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Original Article

The Impact of Artificial Intelligence Adoption on Auditor Performance Efficiency with Innovation as a Mediating Variable

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Abstract

The audit profession has been changed by AI, which automates tasks and improves data analysis. The success of AI in auditing depends on auditors' innovation and its impact on performance efficiency. This study investigates the influence of Artificial Intelligence (AI) Adoption on Auditor Performance Efficiency, with Innovation as a mediating variable. While prior research has established the direct impact of AI on efficiency, the mediating mechanism through Innovation remains empirically untested within an integrated framework. Employing a quantitative correlational approach, data were collected via an online survey from 185 auditors working in Public Accounting Firms (KAP) in East Java, Indonesia. The collected data were subsequently analyzed using Partial Least Squares (PLS)-based Structural Equation Modeling (SEM) with SmartPLS software. The findings reveal that AI Adoption significantly and positively influences both Auditor Performance Efficiency and Innovation. Furthermore, Innovation is also proven to significantly impact Auditor Performance Efficiency. Mediation analysis indicates that Innovation significantly mediates the relationship between AI Adoption and Auditor Performance Efficiency. These results suggest that the effect of AI Adoption on efficiency is not only direct but also substantially occurs through the enhancement of auditors' innovative capabilities. This research underscores the importance of integrating technological investments with the cultivation of an innovation culture within audit firms (KAP). The study contributes recommendations for Public Accounting Firms to optimize AI benefits through sustainable and inclusive innovation across generations.

Keywords: Artificial Intelligence Adoption, Auditor Performance Efficiency, Innovation, Mediation, SmartPLS.

1. Introduction

The rapid development of technology has brought fundamental changes to various industrial sectors, including the audit profession. Artificial Intelligence (AI), with its ability to learn, understand, and adapt, has become one of the most transformative innovations in the last decade. AI growth is exponential, demonstrated by a surge in global investment reaching billions of dollars annually; for example, investment in generative AI alone jumped to $25.2 billion in 2023, and the global AI market is projected to reach $1 trillion by 2031 (Essay Service, 2025; PwC, in Deliberate Directions, 2025). AI adoption across various business functions continues to increase, with 72% of companies having used it by 2024 (Digital Silk, 2025). In the context of the audit profession, AI offers great potential to revolutionize traditional practices through automation of routine tasks, advanced analysis, and anomaly detection. AI adoption is estimated to reduce manual processes by up to 50%, thereby lowering operational costs and improving audit quality (McKinsey, in Smartdev, 2025). Nevertheless,

observations show that awareness and use of AI is still dominated by fresh graduate auditors or Generation Z, while senior auditors are still rarely aware of or adopting this rapid AI development. The contemporary audit environment characterized by increasingly large data volumes and efficiency pressures makes AI implementation a necessity, especially for senior auditors who need to immediately embrace this exponential technological development.

The Wanaartha Life scandal and corruption cases in Bogor Regency demonstrate significant weaknesses of auditors when relying solely on conventional procedures, such as sample testing and manual examination, which have proven slow in detecting financial report manipulation and misuse of public funds. This loss of public trust confirms that merely increasing regulatory compliance is insufficient. A new approach based on Artificial Intelligence (AI) is needed that can process big data, recognize abnormal transaction patterns, and provide early warnings of fraud indications. Yet, AI adoption alone does not automatically guarantee improvement; its effectiveness is highly determined by auditors' innovation capability in integrating this technology into daily audit practices. Therefore, this research emphasizes the importance of testing the mediating role of innovation in the relationship between AI adoption and auditor performance efficiency, particularly in the Indonesian context that faces real challenges in audit quality.

Previous research has identified several crucial relationships regarding AI adoption and impact in the accounting and audit profession. AI adoption has consistently proven to have a positive and direct impact on Auditor Performance Efficiency. AI integration significantly improves efficiency and quality of financial data (Reslan & Al Maalouf, 2024), and leads to increased productivity in digital work environments (Assidi et al., 2025) and cost control through automation of routine tasks (Altawalbeh et al., 2025). This aligns with broader findings on digitalization, where Astuti & Rohmah (2023) also found that audit digitization has a significantly positive influence on auditor performance in public accounting firms. Additionally, the Quality of AI-Processed Data also plays an important role by showing that AI improves data quality and information in accounting (Al-Okaily, 2024). AI also directly contributes to efficiency by reducing verification efforts. Auditor Technology Readiness also has a strong positive relationship with AI Adoption (Abdo-Salloum & Al-Mousawi, 2025; Anh et al., 2024). Auditors who have good technology readiness and AI literacy tend to be more effective in adopting and utilizing AI tools, which in turn indirectly improves audit performance efficiency (Imjai et al., 2025). The importance of auditor capability is further underscored by contextual studies like Komang & Krisnadewi (2024), which, while focused on audit fees, highlights the critical role of auditor-centric factors (like audit committee persistence) in determining audit quality outcomes.

Although previous research has discussed several aspects of this relationship, there is still uncertainty about the extent to which Artificial Intelligence adoption can contribute to auditor performance efficiency. Moreover, the role of Innovation as a mediating variable has not been comprehensively tested by previous research in an integrated framework. Previous research tends to discuss these variables separately or in incomplete combinations, with varying focus (for example, AI adoption as a dependent variable, or data quality as AI output), and has not explicitly modeled "Innovation" as a moderator in the same context. Therefore, the main research gap of this study lies in developing and testing an integrated framework that simultaneously analyzes the impact of AI Adoption on Auditor Performance Efficiency, as well as uniquely testing the mediating role of Innovation in that relationship. Therefore, this study aims to examine the impact of Artificial Intelligence Adoption on Auditor Performance Efficiency with Innovation as a Mediating Variable.

This gap is particularly relevant in the Indonesian context, where audit quality challenges, such as the Wanaartha Life and the Bogor Regency government scandals, underscore the critical need for enhanced auditor performance and integrity (Nitipradja & Hernawati, 2024). While studies like Lindrianasari & Kuncoro (2024) have begun exploring AI's role in boosting auditor capability and competitive advantage in Indonesia, they still treat innovation as an outcome rather than a mediating process. Hence, this study aims to fill this explicit void by developing and testing a comprehensive model that not only analyzes the direct impact of AI Adoption, Data Quality, and Technology Readiness on Auditor Performance Efficiency but also uniquely tests the mediating role of Innovation in these relationships.

