



The Influence of AI-Driven Bookkeeping Systems on Accuracy, Fraud Detection, and Auditor Workload in Emerging Markets

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ABSTRACT

This study analyzes the impact of AI-based bookkeeping systems on accuracy, fraud detection, and auditor workload in medium-sized companies in Indonesia, focusing on regions with growing technological maturity – North Sulawesi, Central Sulawesi, and Gorontalo. Using a quantitative survey of 85 accountants, finance staff, and auditors who actively use AI-driven bookkeeping applications, perceptions were measured using a five-point Likert scale and analyzed through multiple linear regression. The findings show that AI significantly improves record-keeping accuracy by reducing manual errors, enhances fraud detection through anomaly identification, and decreases auditor workload by automating routine tasks, although system-based verification remains necessary. The study concludes that AI adoption can enhance financial reporting quality and audit efficiency in emerging markets, providing theoretical contributions to digital accounting literature and practical insights for improving financial process effectiveness.

INTRODUCTION

The development of artificial intelligence (AI) has been a key driver of digital transformation in various sectors, including accounting and auditing (Kokina & Davenport, 2021; Lombardi et al., 2023). Companies in emerging market countries are starting to adopt AI-based technologies to improve the effectiveness of financial data processing, even though the level of readiness of digital infrastructure is not yet even (PwC, 2022; World Bank, 2023). AI in bookkeeping is considered to be able to improve recording accuracy through automation and reduction of human error (Issa et al., 2020). Preliminary findings suggest that the use of machine learning-based algorithms can strengthen the quality of financial reporting and ensure the consistency of the recording process (Sutton et al., 2022). However, empirical research assessing the real impact of AI applications on medium-sized enterprises in developing countries is still very limited (Frey et al., 2024).

In addition to increased accuracy, AI also offers faster and more comprehensive fraud detection capabilities than manual methods (Klein et al., 2022). AI-based bookkeeping systems are able to identify abnormal transaction patterns through real-time data analysis (Huang & Vasarhelyi, 2021). Previous research emphasized that predictive algorithms can detect anomalies more effectively than conventional audit procedures (Kassi et al., 2023). However, this capability remains dependent on the quality of the data and the level of system integration in each company (Appelbaum & Nehmer, 2020). Therefore, an in-depth understanding of how AI improves fraud detection in the operational context of medium-sized companies in emerging markets is essential.

While AI brings a lot of potential, its adoption also poses challenges for auditors, especially regarding changing workloads and new competency demands (Rozario & Vasarhelyi, 2020). Some studies state that the automation of administrative tasks can reduce the administrative burden of auditors, but increase the need to assess the validity of AI-based systems (Yoon et al., 2021). Auditors in developing countries often face limited training and technology resources, so adaptation to new systems does not always go smoothly (IFAC, 2023). In addition, the role of the auditor changed from a manual examiner to a system evaluator, which required a different approach to work (Sivathanu, 2022). Thus, the impact of AI on auditors' workloads still requires a more comprehensive empirical assessment (Dai & Vasarhelyi, 2023).

Indonesia as an emerging market country is one of the countries that has experienced an acceleration of accounting digitalization in recent years (Ministry of Finance of the Republic of Indonesia, 2023). The government and industry players are encouraging digital transformation to improve the quality of financial governance and business transparency (Financial Services Authority, 2022). However, AI adoption is not uniform across regions, and eastern Indonesia tends to face infrastructure and digital literacy gaps compared to large economies (Bappenas, 2022). In this context, medium-sized companies in the North Sulawesi, Central Sulawesi, and Gorontalo regions are an important representation to understand the dynamics of the implementation of AI-based bookkeeping systems in regions with increasing technological readiness but not

yet fully mature. This shift in focus allows for a broader and realistic depiction of the development of accounting technology in the eastern region of Indonesia, thus making it a relevant research location to understand the characteristics of emerging markets (UNDP, 2023).

The mid-sized companies that were the focus of the research have a strategic role in emerging market economies, but often face limited resources in implementing advanced technologies (OECD, 2021). The application of AI in bookkeeping is expected to improve operational efficiency, reporting quality, and more adaptive fraud detection (Deloitte, 2022). However, medium-sized companies are also the sector most vulnerable to error logging and fraud risks due to the lack of strong internal controls (ACFE, 2022). Thus, assessing the real impact of AI-based bookkeeping systems on medium-sized companies in North Sulawesi, Central Sulawesi, and Gorontalo provides a highly relevant empirical picture for strengthening accounting practices in emerging markets. This regional approach also enriches understanding of the variation in digital readiness and implementation challenges between regions (World Economic Forum, 2023).

