



The Role of Artificial Intelligence in Developing Accounting Audit Practices:A Literature Review

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Abstract:

The accounting audit profession has undergone a significant transformation due to the adoption of artificial intelligence (AI), including machine learning, deep learning, and natural language processing techniques. This study reviews the recent literature (2020–2025) on the role of AI in developing auditing practices, focusing on five main areas: use cases and practical applications, AI's impact on fraud detection and audit quality, operational efficiency and audit costs, governance, ethics and bias, and auditors' readiness and auditability of AI systems.

Findings indicate that AI enhances audit efficiency and effectiveness, improves fraud detection accuracy, and reshapes auditors' roles toward analytical and strategic tasks. The study also highlights the importance of establishing ethical governance frameworks, data protection, minimizing algorithmic bias, and developing auditors' skills to interact effectively with AI systems.

However, the review reveals notable research gaps, particularly regarding small and medium-sized enterprises, auditors' readiness, and the absence of comprehensive ethical governance standards.

The study recommends adopting hybrid and advanced AI models, strengthening professional training for auditors, and promoting applied research in SMEs to ensure responsible and sustainable use of AI technologies in accounting auditing

Key words: Artificial Intelligence, Auditing, Fraud Detection, Ethical Governance, Operational Efficiency.

JEL Codes: M42, O33, M15, C45, M48.

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Introduction

The past decade has witnessed an unprecedented technological boom that has significantly advanced the applications of Artificial Intelligence (AI) across numerous professional domains, with accounting auditing being among the primary beneficiaries. The auditing profession has transitioned from traditional manual procedures that relied on limited samples and standard checks to systems capable of analyzing vast amounts of data quickly and accurately, through various applications such as Machine Learning, Natural Language Processing (NLP), and anomaly detection techniques. These developments have raised high expectations among practitioners, as AI is anticipated to enhance audit efficiency, improve auditors' ability to detect fraud and financial manipulation, and support more continuous auditing processes rather than limited periodic reviews.

Despite these benefits, both the academic and professional arenas have raised fundamental questions regarding the auditability of AI system outputs, the transparency of AI models, and the presence of bias or methodological errors that may affect result reliability. Studies indicate gaps in understanding how to integrate AI tools in ways that ensure proper governance, uphold auditing responsibilities, and maintain data integrity and privacy. Recent research has also highlighted the importance of addressing ethical and regulatory risks, including the development of new frameworks for the concept of "auditability" and model governance processes.

This literature review aims to collect and analyze published evidence from the recent period (2020–2025) regarding the role of AI in advancing accounting auditing practices. The study focuses on five main themes: use cases and practical applications, the impact of AI on fraud detection and audit quality, operational efficiency and audit costs, governance, ethics, and bias issues, and auditor readiness and the auditability of AI systems. By concentrating on these themes, the review seeks to extract prevailing research trends, identify areas of consensus and disagreement, and outline the core research gaps that necessitate future empirical studies or the development of standardized frameworks.

In conclusion, this review provides a comprehensive and updated perspective that assists researchers and decision-makers in auditing organizations in understanding the potential practical gains and associated risks of adopting AI technologies. It also supports the formulation of methodological and professional recommendations to develop a modern audit framework that aligns with transparency and quality requirements in the information age.

Research Methodology

This study adopted a **literature review methodology** to analyze the growing role of Artificial Intelligence (AI) technologies in advancing auditing practices during the recent period (2020–2025). The methodology aims to collect and analyze published evidence from academic and professional sources, categorizing it according to five main themes: use cases and practical

applications, the impact of AI on fraud detection and audit quality, operational efficiency and audit costs, governance, ethics, and bias, and auditor readiness and the auditability of AI systems.

The focus was placed on analyzing the findings and discussions reported in previous studies, highlighting areas of agreement and disagreement among researchers, and identifying research gaps that require future empirical studies or the development of standardized frameworks. The methodology also involved a critical assessment of the literature to determine the extent to which AI contributes to enhancing efficiency and quality, while identifying ethical and technical challenges associated with its applications in auditing organizations.

This methodology reflects an **exploratory and analytical approach** through which practical and academic recommendations can be derived to support the responsible and sustainable use of AI in the auditing field.

2. Literature Review

2.1 Use Cases and Practical Applications of Artificial Intelligence in Auditing

Recent studies indicate that the application of Artificial Intelligence (AI) in auditing processes significantly enhances work efficiency and effectiveness, increases auditors' objectivity, and builds trust among stakeholders, while reducing legal risks associated with negligence and conflicts of interest (Libby & Witz, 2024). A survey conducted by KPMG (2023) also showed that adopting AI technologies enhances the capabilities of accounting and auditing teams and helps attract talent, noting that large firms adopt these technologies—especially next-generation AI (GenAI)—more extensively than smaller firms.

