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ADOPTION OF AI IN FINANCIAL AUDITING AN EMPIRICAL ANALYSIS USING THE TECHNOLOGY ACCEPTANCE MODEL (TAM)

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Abstract
The development of artificial intelligence technology has significantly transformed financial auditing practices, particularly in terms of efficiency, accuracy, and fraud detection capabilities. This study aims to analyze the role of artificial intelligence in financial audits, identify opportunities and challenges for the accounting profession, and propose strategic recommendations for competency enhancement. The research employed a mixed method approach, combining qualitative analysis through in-depth interviews, case studies, and focus group discussions, with quantitative analysis from an online survey involving 120 auditors and accountants. The findings reveal that approximately half of the respondents have adopted artificial intelligence in auditing, with the main benefits being improved accuracy, efficiency, and fraud detection. Nevertheless, major challenges remain, including limited human resource capacity, algorithmic bias risks, and inadequate regulations. A competency gap analysis indicates that individual understanding of artificial intelligence is relatively higher than organizational readiness, highlighting the need for stronger institutional support. These results emphasize that digital transformation in auditing requires an integrated strategy combining enhanced technological literacy among auditors, adequate infrastructure provision, and the development of AI based auditing regulations. Accordingly, this study provides an important contribution to advancing the accounting profession in adapting to the digital era.

1. INTRODUCTION

The rapid advancement of digital technology has brought a profound transformation to the field of accounting, particularly in financial auditing. Artificial Intelligence (AI) has become increasingly instrumental in accelerating data analysis, improving accuracy, and enhancing risk and fraud detection. Beyond automating routine tasks, AI enables auditors to perform more comprehensive analyses of large-scale financial statements. This transformation positions AI as an integral element of the modern audit era, which demands efficiency, speed, and precision in decision-making, [1], [2]

Although many studies have investigated AI implementation in auditing, most have primarily focused on technical aspects such as algorithmic accuracy, predictive analytics, or data processing efficiency rather than its broader organizational and professional impacts[3] [4], [5]. Few studies have comprehensively examined how AI adoption influences accounting professionals' competencies, ethical frameworks, regulatory readiness, and organizational adaptation. Moreover, the majority of these studies have been conducted in developed countries such as the United States, Europe, or China, leaving limited insight into how such technological transformations apply to developing economies like

Indonesia [6],[5]. This creates a research gap regarding the mapping of opportunities and challenges surrounding AI adoption in financial auditing, particularly in terms of the readiness of Indonesian accountants to face digital disruption.

The key issue that emerges is how accountants can adapt to the growing use of AI in auditing. There is an increasing risk that routine audit procedures will be automated, potentially diminishing the traditional roles of auditors. At the same time, ethical concerns, algorithmic bias, and the reliability of AI-generated audit outcomes must still comply with professional and regulatory standards, such as those issued by the Institute of Indonesia Chartered Accountants (IAPI) [7]. These challenges underline the urgent need for strategies that maintain the relevance, competence, and integrity of the accounting profession amid rapid technological change.

To address these issues, this study employs an exploratory qualitative approach involving literature analysis, practitioner interviews, and case studies on Indonesian accounting firms. The research aims to develop a comprehensive mapping of the opportunities and challenges in adopting AI within auditing, and to propose strategic recommendations in the form of training and adaptation frameworks for accountants. Through this approach, the study seeks to produce practical strategies that help the accounting profession manage technological disruption while maintaining its essential role in ensuring accountability.

II. LITERATURE

2.1. Theory is related to the object of research

The increasing integration of Artificial Intelligence (AI) into financial auditing has sparked significant attention among scholars and practitioners. Theoretically, AI refers to computational systems designed to perform tasks that typically require human intelligence, including learning, reasoning, and problem solving. In the auditing context, AI supports automation, data analytics, and predictive modeling, allowing auditors to analyze large data volumes efficiently and identify irregularities or fraud more accurately [2]. According to Ananda et al. [3], AI has substantially transformed audit practices by improving efficiency, accuracy, and fraud detection capabilities. The use of AI in auditing aligns with the principles of digital transformation theory, which suggests that the integration of technology into organizational processes enhances decision-making and operational performance. Furthermore, the data-driven audit model builds upon information systems theory, emphasizing that data quality, system integration, and user competency determine the reliability of automated audit outcomes [4].