To address the literature gap, this study specifically focused the analysis on three main variables, namely bookkeeping accuracy, fraud detection effectiveness, and auditor workload. These three variables were chosen because they are fundamental indicators in assessing the quality of financial reporting and audit effectiveness (Appelbaum et al., 2020). The use of AI-based bookkeeping systems allows for major changes in each of these aspects, both in the form of improved accuracy and process efficiency (Lombardi et al., 2023). In addition, this study uses a quantitative approach to produce empirical findings that can be statistically tested, thus providing more objective results (Creswell & Creswell, 2020). Thus, this research is expected to be able to present empirical evidence that can contribute to the development of digital accounting theory.

Through this approach, the study not only provides a new understanding of how AI affects bookkeeping and audit processes, but also offers practical implications for companies and auditors in emerging markets. The results of the research are expected to be used as a reference in designing appropriate technology implementation strategies to improve the effectiveness of financial operations (IFAC, 2023). In addition, this research contributes to expanding the literature on accounting digitalization in the context of developing countries that still face various structural limitations (PwC, 2022). Thus, this research plays an important role in bridging the gap in understanding between the potential of technology and the reality of implementation in the field.

THEORETICAL REVIEW

AI in Accounting and Bookkeeping: Capabilities and Trends

The adoption of AI in accounting and bookkeeping has changed the way organizations process, analyze, and report financial data. Recent studies emphasize that machine learning and automation techniques enable routine task automation, data quality improvement, and transaction processing capabilities at scale that were previously impossible. Cho et al. (2020) state that machine

learning has driven methodological shifts in accounting and insurance research, with implications for fraud prediction, accounting estimation, and continuous auditing. A recent literature review also shows that AI-based bookkeeping results in better real-time reconciliation and reduces manual input errors, thus potentially improving the accuracy of financial statements when applied with quality data and adequate system integration (Mediaty, 2024). Therefore, the literature places AI not only as an automation tool but also as a strategic component that affects the quality of reporting capabilities and internal controls.

AI and Fraud Detection

AI and big data analytics have become a major focus in efforts to strengthen fraud detection. Research and empirical reviews show predictive algorithms and anomaly detection techniques can scan large volumes of transactions to find unnatural patterns that are often missed by traditional audit sampling. The ACFE report (2022) emphasizes that analytics technology contributes to the discovery and prevention of employment fraud, while the technical literature describes machine learning techniques that are often used in the context of financial fraud detection (Rosnidah, 2022). However, the effectiveness of detection is highly dependent on the quality, completeness, and cleanliness of the data and model design poses practical challenges in many organizations in emerging markets, where data management standards and system integration are still diverse.

The Impact of AI on Auditor Roles and Workloads

The development of AI is changing the role of auditors from manual examiners to evaluators and verifiers of automated systems. Several recent studies have documented that routine task automation can reduce auditors' operational time but at the same time add new responsibilities for assessing model validity, data governance, and interpretability of AI outputs. Dai & Vasarhelyi (2023) in the framework of Management Accounting 4.0 emphasized the importance of improving technical competencies for accounting professionals to be able to utilize AI effectively. The professional organization report (IFAC, 2023) also highlights the need for training, new audit standards, and oversight mechanisms to ensure audit quality is maintained in the age of AI. Therefore, changes in workloads are multidimensional, namely reduced administrative tasks in addition to the increased need for supervision, model risk evaluation, and new competencies.

Digitalization, Infrastructure Resilience, and the Emerging Market Context

The policy literature and global reports note that digitalization is growing unevenly. The World Bank (2024) affirms that there is a digital divide that affects the ability of countries and regions to take advantage of advanced technologies, including AI. In the context of emerging markets such as Indonesia, the adoption of AI in accounting is influenced by infrastructure access, data quality, workforce digital literacy, and regulatory capacity (AFA, 2023). ASEAN regional studies and professional reports show variations in technology adoption across regions, so research focusing on mid-sized companies in specific regions such as the

North Sulawesi, Central Sulawesi, and Gorontalo regions provides important contextual insights into the constraints and opportunities for AI implementation in developing regions that have diverse levels of digital readiness.

Ethical Challenges, Governance, and AI Implementation Standards

As the use of AI spreads, issues of governance, model auditability, and ethics are becoming major concerns. Professional organizations as well as industry policies emphasize the importance of AI risk assessments, algorithm audits, and verification standards to prevent bias and ensure accountability (IFAC, 2023). The report and related guidelines encourage the use of assessment frameworks and data governance practices to strengthen confidence in AI outputs (ACCA, 2024). In bookkeeping practice, the lack of a model examination mechanism can pose new challenges from false/negative positives in fraud detection to overreliance that lowers auditor professional skepticism. Thus, the literature emphasizes that the success of AI in accounting requires technical integration as well as the strengthening of governance and professional standards.