However, implementing AI in auditing is not without challenges. Some researchers have highlighted issues related to transparency, bias, and data privacy, which may affect the reliability of results (Kokina, Blanchette, Davenport, & Pachamanova, 2025). Ganapathy (2023) emphasizes that AI improves audit effectiveness by automating routine tasks, analyzing large datasets, and detecting risks and fraud, yet overcoming challenges of transparency, bias, and data privacy requires appropriate infrastructure and regulatory guidance. According to Binh (2025), AI plays a pivotal role in developing auditing practices by enhancing accuracy, efficiency, and data security.

Results from the DataSnipper survey (2024) show that the majority of auditors trust AI for automating routine tasks, saving time, and improving work quality, which contributes to talent retention and better work-life balance. Furthermore, Rebstadt, Reiners, Rossmann, & Mühlhäuser (2022) indicate that explainable AI (XAI) applications in financial auditing are a crucial step to support more accurate decision-making and ensure compliance with regulatory standards.

Additionally, neural networks have demonstrated high effectiveness in analyzing and classifying large datasets, as shown in studies such as the classification of Covid-19 death cases in Iraq, which highlighted AI's capability to handle big data and support evidence-based decision-making

(Ghafal, 2024). This application illustrates the potential of AI to develop precise analytical models that can also be employed in financial auditing.

Analysis:

AI can be considered a strategic tool for enhancing audit effectiveness and supporting data-driven decision-making, while boosting trust and professional efficiency. Integrating neural networks and other AI techniques in processing and analyzing large datasets expands practical applications to include risk assessment and more accurate fraud detection. However, optimal utilization of these technologies requires clear regulatory frameworks and robust infrastructure, with careful attention to transparency, bias, and data privacy challenges to maintain a balance between innovation and professional responsibility.

2.2 Impact of Artificial Intelligence on Fraud Detection and Audit Quality

Recent research highlights the transformative role of artificial intelligence (AI) in auditing, demonstrating its capacity to enhance fraud detection and improve overall audit quality. AI enables auditors to process complex and high-dimensional financial data more efficiently and accurately than traditional methods, thereby identifying irregularities and violations with greater precision (Murikah, Nthenge, & Musyoka, 2024). Advanced techniques, including XGBoost algorithms, deep learning, and hybrid frameworks combining machine and deep learning, have shown accuracy rates of up to 95% in detecting financial fraud, supporting internal controls and regulatory compliance in various financial institutions, particularly in GCC banks (Mahmoud & Kareem, 2025; Al-Daoud & Abu-ALSondos, 2025).

The adoption of AI in accounting also reshapes professional practices by enhancing data management efficiency, strengthening fraud detection capabilities, and altering the skill requirements for accountants, highlighting the evolving competencies necessary in a digitally transformed financial sector (Bou Reslan & Jabbour Al Maalouf, 2024). Moreover, employing semi-supervised and unsupervised learning approaches helps uncover unusual patterns in financial datasets while mitigating challenges related to algorithmic bias and transparency (Alanzi et al., 2025). Integrating professional principles such as integrity, accountability, and transparency into AI system design further reduces risks associated with biased algorithms and enhances the reliability of audit outcomes (Adelakun, Antwi, Fatogun, & Olaiya, 2024). Statistical models and AI techniques are also critical in analyzing non-normal data, reinforcing auditors' ability to detect fraud accurately and maintain high-quality audit standards (Saejil & Mohsin, 2025).

Analysis:

AI has become a pivotal tool for improving audit quality and fraud detection by enabling efficient processing of large and complex datasets with superior accuracy. To fully leverage these technologies, organizations must ensure strict data quality management, transparency, and minimization of algorithmic biases. The integration of hybrid frameworks and advanced machine

learning techniques balances operational efficiency with regulatory compliance, enhances result interpretability, strengthens trust in audit outcomes, and supports the ongoing development of accountants' competencies to align with rapid digital transformation in the financial sector.

2.3 Operational Efficiency and Audit Costs

Recent literature indicates that Artificial Intelligence (AI) has become a central tool in enhancing auditing practices, effectively shortening audit cycles, reducing costs, and increasing accuracy, despite challenges related to high development costs, the need for qualified personnel, and data security risks (SHS Web of Conferences, 2025). Researchers have also noted that integrating AI improves audit efficiency, accuracy, and client communication quality, while reinforcing corporate governance practices, emphasizing the role of training and ethical commitment in overcoming infrastructure and data privacy challenges (Pérez Calderón & Alrahamneh, 2025).