This research is grounded on the logic that Auditor Performance Efficiency is a synergistic result of several AI-related factors. AI adoption will directly improve efficiency due to automation and more sophisticated data analysis capabilities. However, the effectiveness of this adoption will greatly depend on the Quality of AI-Processed Data. Poor quality data can hinder efficiency benefits even though AI has been adopted. Additionally, Auditor Technology Readiness, which includes their literacy and adaptability to AI, will determine how smoothly and effectively they can integrate and utilize AI tools in their daily work. Therefore, this study aims to comprehensively analyze the impact of these three factors on auditor performance efficiency. Further, innovation, defined as a culture of experimentation and drive to adopt new things in public accounting firms, is expected to moderate this relationship. An innovative environment will facilitate and accelerate auditors' desire to use AI to improve efficiency, as well as encourage optimal utilization of existing data quality and technology readiness. This research will focus on the Indonesian context to provide insights relevant to audit dynamics in developing countries, investigating how AI factors affect efficiency and how innovation moderates that relationship. This research contributes to the development of auditor digital skills investment (especially for senior auditors) and how to foster an innovation culture to maximize AI benefits, while bridging the adoption gap between different generations of auditors in Indonesia.

2. Literature Review

2.1.2. Technology Acceptance Model (TAM) Theory

This theory explains technology adoption based on two main user beliefs: (1) Perceived Usefulness or the extent to which an individual believes that using a particular system will enhance their job performance, and (2) Perceived Ease of Use or the extent to which an individual believes that using a particular system will be free of effort. The higher the perception of AI usefulness and ease of use, the greater the likelihood that auditors will adopt it. This model was first developed by Davis in 1989, emphasizing two main constructs: Perceived Usefulness (PU) which refers to the level of individual belief that using a technology will improve their performance, and Perceived Ease of Use (PEOU) which describes the extent to which individuals believe that using the technology does not require significant effort. Both constructs have consistently been proven to influence Behavioral Intention to Use (BI), which ultimately determines the actualization of technology use.

Over its development, this model has been continuously expanded and modified by various researchers. Abdullah (2016a) developed the General Extended Technology Acceptance Model for E-Learning (GETAMEL) by analyzing external factors commonly used in online learning contexts. In a follow-up study, Abdullah (2016b) found that external factors significantly influence PEOU and PU, thus strengthening the prediction of technology use

intention. Meanwhile, Al-Emran et al. (2020) through systematic review confirmed that TAM remains relevant in the context of mobile learning (M-learning) and is widely used as a theoretical framework to explain the acceptance of technology-based learning systems.

2.1.3. Artificial Intelligence (AI) Adoption

AI adoption refers to the integration and utilization of artificial intelligence tools and applications in various stages of the audit process by individual auditors and public accounting firms. This includes not only the use of AI software but also changes in workflow and audit practices enabled by AI. Previous research shows that AI adoption in the accounting profession is influenced by organizational factors such as organizational culture, regulatory support, as well as individual factors such as perceived usefulness and ease of use (Al Wael et al., 2024). Other factors include technology affordances, competitive environment, and top management support (Bin-Nashwan & Li, 2025; Yang et al., 2024).

Previous research has also identified AI adoption challenges, including lack of AI transparency ("black-box"), biased answers, data privacy, and potential over-reliance on AI (Kokina et al., 2025). In the context of this research, resistance to AI use from senior auditors becomes an adoption barrier. This group lacks AI literacy (Imjai et al., 2025) making them uncomfortable with new technology or worried about AI's impact on their role and expertise (Munoko et al., 2020; Seethamraju & Hecimovic, 2023) which can slow the adoption process throughout the firm.

2.1.4. Relationship between AI Adoption and Auditor Performance Efficiency

AI adoption is widely recognized as having transformative potential for audit practices, particularly in improving auditor performance efficiency. Previous research has proven empirically and consistently that AI integration into audit processes brings significant positive impacts. For example, AI use by public accounting firms is known to directly improve audit efficiency and financial reporting accuracy (Bin-Nashwan & Li, 2025; Xaviera & Rahman, 2024). Furthermore, AI adoption in small Malaysian public accounting firms has proven to improve audit quality and workflow by accelerating processes (Karim et al., 2025). More generally, AI applications in the audit profession can improve overall effectiveness, efficiency, and quality (Almufadda & Almezeini, 2022).

The mechanism behind this efficiency improvement is often related to AI's ability to automate time-consuming and repetitive tasks. AI significantly improves audit efficiency due to its ability to automate time-consuming tasks and improve client communication (Karmańska, 2022). Additionally, AI investment in public accounting firms has proven to reduce audit costs and improve audit quality (Fedyk et al., 2021, 2022). In the GCC region, AI adoption positively affects operational efficiency through task automation and predictive insights. This efficiency can then reduce manual effort and increase productivity (Othman, 2025). AI has also proven to improve decision-making efficiency (Baabdullah, 2024) and generally improve efficiency, accuracy, and decision-making capabilities in accounting and audit practices (A. A. H. Abdullah & Almaqtari, 2024; Imane, 2025). Therefore, the hypothesis of this research is:

H1: Artificial Intelligence Adoption positively affects Auditor Performance Efficiency.

2.1.5. Relationship between AI Adoption and Innovation

AI adoption has proven to have a positive and significant relationship with Innovation in various contexts, including professional firms such as audit. Logically, AI integration provides new capabilities that go beyond mere automation, empowering organizations to

revolutionize internal processes and develop new services. AI adoption provides tools and insights that can trigger innovation in various forms, from improving operational efficiency to creating entirely new products or services.

Previous research supports this relationship by showing that AI adoption significantly improves company innovation efficiency (S. Wang et al., 2024) and green innovation capabilities (Z. Wang et al., 2024; Zhong & Song, 2025). Further, AI adoption intensity positively affects company innovation performance, even improving efficiency and effectiveness through lean product development (Dai, 2024). AI can also contribute to process innovation in business (Zebec & Indihar Štemberger, 2024). Other studies suggest that AI adoption positively impacts firm innovation performance, where organizational learning capabilities act as partial mediators (Li et al., 2025). AI adoption is also associated with increased "greenovation" in companies (Hussain et al., 2024). Although some research shows that innovation climate can shape AI adoption (Bin-Nashwan & Li, 2025; Yang et al., 2024), this underlines the complementary nature where AI is not only adopted in innovative environments but also actively promotes and supports innovation within them. Thus, the hypothesis of this research is:

H2: Artificial Intelligence Adoption positively affects Innovation.