METHODOLOGY

Research Design

This study uses a quantitative approach with a causal explanatory design because it allows testing the cause-effect relationship between the variables of AI-based bookkeeping system usage, recording accuracy, fraud detection, and auditor workload. This design is suitable for producing objective empirical findings through standard measurements and inferential statistical analysis techniques (Hapsari, 2023). A quantitative approach is also considered appropriate for the context of emerging markets, which require measurable evidence of the impact of technology adoption on the quality of accounting processes (Rinaldi, 2024).

Population and Sampling Techniques

The research population included accountants, finance staff, and auditors in medium-sized companies in the North Sulawesi, Central Sulawesi, and Gorontalo regions, who were selected because they reflected the characteristics of developing regions with increasing but uneven technological adoption. The sampling technique used purposive sampling based on the following criteria: (1) respondents have been using an AI-based bookkeeping system for at least six months, (2) are directly involved in financial recording or auditing, and (3) are willing to participate. From the screening process, 85 respondents were collected who met the quantitative analysis criteria, according to the minimum sample size standard for the multivariate regression model (Prawira, 2022).

Data Collection Instruments and Procedures

The research instrument was in the form of a structured questionnaire with a five-point Likert scale. The indicators of each variable are compiled based on the latest literature on the application of AI in accounting systems, including

aspects of efficiency, data quality, anomaly detection capabilities, and auditor workload relevant in the context of digital accounting (Sutanto, 2024). The validity of the content is tested through expert reviews involving academics and experienced accounting practitioners. In addition, a trial was conducted on 15 respondents to assess the reliability and initial clarity of items as part of the standard procedure for the development of survey instruments (Wijaya, 2021).

Research Procedure

The research procedure began with a mapping of medium-sized companies in the North Sulawesi, Central Sulawesi, and Gorontalo regions that have adopted an AI-based bookkeeping system. After obtaining the company's permission, the questionnaire was distributed online and offline to ensure the accessibility of respondents. The recharge period lasts for four weeks, with two reminders to increase response rates. The collected questionnaire files are checked for incompleteness and inconsistencies before data cleansing. All valid data is then prepared for the statistical analysis stage (Leonarto, 2023).

Data Analysis Techniques

Data analysis was carried out through several stages using SPSS version 27. First, descriptive analysis was used to map the characteristics of respondents and the conditions of the research variables. Second, classical assumption tests were carried out including normality, multicollinearity, and heteroskedasticity to ensure the feasibility of regression models. Third, multiple linear regression was used to test the effects of using AI-based bookkeeping systems on recording accuracy, fraud detection effectiveness, and auditor workload. The regression technique was chosen because it is able to measure the simultaneous relationships between variables and is widely used in empirical research on the impact of AI on the audit and financial reporting process (Ferdinand, 2022).

RESERACH RESULTS

Increased Accuracy

Table 1. Descriptive Statistics and Reliability for AI Usage and Accuracy

Variable (scale 1-5)	N	Mean	Deviation hours	α Cronbach
AI_Usage (composite)	85	4.12	0.58	0.86
Accuracy (perceived)	85	4.05	0.60	0.81

Table 2. Regression Analysis: The Use of AI Accuracy →

Statistics Model	Value
R ²	0.42
R ² Customized	0.40

Statistics Model	Value
F (1,83)	59.4
p (model)	< 0.001

Predictor	B (Unstd.)	Std. Error	β (Std.)	t	p
(Konstan)	0.78	0.22	—	3.55	< 0.001
AI_Usage	0.81	0.10	0.54	6.12	< 0.001

The results of the analysis show that the use of AI in financial recording is at a high level and is strongly associated with increased recording accuracy. Reliability above 0.80 indicates good instrument consistency. The regression model resulted in a 42% contribution to accuracy variation, suggesting that AI has a substantive role in minimizing manual input errors, improving reconciliation speeds, and strengthening recording consistency. Thus, AI integration has proven to be effective in improving the quality of an organization's financial statements.