Several scholars have emphasized that AI adoption does not merely automate audit procedures but also reshapes auditors' cognitive and ethical responsibilities. Meitasari and Audrey [5] observed that AI-driven systems can replace repetitive audit tasks, enabling auditors to focus on strategic and interpretive aspects of assurance. However, the growing reliance on AI introduces challenges related to algorithmic bias, data governance, and accountability [6]. From a professional ethics perspective, maintaining auditor independence and objectivity becomes even more critical when audit judgments depend partly on machine-generated insights [7]. In line with socio-technical systems theory, effective AI adoption in auditing requires a balance between technological capability and human expertise. The system cannot operate optimally without adequate user understanding, organizational readiness, and regulatory support [8]. Studies conducted by Almaqtari [9]demonstrate that AI driven auditing systems enhance data accuracy and real-time monitoring but require a robust framework of IT governance and continuous professional education to ensure ethical compliance.

Thus, the theoretical discourse surrounding AI in auditing revolves around three main themes automation and efficiency through technological transformation. Enhancement of analytical and predictive capabilities via big data analytics and the necessity for human oversight, ethical regulation, and professional adaptation. These theories collectively provide a foundation for analyzing how AI affects financial audit practices and the accounting profession's evolution in the digital age

2.2. Theories system used

The theoretical system underlying this research integrates Digital Transformation Theory, Socio-Technical Systems Theory, and Technology Acceptance Model (TAM) as complementary frameworks for understanding AI adoption in auditing. Digital Transformation Theory explains the fundamental shift in organizational processes and structures due to digital technologies. Within the auditing context, this theory posits that AI serves as a catalyst for improving audit quality, timeliness, and fraud detection [1], [3]. The digital transformation of audit processes is characterized by the automation of manual procedures, utilization of predictive analytics, and integration of real-time monitoring systems [9]. Socio-Technical Systems Theory (STS) provides a holistic framework to analyze how technology interacts with human and organizational elements. According to this theory, successful implementation of AI in auditing depends not only on technical sophistication but also on social readiness, user competency, and regulatory frameworks [8]. The STS approach recognizes that AI systems must be designed to complement, rather than replace, the auditor's professional judgment and ethical standards.

Technology Acceptance Model (TAM), originally proposed by Davis (1989), serves as the behavioral basis for examining how auditors perceive and adopt AI technology. The two main constructsperceived usefulness and perceived ease of use explain the acceptance and utilization of AI tools within audit

firms.[10], [11] fauzi confirmed that perceived usefulness significantly influences auditors' willingness to adopt AI systems, while perceived risk and lack of digital literacy act as barriers.

Together, these three theoretical frameworks create an integrated system for this research: Digital Transformation Theory explains the macro-level shift in auditing practices, Socio-Technical Systems Theory addresses the interplay between human, organizational, and technological components. Technology Acceptance Model provides micro-level insights into individual behavioral responses toward AI adoption. This combined framework enables a comprehensive analysis of how AI impacts audit performance, auditor competency, and organizational readiness in the Indonesian accounting context. It also guides the exploration of opportunities and challenges identified through empirical findings, bridging theoretical concepts with practical implications for the accounting profession.

III. RESEARCH METHODS

This study was designed using a mixed-methods approach (Creswell, 2003; Davidson, 2021), dominated by qualitative inquiry supported by quantitative data. The qualitative exploratory approach was employed to gain an in-depth understanding of the experiences and perceptions of accounting practitioners regarding the adoption of Artificial Intelligence (AI) in financial auditing. Meanwhile, the quantitative component complemented this by measuring the level of AI adoption and auditors' perceptions more broadly across different professional contexts.