2.1.6. Relationship between Innovation and Auditor Performance Efficiency

Innovation in the context of public accounting firms has a close and positive relationship with Auditor Performance Efficiency. Logically, when a public accounting firm innovates, whether in processes, methods, or technology used, the goal is often to optimize operations, reduce waste, and increase productivity. Process innovation, for example, can streamline audit workflows, eliminate unnecessary steps, or introduce new faster ways to complete tasks.

Previous research supports this idea by showing that a firm's innovation effort efficiency can reduce demand for greater audit effort associated with risky R&D investments (Kang et al., 2019). This indicates that the more efficient client innovation is, the more efficient the audit process is, reflected in reduced effort required from auditors. Additionally, firms with higher innovation efficiency are associated with lower audit costs (Hsu, 2020), which is a direct indicator of better efficiency. In broader studies in the audit services industry, technology management and innovation positively impact public accounting firm performance (Tuan et al., 2021), which implicitly includes improved operational efficiency. Even at a more general level, firms with high innovation efficiency are known to achieve higher operational performance (Han et al., 2020), reaffirming that efficient innovation correlates with better performance, including efficiency. Therefore, the hypothesis of this research is:

H3: Innovation positively affects Auditor Performance Efficiency.

2.1.7. Innovation Mediation in the relationship between AI Adoption and Auditor Performance

Innovation is a logical result of Artificial Intelligence (AI) adoption in an organization, including public accounting firms. AI adoption provides new capabilities that go beyond mere automation, empowering firms to revolutionize internal processes and develop new services. AI enables organizations to analyze data at unprecedented scale and speed, identify patterns, and generate insights that can trigger innovative ideas for audit process improvement or development of more sophisticated audit services.

Several studies support the positive relationship between AI adoption and innovation. For example, extensive AI adoption in Chinese energy companies has proven to improve their green innovation efficiency (S. Wang et al., 2024). Similarly, AI adoption significantly

improves green innovation capabilities in Chinese companies (Zhong & Song, 2025). Mariani et al. (2023) in their systematic review affirm that innovation is one of the key outcomes of AI implementation in firms. Other studies show that AI adoption intensity positively affects company innovation performance, improving efficiency and effectiveness through lean product development (Dai, 2024). AI can also contribute to process innovation and organizational learning, which in turn improves organizational performance (Zebec & Indihar Štemberger, 2024). Further, AI adoption has been associated with increased "greenovation" in companies (Hussain et al., 2024). Research also shows that AI adoption positively affects firm innovation performance, with organizational learning capabilities acting as partial mediators (Li et al., 2025). Additionally, AI adoption can lead to digital innovation through adaptive resilience (Saleem et al., 2023), and innovation climate can play a key role in shaping AI adoption itself (Bin-Nashwan & Li, 2025), showing a reciprocal relationship where AI and innovation mutually reinforce each other. Thus, the hypothesis of this research is:

H4: Innovation mediates the relationship between Artificial Intelligence Adoption and Auditor Performance Efficiency.

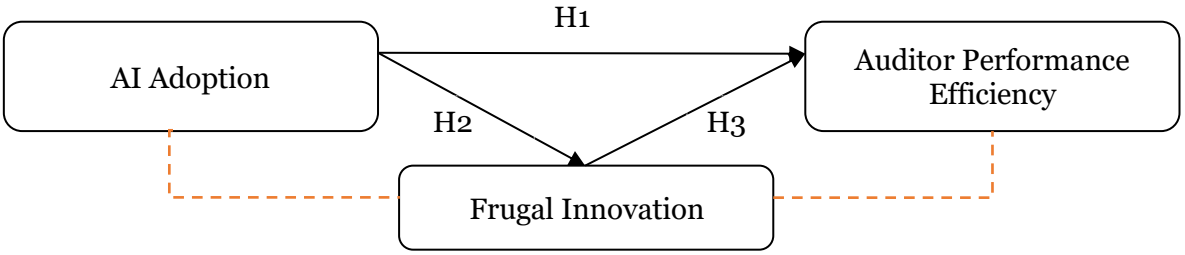

Figure 1. Hypothesis Framework

3. Methods

This research adopts a quantitative approach to test relationships between variables. With the aim of testing hypotheses regarding impact and mediation, this research is classified as correlational research. This approach allows researchers to identify and measure the strength and direction of relationships between the variables studied.

The variables used in this research include Artificial Intelligence (AI) Adoption, Innovation, and Auditor Performance Efficiency. Each variable is measured using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), with indicators and survey statements adapted from relevant previous literature. Details of definitions and measurements are explained as follows:

Table 1. Variable Definition and Measurement

Variable	Definition	Indicator	Survey Statement	Code	Source
AI Adoption	The extent to which auditors and/or public accounting firms have integrated and used AI tools and applications in various stages of their audit process	Frequency of AI use	I often use AI-based tools in performing my audit tasks.	AI1	(Anh et al., 2024)
			AI use has become a routine part of our firm's methodology	AI2	
		Types of AI applications (RPA, ML, etc.)	We utilize AI for tasks involving natural language processing (e.g., contract analysis, emails) in audits.	AI3	
			My audit team integrates various types of AI applications (e.g., Robotic Process Automation, Machine Learning) in the audit process.	AI4	

Variable	Definition	Indicator	Survey Statement	Code	Source
Auditor Performance Efficiency	The ability of auditors to complete audit tasks with minimal use of time, effort, and resources, while maintaining or improving the quality and accuracy of audit results	Audit time reduction	AI use has significantly reduced the time I need to complete certain audit tasks.	E1	(Anh et al., 2024)
			Our audit team can complete more work in the same time period thanks to AI use.	E2	
		Report error reduction	AI helps reduce the error rate in reports or audit outputs I produce.	E3	
			AI utilization has improved the accuracy of data used in the audit reporting process.	E4	
Frugal Innovation	Innovation that focuses on simple, affordable, and resource-efficient solutions to meet needs in resource-constrained environments	Ability to reduce production costs without sacrificing quality	Our team successfully developed/adopted innovative audit solutions that reduce operational costs without sacrificing audit quality.	FI1	(Qin, 2024)
			Our innovative approach to auditing allows us to do more at lower cost while maintaining professional standards.	FI2	
		Use of minimal resources to create effective solutions	We always strive to create effective audit solutions by utilizing resources (time, energy, technology) minimally	FI3	
			We prioritize innovations that maximize results with limited resource inputs	FI4	
		Adaptation of simple technology accessible to low-income communities	We adopt innovative audit technology that is simple and easily accessible, so it can be applied efficiently.	FI5	
			We develop cost-effective and affordable audit solutions, so we can serve diverse clients effectively.	FI6	
		Improving operational efficiency through IoT/AI-based solutions	The innovative AI-based solutions we implement have significantly improved audit operational efficiency.	FI7	
			Utilization of innovative technology (e.g., IoT or AI) has accelerated our audit process	FI8	
		Solution scalability to broader markets	The innovative audit solutions we developed have the potential to be widely applied to various types of clients and industries.	FI9	
			Our firm's innovative audit approach is easily scalable to handle larger work volumes or new clients.	FI10	