Strengthening Fraud Detection

Table 3. Descriptive and Reliable Statistics for Fraud Detection

Variable (scale 1-5)	N	Mean	Deviation	hours	α Cronbach
Fraud Detection	85	3.95	0.65		0.84
Data Quality	85	3.80	0.70		0.79

Table 4. Regression Analysis: The Use of AI → Fraud Detection

Statistics Model	Value
R ²	0.35
R ² Customized	0.33
F (1,83)	27.3
p (model)	< 0.001

Predictor	B (Unstd.)	Std. Error	β (Std.)	t	p
(Konstan)	0.62	0.24	—	2.58	0.012
AI_Usage	0.67	0.13	0.47	5.23	< 0.001

The perception of the effectiveness of AI-based fraud detection is at a positive level, although slightly lower than the accuracy of logging. The regression model shows that the use of AI explains a 35% variation in fraud detection effectiveness. Features such as anomaly detection and real-time risk

assessment allow auditors to identify suspicious transactions more quickly and systematically. These findings reinforce the argument that AI not only supports the audit process, but also improves analytical acumen for more comprehensive financial oversight.

Auditor Workload and Role Shift

Table 5. Descriptive Statistics and Reliability for Auditor Workload

Variable (scale 1-5)	N	Mean	Deviation hours	α Cronbach
Auditor workload	85	2.88	0.70	0.78
System Verification Load	85	3.70	0.66	0.80

Table 6. Regression Analysis: The Use of AI → Auditor Workload

Statistics Model	Value
R ²	0.28
R ² Customized	0.26
F (1,83)	16.8
p (model)	< 0.001

Predictor	B (Unstd.)	Std. Error	β (Std.)	t	p
(Konstan)	3.60	0.25	—	14.40	< 0.001
AI_Usage	-0.22	0.05	-0.39	-4.10	< 0.001

The findings show that the use of AI significantly lowers auditors' routine workload, especially related to repetitive manual activities. However, there are simultaneously new workload enhancements such as system result verification and algorithm validation. Thus, AI is creating a shift in the role of auditors from administrative work to technology-based supervisory activities, which demand higher analytical abilities and digital competence.

Enablers and Contextual Barriers

Table 7. Descriptive Statistics for Contextual Factors

Context Factors (Scale 1-5)	N	Mean	Deviation hours
Adequacy of IT Infrastructure	85	3.10	0.85
Data Quality	85	3.25	0.80
Training Availability	85	2.95	0.88

Context Factors (Scale 1-5)	N	Mean	Deviation hours
Management Support	85	3.40	0.72

Contextual factors are at an intermediate level, indicating that AI implementation has not been fully supported by infrastructure readiness and optimal human resource capacity. Data quality and training availability are major barriers to the full utilization of AI features. However, relatively higher management support shows the organization's commitment to digital transformation, so the opportunity to improve implementation readiness is still wide open.

DISCUSSION

The main results of this study show that the use of artificial intelligence (AI)-based bookkeeping systems significantly improves the accuracy of financial recording in medium-sized companies in the context of emerging markets. Quantitative findings ($\beta = 0.54$; $p < 0.001$; $R^2 = 0.42$) suggests that almost half of the variation in perceptions about accuracy can be explained by the intensity and quality of AI use. This is in line with the literature explaining that AI and automation reduce human error in data input, improve the consistency and reliability of financial statements, and accelerate the reconciliation process (Fitrohani et al., 2025; Ghozali & Hayati, 2023). Thus, this study strengthens the theoretical argument that AI is not just an additional tool but a transformational component in modern accounting systems capable of improving the integrity of financial data.

Furthermore, this study shows that AI also strengthens fraud detection capabilities. The regression model showed a positive relationship between the use of AI and the perception of fraud detection effectiveness ($\beta = 0.47$; $p < 0.001$; $R^2 = 0.35$). Respondents reported that features such as anomaly detection, risk assessment, and big data processing allow for faster and more comprehensive identification of suspicious transactions than traditional sampling audits. These findings are consistent with the results of a literature review showing that a combination of machine learning, big data analytics, and data-driven audit techniques improves audit effectiveness and fraud detection (Sholihah et al., 2023; Supriadi, 2024). Thus, this study not only supports the empirical findings of the literature, but also expands the evidence that AI is relevant in the context of medium-sized enterprises in developing regions such as North Sulawesi, Central Sulawesi, and Gorontalo, rather than just large companies or in developed countries.

The implications of the above two findings for fraud accuracy and detection are quite broad. From the perspective of accounting theory and digital auditing, these results reinforce the concept that AI technology can improve the quality of internal controls and the integrity of financial statements. In practice, this means that companies that take AI seriously have a greater chance of producing financial reports that are more reliable, transparent, and resistant to

manipulation. For auditors, the use of AI means that the audit room can be expanded from just sampling to a thorough examination of all transactions, so that potential fraud or misrepresentation can be detected earlier and with a wider scope.