3.1. Research Subjects

The research subjects consisted of public accountants, internal auditors, regulators, and AI technology developers who are directly involved in technology-based auditing practices. The study was conducted across several accounting firms, corporations, and regulatory institutions in Indonesia to ensure a comprehensive representation of real-world conditions. Participants were selected using purposive sampling, which allows the selection of respondents based on their direct involvement and relevance to digital audit practices. Through this method, approximately 15–20 key informants participated in in-depth interviews, while more than 100 auditors and accountants were involved in the online survey.

3.2. Research Variables

The main research variables included. The level of AI adoption in auditing practices,Perceived risks and challenges (e.g., algorithmic bias, ethical issues, and regulatory adequacy),The competency readiness of accountants in facing digital disruption, and The impact of AI on audit efficiency, quality, and independence. To measure these variables, the study used several instruments. A semi-structured interview guide to obtain in-depth qualitative insights from practitioners. An online questionnaire based on an ordinal (Likert) scale to map perceptions and the extent of AI adoption and Observation sheets to review AI-based audit practices implemented in selected accounting firms.

3.3. Data Collection Techniques

Data were collected using four main techniques. In-depth interviews with key practitioners to explore experiences and perspectives. Online surveys to gather broad quantitative data from auditors and accountants. Case studies conducted in two to three audit firms that have implemented AI in their audit processes and Focus Group Discussions (FGD) with regulators and professional associations to validate and contextualize the research findings.

3.4. Data Analysis

Qualitative data were analyzed using thematic analysis with the aid of NVivo software, which helped identify recurring themes and relationships among responses. Quantitative data were analyzed using descriptive statistics (percentage, mean, and standard deviation) to provide supporting numerical insights. To ensure the validity and reliability of findings, the study applied data triangulation by cross-verifying results from interviews, surveys, case studies, and regulatory documents. This approach enhances the robustness of conclusions drawn from both qualitative and quantitative evidence.

3.5. Expected Outcomes

Through this methodological design, the study aims to produce a comprehensive mapping of opportunities and challenges in adopting AI for financial auditing in Indonesia. The findings are expected to lead to evidence-based strategic recommendations that support the readiness of the accounting profession in navigating digital transformation particularly in enhancing auditor competence, governance frameworks, and the effective application of the Technology Acceptance Model (TAM) within AI-based auditing systems.

IV. RESULTS

The findings of this study are derived from both qualitative and quantitative analyses that explore the adoption of Artificial Intelligence (AI) in financial auditing. Qualitative data obtained from interviews with public accountants, internal auditors, regulators, and AI technology developers were analyzed using NVivo software, while quantitative data were collected through an online survey of 120 auditors and accountants across Indonesia. The integration of both approaches provides a comprehensive understanding of the opportunities, challenges, and readiness of the accounting profession in facing AI-driven digital transformation.

4.1. Qualitative Findings

4.1.1. Opportunities in AI-Based Auditing

Thematic analysis of interview data revealed three dominant opportunities associated with the use of AI in auditing. Most respondents emphasized that AI substantially improves audit efficiency, particularly by reducing the time needed for data verification and testing procedures that were previously performed manually. Automation enables auditors to focus more on analytical and strategic tasks rather than repetitive administrative processes.

AI was also recognized for its strong capability to detect fraudulent activities. Through machine learning algorithms, AI can identify unusual transaction patterns and anomalies that are difficult to detect using conventional auditing techniques. Respondents noted that this technological advantage enhances the auditor's ability to identify potential irregularities early in the audit process.

Another major opportunity identified is the use of AI in processing and analyzing big data more accurately and in real time. AI-based systems allow auditors to examine large volumes of transactions and financial data quickly, thereby improving audit precision and supporting better decision-making. This advancement aligns with the concept of data-driven auditing, which strengthens evidence-based assurance practices.

4.1.2. Challenges in AI Implementation

Despite the significant potential of AI, respondents also highlighted several challenges that hinder its effective adoption in auditing

The most frequently cited issue is the lack of competent human resources capable of understanding and applying AI technology. Many auditors still have limited digital literacy and technical knowledge, making it difficult to optimize the use of AI tools in audit activities. Respondents expressed concerns regarding algorithmic bias, which can lead to misinterpretation of results or unreliable conclusions. Without proper human oversight, overreliance on AI could compromise audit quality and threaten professional judgment integrity. Another major challenge is the absence of comprehensive regulations governing AI use in auditing. Currently, most auditing standards remain focused on manual and procedural aspects, without addressing the governance and accountability of AI-assisted audits. This regulatory gap creates uncertainty regarding the legal responsibility of auditors and the reliability of AI-generated audit evidence.