Table 1 describes the measurement for each variable used in this research. The Artificial Intelligence (AI) Adoption variable is measured to capture the extent to which auditors and public accounting firms integrate and utilize AI tools and applications in their audit processes. This measurement is based on two main dimensions: frequency of AI use and types of AI

applications integrated. The Auditor Performance Efficiency variable is defined as the ability of auditors to complete tasks with minimal use of time, effort, and resources, while maintaining or improving audit quality. The Frugal Innovation variable focuses on innovation that produces simple, affordable, and resource-efficient solutions, which in the audit context means developing or implementing smart, economical, and effective audit practices. This measurement includes several dimensions.

The population for this study comprises all auditors working in Public Accounting Firms (KAP) in East Java, Indonesia. A purposive sampling technique will be employed to ensure respondents possess the specific experience relevant to the research context. The inclusion criteria for respondents are:

1. Must be an auditor actively working in a KAP.
2. Must have direct experience using or interacting with at least one AI-based tool or application (e.g., data analytics software, automated testing tools, AI-powered risk assessment platforms) in their audit work within the past 12 months.

This sampling strategy ensures the collected data is provided by informants with the requisite knowledge to accurately assess the research variables, thereby enhancing the validity of the findings. However, it is acknowledged that this method limits the generalizability of results to the broader population of auditors without AI experience. The planned sample size is 185 auditors, which is considered adequate for complex statistical analysis.

The data used in this research is primary data, collected directly from respondents. The main data collection method is through online surveys using the Google Form platform. The collected data will be analyzed using variance-based Structural Equation Modeling (SEM) with the SmartPLS 4 software. The collected data is then analyzed using Partial Least Squares-Structural Equation Modeling (PLS-SEM) using SmartPLS 4 software. The analysis procedure is conducted through several following stages (Hair et al., 2022):

1. Outer Model Evaluation (Measurement Model)
   a) Indicator reliability is tested through factor loading values, with criteria ≥ 0.70.
   b) Internal reliability is measured using Composite Reliability (CR) and Cronbach's Alpha, with values ≥ 0.70 indicating good reliability.
   c) Convergent validity is tested using Average Variance Extracted (AVE), with minimum value ≥ 0.50.
   d) Discriminant validity is tested with Fornell–Larcker criteria and Heterotrait–Monotrait Ratio (HTMT), with HTMT value < 0.90 indicating no discriminant problems.
2. Inner Model Evaluation (Structural Model)
   a) Before testing hypotheses, multicollinearity examination is conducted by examining Variance Inflation Factor (VIF) values, which must be < 5.
   b) Path coefficients (β) are calculated to determine the direction and strength of relationships between latent variables.
   c) Coefficient of Determination (R^2) is used to assess the model's explanatory capability toward endogenous variables, with criteria 0.25 (weak), 0.50 (moderate), and 0.75 (substantial).
   d) Effect size (f^2) is used to measure the relative contribution of each construct, with values 0.02 (small), 0.15 (medium), and 0.35 (large).
   e) Predictive relevance (Q^2) is tested with blindfolding technique, where value > 0 indicates the model has predictive power.

3. Bootstrapping Procedure
   a) Significance of path coefficients is tested using bootstrapping technique with 5,000 resampling subsamples.
   b) Analysis results include t-statistic values and p-values. Relationships between variables are declared significant if t > 1.96 or p < 0.05 at 5% significance level.
4. Mediation Test
   a) The mediating role of Innovation is tested through indirect effects (AI → Innovation → Auditor Efficiency).
   b) Significance testing is conducted with bootstrapping. If both direct and indirect effects are significant, then partial mediation occurs; whereas if only indirect effect is significant, then full mediation occurs.
   c) To measure mediation strength, Variance Accounted For (VAF) value is used. VAF value between 20%–80% indicates partial mediation.

With this procedure, the research model can be evaluated comprehensively, both from measurement and structural relationship aspects between variables.

4. Results and Discussion

4.1. Research Results

This research aims to analyze the impact of Artificial Intelligence Adoption on Auditor Performance Efficiency with Innovation as a mediating variable. To achieve this goal, primary data was collected through online surveys using Google Forms. From a target of 200 auditors at Public Accounting Firms (KAP) in East Java, this research successfully collected data from 185 respondents, which is an adequate sample size for analysis. Based on the collected data, hypothesis testing was conducted using Structural Equation Modeling (SEM) method with SmartPLS software. The data testing results are as follows:

