

The Use of Artificial Intelligence in Financial Statement Audit

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ABSTRACT

Keywords: artificial intelligence; audit; financial statement.

The rapid advancement of Artificial Intelligence (AI) has transformed various industries, including financial auditing, by improving efficiency, accuracy, and fraud detection. This study investigates the extent of AI adoption in financial audits in Indonesia, with a focus on both Big 4 audit firms and smaller, local firms. Through a literature review and interviews with auditors from eight firms, the research explores the current state of AI utilization and the barriers to its implementation. The results indicate that while Big 4 firms are in the developmental phase of integrating AI into their auditing processes, smaller firms face significant obstacles, such as financial limitations, lack of expertise, and regulatory uncertainties, which hinder AI adoption. Despite the challenges, auditors from larger firms anticipate that AI will play a crucial role in future audits. The study concludes that AI adoption in Indonesian financial audits is uneven, and further efforts are required to support smaller firms through accessible AI tools, clearer regulations, and targeted training. These measures are essential for closing the gap in audit quality between large and small firms, ensuring broader AI implementation in the auditing sector.



Introduction

The rapid advancement of information technology has brought transformative changes to various sectors, with the financial industry being among the most affected (Rukmana et al., 2024). A key driver of this transformation is the rise of Artificial Intelligence (AI), which has permeated multiple domains, including banking, investment management, accounting, and notably, the auditing of financial statements. AI's ability to analyze vast quantities of data, identify hidden patterns, and optimize traditionally manual and time-consuming processes holds immense potential for enhancing both the efficiency and accuracy of financial audits (Khokhar & Khan, 2022). Despite its advantages, the adoption of AI in financial auditing in Indonesia remains limited and fragmented. As the complexity and volume of financial transactions increase globally, and especially in Indonesia, traditional audit methods, which often rely on sampling and manual review, may no longer be sufficient. One of the critical areas where AI can bring about substantial improvements is in fraud detection. Traditional auditing techniques

typically involve examining a subset of transactions, which can leave room for undetected fraud. In contrast, AI allows for the analysis of entire datasets, enabling auditors to identify anomalies and potential fraud more effectively (Beemamol, 2024). This shift from selective sampling to full population testing significantly enhances the reliability of the audit process (Tiwari et al., 2019). However, Indonesia's financial audit sector still relies heavily on conventional methods, which may not fully address the challenges posed by increasing transaction volumes and the demand for real-time analysis. Additionally, AI has the potential to improve compliance with financial regulations and standards, such as the International Financial Reporting Standards (IFRS). Given the frequent updates to financial regulations and the regional variations in compliance requirements, staying up-to-date can be challenging. AI tools can be programmed to automatically incorporate these updates, ensuring that financial statements are prepared according to the latest guidelines, thereby reducing the risk of non-compliance (Wilform Jr, 2023). Despite these clear advantages, there is limited research on the barriers and facilitators of AI adoption in financial audits in Indonesia. Factors such as regulatory constraints, technological infrastructure, auditor expertise, and organizational culture may contribute to the slow uptake of AI in the country (Pasyarani, 2023).

This research is important for several reasons. First, the financial sector plays a vital role in Indonesia's economic development, and the integrity of financial audits is essential to maintaining investor confidence and regulatory compliance. As the complexity of financial transactions grows, so does the need for advanced audit tools that can analyze large volumes of data quickly and accurately. AI has been proven to improve the efficiency and accuracy of financial audits by automating routine tasks, identifying anomalies, and providing deeper insights into financial data. (Pratama et al., 2023). Second, the regulatory environment in Indonesia is becoming increasingly stringent, with new laws and standards aimed at improving corporate governance and financial transparency. The adoption of AI in audits could help auditors comply with these regulations by ensuring more rigorous oversight and detection of non-compliance. However, without a clear understanding of the challenges faced by auditors and firms in adopting AI, it will be difficult to realize these benefits. Finally, the research will contribute to the broader field of accounting and auditing by addressing a significant gap in the literature. While there has been extensive research on the use of AI in auditing in developed economies, the specific factors that affect AI adoption in emerging markets like Indonesia have not been adequately explored. This study aims to fill that gap by providing insights into the Indonesian context and offering recommendations for practitioners and policymakers.

Research Methods

This research will employ a mixed-methods approach, combining a comprehensive literature review with semi-structured interviews. The objective is to explore the current use of Artificial Intelligence (AI) in financial audits and the factors affecting its adoption in Indonesia. The research method will be divided into two parts: (1) a literature review

to compare and analyze recent studies on AI in financial auditing, and (2) interviews with auditors from both large (Big 4) and small audit firms in Indonesia to gather practical insights on AI adoption.