4.1.3. Regulatory Review

Findings from document analysis further strengthen the qualitative results. The review of the Public Accountant Professional Standards issued by the Institute of Indonesia Chartered Accountants (IAPI, 2021) and the Financial Services Authority (OJK) Regulation on Digital Audit (Mustafidah & Fauzi, 2023) revealed a regulatory gap. Current standards still prioritize traditional manual approaches and do not yet provide specific guidelines on AI-based auditing practices.

This lack of regulation leads to potential legal uncertainty regarding auditor accountability and the validation of audit results produced through AI systems. Consequently, while AI holds great potential to transform audit practices, its success remains highly dependent on human resource readiness and the establishment of updated regulatory frameworks that ensure ethical and professional compliance.

4.2. Quantitative Findings

The online survey involving 120 auditors and accountants provides a broader picture of AI adoption in Indonesia's auditing sector. The data show that approximately 54% of respondents have implemented AI tools in their audit activities, while 46% have not yet adopted them. These figures indicate that although the use of AI has begun to emerge, its adoption is still uneven and limited among accounting firms.

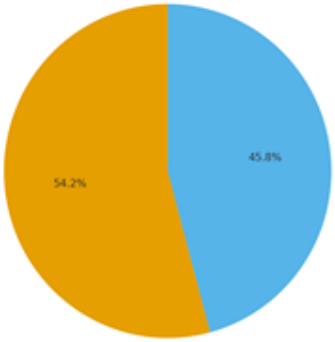

Figure 1. Percentage of AI Use in Auditing

Figure 1 illustrates that slightly more than half of the respondents (54%) reported having used AI in their auditing processes, while the remaining 46% have not yet adopted AI-based tools. This demonstrates that the integration of AI technology into auditing practices is at an early stage, with adoption concentrated in firms possessing stronger technological infrastructure and digital capabilities.

Table 1. Distribution of AI Challenges and Benefits

Category	Number of Respondents	Percentage (%)
Challenges		
Limited Human Resources	37	30.8
High Implementation Cost	31	25.8
Algorithmic Bias	29	24.2
Inadequate Regulation	23	19.2
Benefits		
Improved Accuracy	33	27.5

Category	Number of Respondents	Percentage (%)
Not Yet Implemented	31	25.8
Enhanced Fraud Detection	30	25.0
Increased Efficiency	26	21.7

4.2.1. Interpretation of Quantitative Results

The results in Table 1 indicate that the main challenge in adopting AI is the lack of qualified human resources, mentioned by 37 respondents (30.8%), followed by high implementation costs (25.8%), algorithmic bias (24.2%), and inadequate regulation (19.2%). These findings confirm that technological adoption in auditing is not solely a technical issue but also an organizational and policy challenge.

Regarding the benefits, respondents identified improved accuracy (27.5%) as the most significant advantage of AI adoption, followed by fraud detection capability (25.0%) and operational efficiency (21.7%). Interestingly, 25.8% of respondents reported that they have not yet implemented AI, indicating the early stage of digital transformation within Indonesian audit firms.

4.2.2. Level of Understanding and Organizational Readiness

The survey results show that the average level of auditors' understanding of AI is 2.92 out of 5, categorized as moderate. This suggests that most auditors are already familiar with the basic concepts of AI, but their technical understanding remains limited. Meanwhile, organizational readiness for AI adoption scored an average of 2.76 out of 5, which is slightly lower than individual understanding. This difference reveals a readiness gap, indicating that while individual auditors are becoming more open to adopting technology, their organizations have not yet fully developed the necessary infrastructure, policies, and managerial support.