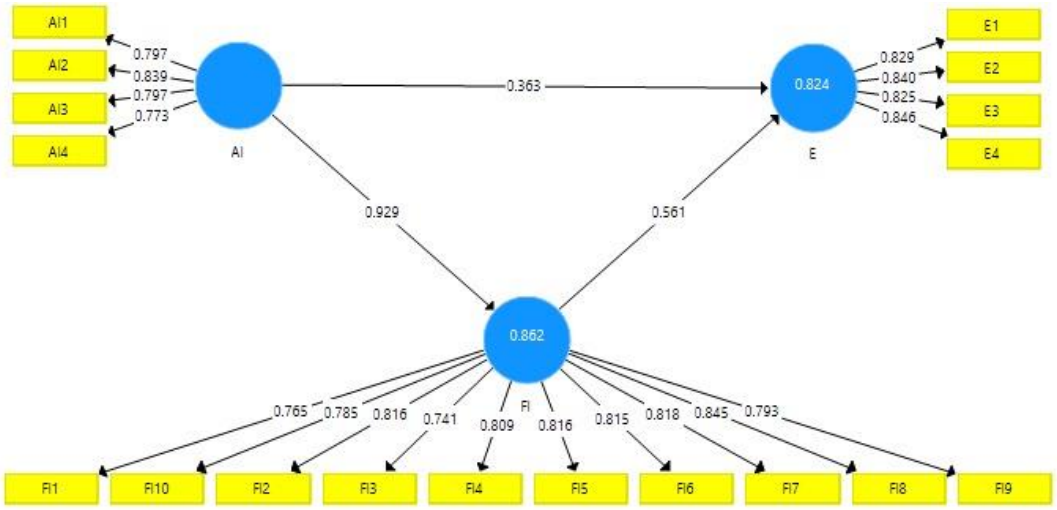

Figure 2. Outer and Inner Model Testing Results

Figure 2 shows the results of the Outer Model (Measurement Model) and Inner Model (Structural Model) SmartPLS. The Outer Model (Measurement Model) in SmartPLS analysis is evaluated to ensure reliability and validity of indicators in measuring their latent constructs. Based on the provided Outer Loadings table, all indicators show high loading values exceeding the common threshold of 0.70. Indicators for AI Adoption (AI1-AI4) have loadings between

0.773 to 0.839, showing that all these questions strongly represent the AI Adoption construct. Similarly, Auditor Performance Efficiency indicators (E1-E4) show loadings between 0.825 to 0.846, confirming that each item effectively measures efficiency. For Innovation (FI1-FI10), all indicators have loadings above 0.741 to 0.845. The consistency of these high loading values for all variables indicates that the measurement instruments used have good indicator reliability and have met convergent validity, so the collected data can be relied upon for further analysis.

The Inner Model (Structural Model), on the other hand, evaluates the strength and significance of relationships between latent constructs, or in other words, tests research hypotheses. The results of Path Coefficients and Mean, STDEV, T-Values, P-Values show that all hypothesized relationships are statistically significant. The direct relationship from AI Adoption to Auditor Performance Efficiency is positive and significant (path coefficient = 0.363, p-value = 0.000, t-statistic = 4.460). This confirms the hypothesis that AI adoption directly improves auditor efficiency. Additionally, AI Adoption also has a positive and highly significant influence on Innovation (path coefficient = 0.929, p-value = 0.000, t-statistic = 110.525), showing that AI adoption is a strong driver of innovation. Furthermore, Innovation has a positive and significant influence on Auditor Performance Efficiency (path coefficient = 0.561, p-value = 0.000, t-statistic = 7.087), indicating that innovation in public accounting firms contributes to performance efficiency. Most importantly, the Total Indirect Effects analysis confirms that Innovation significantly mediates the relationship between AI Adoption and Auditor Performance Efficiency (path coefficient = 0.521, p-value = 0.000, t-statistic = 6.996).

Given that the direct effect of AI Adoption on Auditor Performance Efficiency is also significant, this finding indicates partial mediation, where AI Adoption affects Auditor Performance Efficiency not only directly but also indirectly through its role in driving innovation. Based on Structural Equation Modeling (SEM) analysis using SmartPLS, the results of this research hypothesis testing provide consistent and significant evidence for all proposed relationships.

Table 2. Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
AI -> E	0.363	0.361	0.081	4.460	0.000
AI -> FI	0.929	0.929	0.008	110.525	0.000
FI -> E	0.561	0.564	0.079	7.087	0.000

Table 2 containing the results of path coefficient analysis shows that all relationships between variables are positive and significant. First, Artificial Intelligence (AI) adoption proves to have a direct effect on auditor performance efficiency with a path coefficient of 0.363, t-value of 4.460, and p-value of 0.000. This indicates that the higher the level of AI implementation, the more efficient the resulting auditor performance. Second, AI adoption has a very strong effect on innovation, with a path coefficient of 0.929, t-value reaching 110.525, and p-value of 0.000. This result shows that AI plays an almost complete role as a driver for the emergence of innovation in audit practices. Third, innovation proves to contribute significantly to auditor performance efficiency with a path coefficient of 0.561, t-value of 7.087, and p-value of 0.000. This finding confirms that the higher the level of innovation applied in audit practices, the greater the improvement in auditor performance

efficiency. Thus, Table 2 confirms the existence of direct effects from both AI and innovation in driving improvements in auditor performance efficiency.

Table 3. Indirect Effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
AI -> FI -> E	0.521	0.524	0.074	6.996	0.000

The mediation hypothesis testing in table 3 indicates that innovation mediates the link between AI adoption and auditor performance efficiency. The analysis of indirect effects (Total Indirect Effects) reveals that the indirect effect of AI adoption on auditor performance efficiency through innovation is statistically significant. With a coefficient value (β) of 0.521 (p=0.000; t=6.996), this confirms that Innovation significantly mediates the relationship between AI Adoption and Auditor Performance Efficiency. This means that AI adoption not only has a direct impact on efficiency, but also substantially affects auditor performance efficiency through its role in triggering innovation. In other words, AI increases innovation, and it is this innovation that then significantly improves auditor performance efficiency.

4.2. Discussion

4.2.1. How AI Adoption Can Improve Auditor Performance Efficiency

This research empirically examines the influence of Artificial Intelligence (AI) adoption on auditor performance efficiency. Analysis results show that AI adoption has a positive and significant effect on auditor performance efficiency. The estimated path coefficient is 0.363 with a p-value of 0.000 and t-statistic of 4.460, making it statistically significant. This finding aligns with the hypothesis where the higher the level of AI adoption in audit activities, the higher the auditor performance efficiency. This means AI can accelerate audit processes, reduce manual workload, and improve accuracy and reliability of audit results.

The relationship between AI adoption and auditor performance efficiency can be explained logically through several mechanisms. First, AI facilitates automation of various audit tasks that are routine and rule-based, such as data extraction, document verification, and account reconciliation, thus reducing dependence on manual intervention. This audit task automation allows auditors to focus more on analytical and strategic tasks.

Second, machine learning technology integrated in AI systems enables processing and analysis of large amounts of data quickly and efficiently. This not only accelerates the audit cycle, but also enables full population testing approaches rather than manual methods using sampling. Third, AI significantly reduces the risk of human error in audit processes and helps identify anomalies accurately, thus reducing the need for rework. Fourth, AI plays a role in providing predictive information useful in audit risk assessment more precisely and proactively. Fifth, human resource usage efficiency also increases because auditors can focus on activities that provide higher added value rather than just administrative or mechanical processes.