Figure 1 Research Method Design

The first phase of the research involves a systematic review of the latest academic articles, industry reports, and relevant publications on the use of AI in financial audits. The focus will be on identifying key advancements in AI technology as applied to auditing, including fraud detection, automation of routine tasks, compliance with regulations, and predictive analytics. Specifically, the literature review will compare findings from studies conducted in developed economies with those from emerging markets, with a special emphasis on any existing research regarding Indonesia's audit sector. The literature review will serve three main purposes:

1. **Identify Best Practices:** Review current AI applications in financial audits to outline best practices, especially in areas such as fraud detection, compliance, and automation.
2. **Highlight Gaps in Research:** Examine the gaps in the literature concerning the adoption of AI in auditing in Indonesia and other emerging markets.
3. **Develop Interview Themes:** The findings from the literature will inform the development of interview questions, ensuring the interviews are grounded in existing theoretical and practical insights.

The second phase of the research involves conducting semi-structured interviews with auditors to gain a deeper understanding of AI adoption in Indonesia's financial audit sector. The interviewees will include auditors from both Big 4 audit firms and smaller audit offices, ensuring a diversity of perspectives regarding the challenges and opportunities associated with using AI in financial audits. A total of 8 auditors will be interviewed, divided as follows:

1. 4 auditors from Big 4 firms: Auditors from the Big 4 firms are expected to have exposure to global best practices and cutting-edge AI technologies in auditing.
2. 4 auditors from small audit firms: Auditors from smaller firms may face unique challenges in AI adoption, such as limited resources or access to technology, and their insights will provide a comparative understanding of the local auditing environment.

The semi-structured interviews will include open-ended questions to allow participants to provide detailed responses while also covering key themes identified in the literature review. The interview questions will focus on the following areas:

1. Current AI Adoption: What AI tools are currently used in their auditing processes, and what tasks are they used for?
2. Barriers to AI Implementation: What challenges do auditors face in adopting AI technologies, such as cost, lack of technical expertise, or resistance from management?
3. Perceived Benefits: How do auditors perceive the benefits of AI, such as improved audit efficiency, fraud detection, and compliance with regulations?
4. Future Outlook: How do auditors see the future of AI in financial auditing, and what factors might drive or hinder its wider adoption in Indonesia?

The interviews will be conducted either in person or via video conferencing platforms, depending on the availability and preference of the respondents. Each interview is expected to last approximately 45 to 60 minutes, and all sessions will be recorded (with the consent of the participants) to ensure accurate transcription and analysis.

The findings from the literature review will be organized into thematic areas, including AI applications in fraud detection, audit automation, compliance, and predictive analytics. A comparative analysis will be conducted to assess how AI adoption in financial audits in Indonesia aligns with or differs from global trends, highlighting specific contextual factors that may affect its implementation. The interview transcripts will be analyzed using a thematic coding approach. Key themes such as barriers to AI adoption, benefits of AI, and differences in adoption between large and small firms will be identified and categorized. The data will then be compared across respondents from Big 4 and smaller firms to identify any significant differences or commonalities in their experiences with AI. The combination of literature review and interview data will allow for a comprehensive understanding of the current state of AI adoption in financial auditing in Indonesia, while also providing practical insights into the challenges and opportunities auditors face. The research will adhere to ethical guidelines for conducting interviews, including obtaining informed consent from all participants, ensuring confidentiality, and allowing participants the right to withdraw from the study at any time. The findings from the interviews will be anonymized to protect the identities of the respondents and their organizations.

This mixed-methods approach, incorporating a literature review and semi-structured interviews, will provide a comprehensive analysis of AI adoption in financial auditing in Indonesia. The literature review will offer a global perspective on AI advancements, while the interviews will provide valuable insights into the practical challenges and benefits of AI implementation in the Indonesian audit context. The results of this study will contribute to the broader understanding of AI's potential in emerging markets, with a focus on the specific factors influencing its adoption in the financial audit sector in Indonesia.

Results and Discussion

AI Utilization in Financial Audit

The use of Artificial Intelligence (AI) in financial auditing has gained significant attention in recent years, as the auditing profession experiences rapid technological advancements. (Bakri et al., 2023). The literature reveals that AI is revolutionizing traditional audit processes by enhancing efficiency, improving accuracy, and offering deeper insights into financial data. AI's ability to process vast datasets, detect anomalies, automate repetitive tasks, and predict future risks has positioned it as a valuable tool for auditors, particularly in markets where financial transactions and regulations are becoming increasingly complex. This section provides a detailed summary of how AI is being utilized in various aspects of financial auditing. (Juliyani et al., 2024).

