on a narrative review methodology, it prioritizes thematic synthesis over empirical validation. Consequently, the proposed framework has not yet been tested in real-world classroom settings. The findings may not fully capture contextual challenges faced by institutions with limited technological infrastructure or diverse student populations. Additionally, while moderating factors like faculty readiness and institutional support are discussed, specific implementation models for different types of institutions (e.g., rural vs. urban, public vs. private) were beyond the scope of this analysis.

Despite these limitations, the study offers practical value, particularly for under-resourced institutions seeking to adopt AI incrementally. A phased adoption strategy is recommended, starting with low-cost, accessible tools such as AI-powered writing assistants (e.g., ChatGPT) and open-access platforms. Professional development programs should focus on building digital confidence among educators through peer mentoring, micro-credentialing, and just-in-time training modules. Policymakers can further support equitable AI adoption by establishing shared technology hubs or cloud-based solutions accessible across campuses. These steps can help bridge the digital divide without requiring large-scale infrastructure investment.

Future research should empirically validate the proposed propositions across diverse educational contexts. Studies could examine how socioeconomic status, regional infrastructure, and cultural attitudes toward technology influence AI adoption in accounting classrooms. Moreover, longitudinal evaluations of professional development programs aimed at reducing educator resistance to change are needed. Finally, deeper exploration of ethical concerns, such as algorithmic bias, data privacy, and the risk of depersonalized learning, is warranted to ensure responsible and inclusive use of AI in education.

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