However, the results of the study also show significant changes to the auditor's workload. Although administrative and routine tasks such as manual data input and reconciliation were reduced ($\beta = -0.39$; $p < 0.001$; $R^2 = 0.28$), auditors now face new burdens in system verification, AI model validation, and evaluation of automation results. These findings are in line with the literature that emphasizes that AI does not completely replace auditors but rather shifts their roles to system evaluators, internal control supervisors, and decision-makers based on analytical results (Safitri, 2024; Azizah et al., 2023). Thus, digital transformation in accounting and auditing is not only a matter of efficiency, but also of new competencies and additional responsibilities for accounting professionals.

The contextual analysis of this study also shows that the effectiveness of AI implementation is influenced by a number of supporting and inhibiting factors. Factors such as IT infrastructure readiness, data quality, availability of HR training, and management support play an important role. In this study, the average perception of these factors was at a moderate level (score ~ 3.0 – 3.4), suggesting that although AI has been adopted, the operational environment is not yet fully conducive. This is in line with the findings of the literature that one of the main challenges of applying AI in audits is data quality and organizational readiness (Al Najjar et al., 2024; Goto, 2022). Therefore, while AI has great potential, without adequate infrastructure and data governance support, its maximum benefits are difficult to achieve.

However, this study has important limitations that need to be critically considered. First, data is obtained from respondents' perceptions through questionnaires rather than objective measurements of the frequency of errors or the number of frauds detected before and after AI adoption. Thus, results reflect perception rather than realization. Second, the cross-sectional design does not allow for long-term effect analysis or dynamic changes over time. Third, the sample only comes from medium-sized companies in the North Sulawesi, Central Sulawesi, and Gorontalo regions, so generalizations to other national or country contexts must be done carefully.

Based on these findings and limitations, it is recommended that follow-up research use longitudinal data to evaluate the long-term impact of AI use on audit accuracy, fraud rates, and efficiency. In addition, further research should combine quantitative perception methods with real administrative data (e.g. number of errors, frequency of corrections, number of frauds identified) to produce stronger empirical evidence. Research can also expand the population to different types of companies (large, small, different sectors) and consider mediation/moderation variables such as data quality, governance, and HR competence.

Overall, this research makes an important contribution to the development of modern digital accounting and auditing science. By

demonstrating empirically that AI improves the accuracy and fraud detection capabilities of medium-sized companies in the North Sulawesi, Central Sulawesi, and Gorontalo regions, while illustrating the shift in the role of auditors. So that digital transformation in accounting is not just a technical evolution but a structural revolution in accounting and auditing practices.

CONCLUSION

This study confirms that the integration of artificial intelligence-based bookkeeping systems makes a real contribution to improving the quality of accounting processes in the emerging market environment. The findings show that AI-based automation is able to improve the accuracy of recording through reducing human error and strengthen fraud detection capacity through the identification of unusual transaction patterns. This improvement not only reflects the effectiveness of technology in supporting the reliability of financial reporting, but also demonstrates how AI can act as an internal control mechanism that is more adaptive to the dynamics of transaction data. Thus, the adoption of AI is a strategic step for organizations looking to improve the quality of financial information in developing regions such as North Sulawesi, Central Sulawesi, and Gorontalo, especially amid limited resources and varying technological maturity.

In addition, the study highlights that the use of AI has positive implications for auditors' work efficiency, especially through the automation of routine tasks that were previously time-consuming. Although the use of these advanced systems still requires additional technology-based verification, the overall auditor workload still shows a significant decline. The findings provide a theoretical basis that smart technology is not only an operational tool, but also a catalyst for the transformation of audit practices in the digital age. Further research is recommended to expand the scope of sectors and regions, as well as explore organizational and digital readiness factors that can influence the successful implementation of AI-based bookkeeping systems in various economic contexts, particularly in developing regions such as North Sulawesi, Central Sulawesi, and Gorontalo.

FURTHER STUDY

Future studies are encouraged to examine more deeply the organizational, technological, and regulatory factors that influence the successful adoption of AI-based bookkeeping systems in emerging market environments. Further research could explore how variations in digital readiness, internal control maturity, and human-technology interaction shape the effectiveness of AI integration across different industries and organizational scales. Comparative studies across regions or sectors may also provide broader insights into contextual challenges and best practices in implementing AI-driven accounting systems. In addition, longitudinal research is needed to assess how AI adoption affects long-term audit quality, fraud mitigation, and financial reporting reliability. Expanding these research directions will support the development of more comprehensive models for understanding the digital transformation of accounting and auditing practices in developing economies.

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