Fraud Detection and Anomaly Identification

One of the primary applications of AI in financial audits, as highlighted in the literature, is its capability to enhance fraud detection and anomaly identification. Traditional audit techniques often rely on sampling methods, where a subset of financial transactions is selected for review. This approach, while practical, leaves room for oversight, as only a fraction of the total transactions are scrutinized. In contrast, AI allows auditors to conduct full population testing, analyzing all financial data for irregularities, thus significantly increasing the likelihood of identifying fraudulent activities. Emphasize that AI systems equipped with machine learning algorithms can detect subtle patterns in financial records that may indicate fraudulent behavior, such as unusual transaction patterns, unauthorized access, or irregular accounting entries. This capability is particularly valuable in large organizations where the volume of transactions can make manual reviews impractical. AI tools continuously learn from historical data, refining their fraud detection capabilities over time and becoming more accurate in identifying emerging fraud schemes. As a result, AI-powered audits provide auditors with a robust mechanism to enhance the integrity of financial reporting.

Automation of Routine Audit Tasks

Another significant contribution of AI in financial auditing is its ability to automate repetitive and time-consuming tasks. Tasks such as data entry, transaction reconciliation, and document verification are integral to the audit process but typically require substantial manual effort. AI tools have proven effective in automating these routine processes, thereby freeing up auditors to focus on more complex, analytical, and judgment-intensive aspects of the audit. AI-driven automation reduces the risk of human error, which can be prevalent in manual processes, especially when dealing with large volumes of data. Furthermore, automation enhances the speed and efficiency of audits, allowing auditors to meet tight deadlines without compromising the quality of their work. For instance, (Hariyanto & Hidayatullah, 2024) Discuss how AI-powered systems can quickly cross-check thousands of transactions against set criteria, flagging any inconsistencies or unusual patterns for further review. This level of automation not only increases the precision of audits but also reduces the workload for audit teams.

Enhancing Compliance with Financial Regulations

AI is also playing a critical role in helping auditors navigate the complexities of financial regulations, which are subject to frequent updates and vary significantly across different jurisdictions. Compliance with these regulations, such as the International Financial Reporting Standards (IFRS), is essential for maintaining transparency and accountability in financial reporting. However, keeping up with regulatory changes can be challenging, especially for multinational corporations operating in multiple countries. AI systems can be programmed to automatically update audit procedures to reflect the latest regulatory changes, ensuring that financial statements are always in compliance with current standards. This is particularly beneficial in industries where regulations are stringent and non-compliance can result in hefty fines or reputational damage. (Wilform Jr, 2023). AI tools can also analyze financial statements for discrepancies that may indicate non-compliance, alerting auditors to potential issues before they escalate. By reducing the complexity associated with compliance, AI helps auditors provide more accurate and timely assessments of a company's adherence to regulatory requirements.

Predictive Risk Management and Decision Support

AI's predictive capabilities represent another area where it is making a significant impact on financial audits. Through machine learning and advanced data analytics, AI systems can identify trends, predict future risks, and provide auditors with valuable decision-making insights. This predictive function allows auditors to move from a reactive approach, where they address issues after they arise, to a proactive approach, where they can anticipate potential problems before they occur. For instance, AI can analyze a company's financial performance over time and predict areas of potential risk, such as cash flow shortages, debt repayment difficulties, or market volatility. These predictive insights enable auditors to focus their attention on high-risk areas, ensuring that audits are more targeted and effective. (Fotache & Bucsa, 2024) Further argue that AI's ability to simulate various financial scenarios helps auditors make better-informed recommendations to management, ultimately leading to more robust risk management strategies.

Improving Audit Quality and Efficiency

AI's capacity to handle large datasets and complex analyses significantly improves both the quality and efficiency of audits. Traditional audit methods are often time-consuming and may miss critical insights due to the limitations of manual data analysis. AI, on the other hand, can process massive amounts of structured and unstructured data at unprecedented speeds, uncovering patterns and relationships that might otherwise go unnoticed. This capability is particularly important as financial markets become more complex and interconnected, increasing the volume and diversity of data that auditors must review. (y Mpofu, 2023) highlight that AI tools can process not only numerical financial data but also unstructured data sources, such as contracts, emails, and other documents, to provide a more comprehensive view of a company's financial health. This broader scope of data analysis contributes to more accurate audit conclusions and allows auditors to deliver higher-quality reports. Moreover, AI-driven audits can be conducted

more efficiently, enabling audit firms to reduce costs and allocate their resources more effectively.