This finding aligns with several previous studies that have confirmed AI's contribution to improving efficiency in auditing. Bou Reslan & Jabbour Al Maalouf (2024) affirm that AI adoption accelerates financial data processing. Similar results were also found by Assidi et al. (2025), Altawalbeh et al. (2025), and Karim et al. (2025) who concluded that AI improves productivity and cost efficiency, even in small-scale public accounting firms.

This research finding contributes to proving the Technology Acceptance Model (TAM) theory. In the Technology Acceptance Model (TAM) perspective, increased efficiency reflects perceived usefulness of AI technology believed to improve work performance. Auditors are more likely to adopt technology if they believe that the technology has real practical benefits for their professional tasks.

This finding has implications for audit profession transformation in Indonesia. Public accounting firms need to proactively integrate AI in audit cycles to optimize work processes, accelerate audit completion, and reduce operational costs. The achieved efficiency also allows auditors to improve audit service quality through deeper analysis for clients. This requires auditor competency development, especially through structured training in technology literacy, data analysis, and AI-based result interpretation. Effective AI adoption can also improve public accounting firms' competitiveness in attracting clients and retaining the best talent.

4.2.2. How AI Adoption Can Improve Innovation

Test results show that AI adoption has a highly significant positive influence on innovation. The obtained path coefficient (β) value of 0.929 with a p-value of 0.000 and t-statistic of 110.525 confirms the strength and significance of this relationship. This finding indicates that the higher the level of AI adoption by auditors, the greater the capacity and drive of public accounting firms to create innovation in audit processes.

Logically, the relationship between AI adoption and increased innovation in public accounting firms can be explained through several main mechanisms. First, AI opens new capabilities in data analysis. This capability allows auditors to process large data volumes, identify complex client transaction patterns, and make predictions more accurately. This capability not only improves audit effectiveness, but also triggers innovative thinking that can create new audit methods (never existed before).

Second, AI enables audit process re-engineering through automation of routine tasks, producing leaner, faster, and more accurate workflows a concrete form of process innovation. In the long term, this also enables development of new services such as continuous auditing or AI-based risk consulting. Third, AI can enhance research and development (R&D) audit activities by detecting trends, analyzing market data, and supporting prototype development.

This finding aligns with Zhong and Song (2024) who found that AI can strengthen innovation capabilities. Mariani et al. (2022) in their systematic review identified innovation as a key result of AI implementation. Dai (2024) also shows that AI adoption intensity positively affects company innovation performance through more efficient and effective product development.

This research result has implications for fostering an innovation culture that supports experimentation, cross-functional collaboration, and tolerance for failure as part of the learning process in public accounting firms. Additionally, investment in AI-based R&D becomes mandatory because it will create new audit methods, more sophisticated tools, and high-value-added services. Finally, AI-driven innovation will lead to comprehensive transformation in the audit profession, making it more dynamic, technology-based, and oriented toward strategic value, not merely administrative compliance.

4.2.3. How Innovation Can Improve Auditor Performance Efficiency

Statistical test results show that innovation has a positive and significant influence on auditor performance efficiency with a path coefficient (β) value of 0.561 with a p-value of 0.000 and t-statistic of 7.087. This result shows that the relationship between innovation and auditor performance efficiency is statistically significant. This result empirically strengthens

the hypothesis that high levels of innovation in audit practice correlate positively with improved auditor performance efficiency.

Logically, innovation contributes to improving auditor performance efficiency in public accounting firms through various mechanisms. First, innovation can trigger audit process optimization through application of new methodologies or improvement of existing Audit SOPs (Audit Programs). This innovation includes automation of manual tasks, use of data-driven sampling techniques, and simplification of verification procedures, which collectively reduce time and resources needed. Second, innovation encourages smarter utilization of Auditor human resources, enabling auditors to achieve optimal results with the principle of doing more with less. Third, innovation that results in improved audit quality from early stages can reduce error rates and need for rework, which is one of the main causes of audit inefficiency.

This finding is consistent with previous literature showing a positive relationship between innovation and efficiency. Hsu (2020) shows that firms with higher innovation efficiency tend to have lower audit costs, which is a direct indicator of operational efficiency. Research by Tuan Le Anh et al. (2021) and Han et al. (2020) shows that innovation management and innovation efficiency correlate positively with improved public accounting firm performance.

This research has implications for (1) fostering a continuous innovation culture, (2) encouraging inter-team collaboration, (3) tolerance for failure, and (4) courage to experiment. Auditors need the ability to identify process innovation opportunities and actively participate in designing new audit solutions. Finally, the ability to innovate efficiently provides public accounting firms with resilience against technological disruption and regulatory changes in the future, because they can quickly adapt and remain efficient in changing conditions.

4.2.4. How Innovation Can Mediate the Relationship Between AI Adoption and Auditor Performance Efficiency

Hypothesis test results show that innovation significantly mediates the relationship between AI adoption and auditor performance efficiency with a path coefficient (β) on indirect effect of 0.929 ($p = 0.000$; $t = 110.525$). This result indicates partial mediation, meaning innovation plays an important role as a link between AI use and improved auditor performance efficiency.

Logically, innovation's mediating role can be explained in two interrelated stages. In the first stage, AI adoption facilitates innovation in public accounting firms. AI technology provides fundamental new skills such as large-scale data processing, complex pattern detection, and predictive analysis. This capability encourages auditors to develop new audit methods, reconstruct work processes, and create innovative audit services, including continuous auditing and technology-based risk consulting. In the second stage, this innovation then significantly improves auditor performance efficiency. Innovation realized in the form of new methodologies, sophisticated audit tools, or process simplification directly optimizes resource use, accelerates task completion time, and reduces errors and rework. Ultimately, innovation becomes the bridge that transforms AI technology potential into more efficient audit performance.

This finding aligns with previous research such as Wang et al. (2024), Zhong and Song (2024), and Mariani et al. (2022) which show that AI adoption contributes significantly to improving company innovation capabilities. Dai (2024) emphasizes that AI adoption intensity directly impacts innovation performance. Other research by Kim et al. (2019), Hsu (2020), and Tuan Le Anh et al. (2021) found that innovation efficiency contributes to reduced audit costs and improved operational performance.

This finding has implications for audit profession development in the digital era. Innovation must be positioned as a critical bridge connecting AI technology with real efficiency. Public accounting firms need to realize that AI benefits will only be achieved through innovative initiatives that transform technological capabilities into practical solutions. Additionally, auditor training needs to be redesigned to include innovative thinking capabilities, exploration of new processes, and collaboration in designing AI-based audit solutions. This becomes very important in bridging the generational gap in technology adoption.