Further analysis of survey responses confirms that the primary barriers to AI implementation include limited digital competence (37 respondents), high costs (31 respondents), algorithmic bias (29 respondents), and weak regulatory frameworks (23 respondents). On the other hand, respondents who have adopted AI highlighted increased accuracy (33 respondents), fraud detection (30 respondents), and time efficiency (26 respondents) as the most significant benefits.

The 0.16-point gap between individual understanding and organizational readiness demonstrates that individuals are more prepared than the institutions they work for. This finding implies that although auditors are becoming more aware of the importance of AI in auditing, institutional support both in terms of structure and policy remains inadequate. Hence, the success of AI implementation in financial auditing depends not only on auditors' technical competence but also on organizational adaptability to digital transformation. Without systemic preparation, AI adoption will continue to rely on individual initiative rather than institutional commitment.

4.3. Summary of Findings

Overall, the findings indicate that the adoption of AI in financial auditing in Indonesia remains at an early and uneven stage. While auditors acknowledge AI's potential to enhance audit accuracy, efficiency, and fraud detection, several persistent barriers such as limited human resources, high implementation costs, algorithmic bias, and inadequate regulation hinder widespread adoption. These results align with the Technology Acceptance Model (TAM), which posits that perceived usefulness and perceived ease of use are key determinants of technology adoption. Auditors generally perceive AI as useful however, their acceptance is moderated by institutional and regulatory challenges. Therefore, future strategies should emphasize not only technical capacity building but also organizational readiness and regulatory reform to ensure the ethical, effective, and sustainable integration of AI into auditing practices.

V. CONCLUSION

This study examined the adoption of Artificial Intelligence (AI) in financial auditing in Indonesia using the Technology Acceptance Model (TAM) as a theoretical framework. By employing a mixed-methods approach that combined qualitative interviews, case studies, and quantitative surveys, the research provides an integrated understanding of the opportunities, challenges, and readiness of auditors and organizations in facing digital transformation. The findings reveal that the adoption of AI in financial auditing is still at an early and uneven stage. While approximately 54% of respondents have begun to use AI in some form, the majority of audit firms remain in the preliminary phase of implementation. The qualitative analysis identified three major opportunities improved audit efficiency, enhanced fraud detection, and greater analytical accuracy through big data all of which demonstrate AI's transformative potential to improve audit quality and reliability. However, several critical challenges persist. These include the limited digital competence of auditors, high implementation costs, algorithmic bias risks, and inadequate regulatory frameworks that have yet to address AI-based auditing comprehensively. Moreover, a competency gap was identified: individual auditors scored higher in AI understanding (mean = 2.92) compared to their organizational readiness (mean = 2.76). This 0.16-point gap suggests that auditors are more prepared at the individual level than the institutions they represent, reflecting a lack of strategic alignment and managerial support for digital transformation.

The results confirm the relevance of the Technology Acceptance Model (TAM) in explaining AI adoption behavior. Consistent with TAM, auditors' perceived usefulness of AIparticularly its benefits in

efficiency, fraud detection, and accuracy positively influences their acceptance. However, perceived ease of use is constrained by technical limitations, inadequate infrastructure, and regulatory ambiguity. Therefore, the full realization of AI's benefits in auditing requires not only technological competence but also institutional commitment and a supportive regulatory environment. In summary, the successful integration of AI in auditing depends on three key dimensions. Human resource development, focusing on digital literacy and professional ethics. Organizational readiness, including infrastructure, governance, and policy frameworks and regulatory modernization, ensuring accountability, data integrity, and ethical compliance in AI driven auditing.

Future research on AI-based financial auditing should broaden its scope by including diverse geographical contexts or cross-country comparisons to capture cultural, regulatory, and technological differences in AI adoption. Longitudinal or experimental research designs are recommended to assess the long-term and causal impacts of AI on audit quality, decision accuracy, and professional independence. Additionally, integrating advanced behavioral frameworks such as UTAUT or TOE with TAM can better explain organizational and external influences on adoption. Finally, greater attention should be given to algorithmic ethics, transparency, and explainable AI (XAI) to ensure accountability and trust in AI-assisted audit decisions.

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