AI Learning and Adaptation

One of the unique advantages of AI in financial auditing is its ability to learn and adapt over time. As AI systems are exposed to more data and audit scenarios, they continuously refine their algorithms, improving their accuracy and relevance. This adaptive learning process is especially beneficial in dynamic financial environments, where new types of fraud, regulations, and financial instruments are constantly emerging. (Yang et al., 2024). As AI systems become more sophisticated, they can provide auditors with increasingly precise insights, making them indispensable tools for navigating the complexities of modern financial audits. Yang, Amrollahi, and (Yang et al., 2024) Predict that future advancements in AI, such as deep learning and natural language processing, will further expand AI's capabilities in areas such as analyzing contracts, understanding financial narratives, and detecting subtle financial irregularities. As AI continues to evolve, its role in financial auditing is expected to grow, making it an integral part of audit firms' operations worldwide.

Current AI Adoption in Indonesia

To gain a comprehensive understanding of how AI is utilized in financial auditing in Indonesia, interviews were conducted with auditors from both Big 4 audit firms and smaller, local audit firms. These interviews provided critical insights into the current state of AI adoption, the challenges faced by auditors in integrating AI into their workflows, and the prospects of AI implementation in the Indonesian auditing industry.

The interviews revealed that contrary to global trends observed in the literature, the use of AI in financial audits in Indonesia remains in its infancy. Neither Big 4 firms nor small audit firms in Indonesia have fully adopted AI tools in their audit processes. However, there is a clear difference in the approach between larger and smaller firms. While Big 4 firms are actively working on integrating AI into their audit tools and processes, smaller firms have not yet begun the development or adoption of AI technologies due to various constraints. The auditors from Big 4 firms indicated that AI implementation is currently in the developmental phase. These firms are investing resources into research and development to create AI-driven audit tools that will enhance their ability to handle large datasets and perform more sophisticated analyses. Although AI is not yet fully operational in these firms, there are ongoing pilot projects that aim to incorporate specific AI features, such as machine learning algorithms for data analysis and anomaly detection. The auditors expressed optimism about the future, with expectations that AI will become an integral part of their auditing processes within the next few years. In contrast, auditors from smaller firms admitted that they have not made any significant strides toward AI adoption. Due to limited financial resources, technical expertise, and infrastructure, these firms face substantial barriers to integrating AI into their operations. While they recognize the potential benefits of AI, such as increased efficiency and improved audit quality, the cost and complexity of implementing AI tools have hindered their ability to adopt this technology. As a result, smaller audit firms

continue to rely on traditional manual auditing methods, which are more labor-intensive and less efficient compared to AI-powered audits.

Development and Integration of AI

The interviews with auditors from Big 4 firms revealed that these global firms are at the forefront of AI development in Indonesia's auditing sector. Although they have not yet fully integrated AI into their auditing processes, several initiatives are underway to incorporate AI features into existing audit tools. (Rasyid, 2024). These initiatives are driven by the need to stay competitive in an increasingly digital and data-driven business environment, where the ability to process vast amounts of financial data quickly and accurately is crucial. According to the interviewees, Big 4 firms are focusing on developing AI tools that can automate repetitive tasks, such as data entry, transaction matching, and account reconciliation. (Fajrillah et al., 2024). These tasks are time-consuming and prone to human error, making them ideal candidates for AI-driven automation. By automating these processes, auditors can allocate more time and resources to high-risk areas of the audit that require professional judgment and analysis. Furthermore, these firms are exploring the use of AI in anomaly detection, fraud prevention, and compliance checks, where AI can provide a more comprehensive review of financial data compared to traditional sampling methods. One key area where AI is being developed is fraud detection. Auditors from Big 4 firms highlighted that fraud detection is a high priority in their AI development efforts, as AI's ability to analyze entire datasets and detect irregular patterns offers a significant advantage over conventional auditing techniques. Machine learning algorithms, which can learn from historical data to identify suspicious transactions, are being integrated into audit tools. These AI-driven tools can flag anomalies in real time, enabling auditors to investigate potential fraud more quickly and thoroughly. Another focus of AI development in Big 4 firms is the enhancement of audit quality through predictive analytics. By using AI to analyze historical financial data, auditors can identify patterns that may indicate potential risks or financial misstatements in the future. This proactive approach allows auditors to address risks before they materialize, improving both the efficiency and effectiveness of the audit process. The interviewees believe that these predictive tools will play a critical role in the future of financial auditing, as they shift the focus from reactive auditing to a more forward-looking, risk-based audit approach.