5. Conclusion

This research empirically tests the influence of Artificial Intelligence (AI) adoption in improving auditor performance efficiency, both directly and indirectly through innovation mediation. Analysis results show that AI Adoption has a positive and significant influence on Innovation and Auditor Performance Efficiency. Innovation also significantly improves Auditor Performance Efficiency and significantly mediates the relationship between AI Adoption and Auditor Performance Efficiency. These results prove that AI not only provides efficiency benefits directly, but also acts as a catalyst for innovation, which ultimately becomes a bridge in realizing improved auditor performance efficiency.

This study is subject to several limitations. First, while the geographical focus on East Java provides specific insights, it limits the generalizability of the findings to other regions with different institutional or economic environments. Second, the use of measures on a Likert scale introduces the potential for common method bias and social desirability bias, where respondents may overstate their use of AI or their performance efficiency. Based on these limitations, future research should pursue several directions, first, future research can expand sample coverage to other regions, especially other developing countries or even compare with developed countries to see differences in AI adoption, innovation, and efficiency. Second, adopt a longitudinal or quasi-experimental design to trace how AI implementation shapes innovation and efficiency over time. Use mixed methods, to capture a more deep view of how audit teams experience innovation with AI. Lastly, involving auditors from various types of public accounting firms (for example, Big Four, smaller firms, internal audit) thus providing a more comprehensive perspective).

6. References

Abdo-Salloum, A. M., & Al-Mousawi, H. Y. (2025). Accounting Students' Technology Readiness, Perceptions, and Digital Competence Toward Artificial Intelligence Adoption in Accounting Curricula. *Journal of Accounting Education*, *70*, 100951. https://doi.org/10.1016/j.jaccedu.2025.100951

Abdullah, A. A. H., & Almaqtari, F. A. (2024). The impact of artificial intelligence and Industry 4.0 on transforming accounting and auditing practices. *Journal of Open Innovation: Technology, Market, and Complexity*, *10*(1), 100218. https://doi.org/10.1016/j.joitmc.2024.100218

Abdullah, F. (2016a). Developing a General Extended Technology Acceptance Model for E-Learning (GETAMEL) by analysing commonly used external factors. *Computers in Human Behavior*, *56*, 238–256. https://doi.org/10.1016/j.chb.2015.11.036

Abdullah, F. (2016b). Investigating the influence of the most commonly used external variables of TAM on students' Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) of e-portfolios. *Computers in Human Behavior*, *63*, 75–90. https://doi.org/10.1016/j.chb.2016.05.014

Al-Emran, M., Arpaci, I., & Salloum, S. A. (2020). An empirical examination of continuous intention to use m-learning: An integrated model. *Education and information technologies*, *25*(4), 2899-2918.

Al-Okaily, M. (2024). Artificial intelligence and its applications in the context of accounting and disclosure. *Journal of Financial Reporting and Accounting*. https://doi.org/10.1108/JFRA-04-2024-0209

Al Wael, H., Abdallah, W., Ghura, H., & Buallay, A. (2024). Factors influencing artificial intelligence adoption in the accounting profession: the case of public sector in Kuwait. *Competitiveness Review: An International Business Journal*, *34*(1), 3–27. https://doi.org/10.1108/CR-09-2022-0137

Almufadda, G., & Almezeini, N. A. (2022). Artificial Intelligence Applications in the Auditing Profession: A Literature Review. *Journal of Emerging Technologies in Accounting*, *19*(2), 29–42. https://doi.org/10.2308/JETA-2020-083

Altawalbeh, M. A., Alfrijat, Y. S., & Alhajaya, M. E. (2025). Pros and Cons of using Artificial Intelligence in Accounting: The Dual effect and Financial Control. *International Review of Management and Marketing*, *15*(2), 200–208. https://doi.org/10.32479/irmm.17854

Anh, N. T. M., Hoa, L. T. K., Thao, L. P., Nhi, D. A., Long, N. T., Truc, N. T., & Ngoc Xuan, V. (2024). The Effect of Technology Readiness on Adopting Artificial Intelligence in Accounting and Auditing in Vietnam. *Journal of Risk and Financial Management*, *17*(1), 27. https://doi.org/10.3390/jrfm17010027

Assidi, S., Omran, M., Rana, T., & Borgi, H. (2025). The role of AI adoption in transforming the accounting profession: a diffusion of innovations theory approach. *Journal of Accounting & Organizational Change*. https://doi.org/10.1108/JAOC-04-2024-0124

Astuti, D. S. P., & Rohmah, U. (2023). The effect of application of audit digitalization on auditor performance with professional ethics as a moderation variable:(survey on KAP in Central Java). *Journal of Management, Accounting, General Finance And International Economic Issues*, *2*(2), 598–606.

Bin-Nashwan, S. A., & Li, J. Z. (2025). What shapes AI adoption in financial service-oriented contexts? The game-changing role of innovation climate. *Information Discovery and Delivery*. https://doi.org/10.1108/IDD-12-2024-0199

Dai, J. (2024). Enhancing Corporate Innovation Through Artificial Intelligence Adoption: A Study of Chinese Telecommunications Companies. *International Journal of Science and Business*, *38*(1), 18–34. https://doi.org/10.58970/IJSB.2402

Fedyk, A., Fedyk, T., Hodson, J., & Khimich, N. V. (2021). Is Artificial Intelligence Making Audit Firms More Efficient? *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3853231

Fedyk, A., Hodson, J., Khimich, N., & Fedyk, T. (2022). Is artificial intelligence improving the audit process? *Review of Accounting Studies*, *27*(3), 938–985. https://doi.org/10.1007/s11142-022-09697-x

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A Primer on Partial Least Aquares Structural Equation Modeling (PLS-SEM)*. Sage Publication.