Despite these advancements, the interviewees also acknowledged several challenges in fully implementing AI within their firms. These challenges include the high cost of developing and maintaining AI systems, the need for specialized training for auditors to effectively use AI tools, and concerns about data security and privacy. Additionally, they mentioned that the regulatory environment in Indonesia is still catching up with technological developments, and there is uncertainty about how AI-driven audits will be viewed by regulatory bodies. Nonetheless, the interviewees expressed confidence that these challenges will be addressed in the coming years, and AI will eventually become a core component of their auditing processes.

In contrast to Big 4 firms, smaller audit firms in Indonesia face significant challenges in adopting AI technologies. The interviews with auditors from small firms revealed a consensus that AI, while desirable, is currently beyond their reach due to several key barriers. The most frequently cited challenge was the high cost of AI implementation. AI tools, especially those tailored for financial auditing, require substantial investment in software, hardware, and infrastructure. For small firms with limited budgets, these costs are prohibitive. Unlike the Big 4 firms, which have the resources to invest in cutting-edge technologies, smaller firms must prioritize their expenditures, often focusing on more immediate operational needs rather than long-term technological advancements.

Another major barrier is the lack of technical expertise. Implementing and maintaining AI systems requires specialized knowledge in data science, machine learning, and software development skills that are not typically found within small audit firms. The auditors interviewed indicated that their firms do not have the personnel or resources to hire AI specialists, making it difficult to even begin exploring the use of AI in their audits. This lack of expertise also extends to understanding how AI can be integrated into existing auditing practices, further limiting the potential for AI adoption. Smaller firms also expressed concerns about the regulatory and legal implications of using AI in financial audits. They noted that there is little guidance from Indonesian regulators on how AI-driven audits should be conducted or how the results should be evaluated. This uncertainty creates hesitation among small firms, as they fear that reliance on AI could lead to regulatory challenges or conflicts. Additionally, auditors from these firms voiced concerns about data security and the risk of breaches, which could be exacerbated by the use of AI systems that require access to sensitive financial data. While small firms acknowledge the potential benefits of AI in improving audit efficiency and accuracy, they emphasize that without external support such as government incentives, industry partnerships, or affordable AI solutions they are unlikely to adopt AI shortly. The interviewees suggested that collaborations between larger firms and smaller firms could help bridge this gap by providing access to AI tools and training for small firm auditors. Furthermore, they advocated for clearer regulatory guidelines on AI use in auditing, which could provide the necessary assurance to explore AI technologies.

Future Prospects for AI in Indonesian Auditing

Despite the current lack of widespread AI adoption, the interviewees from both Big 4 and small audit firms expressed optimism about the future of AI in Indonesian auditing. Auditors from Big 4 firms, in particular, are confident that within the next few years, AI will be fully integrated into their audit processes. They believe that as AI technology matures and becomes more affordable, it will become an essential tool for auditors across firms of all sizes. For smaller firms, while the path to AI adoption is more challenging, there is hope that as AI tools become more accessible and cost-effective, they too will be able to leverage these technologies to improve their audit practices. The interviewees emphasized that government support, industry collaboration, and ongoing education and training will be critical in helping smaller firms overcome the barriers to AI adoption. In

summary, while AI is not yet fully utilized in financial audits in Indonesia, the interviews indicate that efforts are underway, particularly in Big 4 firms, to develop and integrate AI tools into the audit process. However, smaller firms face significant challenges, including financial constraints, lack of expertise, and regulatory uncertainty, which must be addressed before AI can be widely adopted in the Indonesian auditing industry.

Conclusion

This research aimed to examine the adoption of Artificial Intelligence (AI) in financial audits in Indonesia, revealing a significant gap between global trends and local practices. While AI has demonstrated its potential to enhance audit efficiency, fraud detection, and data analysis globally, its use in Indonesia remains limited. Big 4 audit firms are in the early stages of AI integration, whereas smaller firms face barriers such as high costs, limited expertise, and regulatory uncertainty, preventing adoption. The findings indicate that AI adoption in Indonesia's audit sector is uneven, with larger firms leading the way and smaller firms lagging due to resource constraints. To close this gap, future research should focus on developing accessible AI tools, fostering industry collaboration, and establishing clear regulatory guidelines. Additionally, targeted training programs could equip auditors with the skills needed to effectively utilize AI, ensuring broader adoption and improved audit quality across the industry.

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