Han, J., Ha, S., & Cho, S. (2020). The Impact of Innovative Efficiency on Performance of Firms. *The Korea Society for Innovation Management & Economics*, *28*(3), 1–28. https://doi.org/10.14386/SIME.2020.28.3.1

Hsu, H.-T. (2020). *Corporate Innovation and Audit Fees*. https://doi.org/10.26226/morressier.5f11aa861df9a502f50e6c5a

Hussain, M., Yang, S., Maqsood, U. S., & Zahid, R. M. A. (2024). Tapping into the green potential: The power of artificial intelligence adoption in corporate green innovation drive. *Business Strategy and the Environment*, *33*(5), 4375–4396. https://doi.org/10.1002/bse.3710

Imane, L. (2025). Artificial intelligence in financial auditing: improving efficiency and

addressing ethical and regulatory challenges. *Brazilian Journal of Business*, *7*(1), e76833. https://doi.org/10.34140/bjbv7n1-017

Imjai, N., Yordudom, T., Yaacob, Z., Saad, N. H. M., & Aujirapongpan, S. (2025). Impact of AI literacy and adaptability on financial analyst skills among prospective Thai accountants: The role of critical thinking. *Technological Forecasting and Social Change*, *210*, 123889. https://doi.org/10.1016/j.techfore.2024.123889

Kang, J., Kim, J.-S., & Seol, S. (2019). The prioritization of technologies and public R&D roles between the manufacturing and service industries in the fourth industrial revolution. *Foresight*, *21*(6), 680–694. https://doi.org/10.1108/FS-03-2019-0021

Karim, M. S., Mohd Pauzi, N. F., Shamsudin, A., Mamat, S. N., Abdul Fatah, M. M., Ahmad, K., & Roslan, N. (2025). Artificial Intelligence Adoption in Smaller Audit Practices. *Information Management and Business Review*, *17*(1(I)S), 241–250. https://doi.org/10.22610/imbr.v17i1(I)S.4381

Karmańska, A. (2022). Artificial Intelligence in audit. *Prace Naukowe Uniwersytetu Ekonomicznego We Wrocławiu*, *66*(4), 87–99. https://doi.org/10.15611/pn.2022.4.06

Kokina, J., Blanchette, S., Davenport, T. H., & Pachamanova, D. (2025). Challenges and opportunities for artificial intelligence in auditing: Evidence from the field. *International Journal of Accounting Information Systems*, *56*, 100734. https://doi.org/10.1016/j.accinf.2025.100734

Komang, C. P. W., & Krisnadewi, K. A. (2024). Pengaruh Ketekunan Komite Audit Dan Audit Effort Pada Fee Audit. *TRANSEKONOMIKA: AKUNTANSI, BISNIS DAN KEUANGAN*, *4*(5), 665–678. https://doi.org/10.55047/transekonomika.v4i5.709

Li, K., Cai, Y., Pei, Y., & Yuan, C. (2025). The impact of artificial intelligence adoption on firms' innovation performance in the digital era: based on dynamic capabilities theory. *International Theory and Practice in Humanities and Social Sciences*, *2*(3), 228–237. https://doi.org/10.70693/itphss.v2i3.343

Lindrianasari, L., & Kuncoro, E. A. (2024). Internal auditors' artificial intelligence capabilities and sustainable competitive advantage. *Corporate and Business Strategy Review*, *5*(1), 38–44. https://doi.org/10.22495/cbsrv5i1art4

Mariani, M. M., Machado, I., Magrelli, V., & Dwivedi, Y. K. (2023). Artificial intelligence in innovation research: A systematic review, conceptual framework, and future research directions. *Technovation*, *122*, 102623. https://doi.org/10.1016/j.technovation.2022.102623

Munoko, I., Brown-Liburd, H. L., & Vasarhelyi, M. (2020). The Ethical Implications of Using Artificial Intelligence in Auditing. *Journal of Business Ethics*, *167*(2), 209–234. https://doi.org/10.1007/s10551-019-04407-1

Nitipradja, M. D. W., & Hernawati, N. (2024). Pengaruh Artificial Intelligence (AI) dan Profesionalisme terhadap Kinerja Auditor. *Bandung Conference Series: Accountancy*, *4*(1). https://doi.org/10.29313/bcsa.v4i1.11592

Othman, M. S. (2025). Investigating the Extent and Impact of AI Applications on Audit Firms Performance in Saudi Arabia. *Journal of Ecohumanism*, *3*(8). https://doi.org/10.62754/joe.v3i8.5770

Qin, W. (2024). How to unleash frugal innovation through internet of things and artificial intelligence: Moderating role of entrepreneurial knowledge and future challenges. *Technological Forecasting and Social Change*, *202*, 123286. https://doi.org/10.1016/j.techfore.2024.123286

Reslan, F. B., & Al Maalouf, N. J. (2024). Assessing the Transformative Impact of AI Adoption on Efficiency, Fraud Detection, and Skill Dynamics in Accounting Practices. *Journal of Risk and Financial Management*, *17*(12), 577. https://doi.org/10.3390/jrfm17120577

Seethamraju, R., & Hecimovic, A. (2023). Adoption of artificial intelligence in auditing: An exploratory study. *Australian Journal of Management*, *48*(4), 780–800. https://doi.org/10.1177/03128962221108440

Tuan, G. Q., Hung, N. K., Phuong, D. T. M., Tram, H. V. B., & Hien, N. A. (2021). Factors Affecting Corporate Income Tax Compliance: A Case Study Of Fdi Enterprises In Vietnam. *Academy of Accounting and Financial Studies Journal*, *25*(Special Issue 2).

Wang, S., Huang, X., Xia, M., & Shi, X. (2024). Does Artificial Intelligence Promote Firms' Innovation Efficiency: Evidence from the Robot Application. *Journal of the Knowledge Economy*, *15*(4), 16373–16394. https://doi.org/10.1007/s13132-023-01707-w

Wang, Z., Zhang, T., Ren, X., & Shi, Y. (2024). AI adoption rate and corporate green innovation efficiency: Evidence from Chinese energy companies. *Energy Economics*, *132*, 107499. https://doi.org/10.1016/j.eneco.2024.107499

Xaviera, A., & Rahman, A. (2024). The Role Of Business Strategy In Moderating The Effect Of Esg Performance On Firm Value. *Jurnal Akuntansi Bisnis*, *17*(1), 70. https://doi.org/10.30813/jab.v17i1.4967

Yang, J., Blount, Y., & Amrollahi, A. (2024). Artificial intelligence adoption in a professional service industry: A multiple case study. *Technological Forecasting and Social Change*, *201*, 123251. https://doi.org/10.1016/j.techfore.2024.123251

Zebec, A., & Indihar Štemberger, M. (2024). Creating AI business value through BPM capabilities. *Business Process Management Journal*, *30*(8), 1–26. https://doi.org/10.1108/BPMJ-07-2023-0566

Zhong, K., & Song, L. (2025). Artificial intelligence adoption and corporate green innovation capability. *Finance Research Letters*, *72*, 106480. https://doi.org/10.1016/j.frl.2024.106480