Similarly, Shi (2025) highlights that improving operational efficiency requires institutional collaboration between industry and academia, as well as the development of specialized training programs. At the global level, Ghafar et al. (2024) show that AI reshapes internal auditing by automating routine tasks, enhancing result accuracy, and accelerating risk detection, while simultaneously introducing challenges related to skill gaps and integrating technology within existing regulatory frameworks.

Furthermore, Sayal et al. (2025) note that combining emerging technologies such as blockchain, IoT, and cloud computing enhances the flexibility and reliability of audit processes. Durant et al. (2025) observe that AI-powered software significantly reduces error rates, shortens working hours, and supports early fraud detection, demonstrating its effectiveness despite transparency and data security challenges. In the Australian context, Seethamraju & Hecimovic (2020) indicate that AI adoption improves audit quality and reshapes certain traditional audit stages, although concerns regarding data, legal, and regulatory risks persist.

Analysis:

AI has significantly transformed audit operational efficiency, reduced costs, and improved accuracy. Full utilization of its potential, however, depends on developing technical infrastructure, addressing transparency and privacy issues, and enhancing personnel skills to ensure a balanced approach between realized benefits and associated challenges.

2.4 Governance, Ethics, and Bias Issues

The effective use of artificial intelligence (AI) in auditing and accounting hinges on robust ethical governance frameworks that ensure accountability, transparency, and fairness. The International Ethics Standards Board for Accountants (IESBA) Technology Working Group highlights the evolving strategic roles of accountants, including positions such as data engineers, data stewards, data scientists, and strategic advisors, to support responsible AI implementation (IESBA Technology Working Group, 2022). Experiences from Ontario indicate that establishing ethical

AI principles has become a priority for policymakers and regulators, necessitating a careful balance between stringent governance and innovation facilitation, particularly in smaller organizations with limited readiness (EY & Ontario Securities Commission, 2023).

Professional literature emphasizes translating AI governance principles into actionable practices, such as defining clear usage policies, safeguarding confidential data, incorporating human review of AI outputs, conducting employee training, monitoring policy compliance, and consulting legal advisors to mitigate risks related to professional liability and data integrity (FERENCE, 2023; Schweitzer, 2024; Adelakun, 2022). Moreover, electronic management information systems play a key role in strengthening corporate governance by enhancing transparency, supporting unbiased decision-making, and promoting organizational sustainability, while ensuring the reliability of administrative processes (Abdul Kareem, 2025).

Analysis:

This domain highlights that ethical governance is essential for responsible AI adoption in auditing and accounting. Accountants are central to managing data, ensuring transparency, and upholding accountability. Effective AI governance requires comprehensive regulatory and ethical frameworks addressing data protection, algorithmic bias, human oversight, and professional liability. Furthermore, ongoing training and centralized governance mechanisms are critical to enhancing accountants' competencies, fostering public trust, and ensuring responsible, sustainable, and reliable AI-driven auditing practices.

2.5 Auditor Readiness and Auditability of AI Systems

Auditing is undergoing a fundamental transformation due to AI applications, necessitating the development of standard frameworks to ensure the auditability of AI systems and equip auditors with specialized skills aligned with this evolving domain (Li & Goel, 2025).

Assessing the auditability of AI-integrated systems enhances auditor readiness and ensures audit effectiveness by designing systems that allow auditing, provide evidence, and maintain appropriate documentation (Fernsel et al., 2025). Achieving this requires a comprehensive standard framework, continuous audit mechanisms, and centralized institutions to strengthen auditability and auditor preparedness (Lam et al., 2025; Minkkinen et al., 2022; Manheim et al., 2025).

Auditing large language models (LLMs) indicates the need for a three-layered approach involving governance, model, and application audits to enhance auditor readiness and manage ethical and social risks (Mökander et al., 2023). Practically, AI restructures auditor roles, with routine tasks handled by systems while accountants focus on supervisory and strategic tasks, adopting outcome-based pricing models instead of traditional hourly billing (Thompson, 2025).

Analysis:

Auditor readiness and AI system auditability rely on integrating technical, ethical, and

professional knowledge. Optimal utilization of these technologies requires developing centralized standard frameworks, specialized audit institutions, advanced professional training, and continuous monitoring mechanisms to ensure a balance between innovation, compliance, transparency, and ethical responsibility.

Research Gap

Despite significant advances in the application of Artificial Intelligence (AI) in accounting auditing, current literature highlights a lack of studies focusing on integrating these technologies within auditing practices in small and medium-sized enterprises (SMEs), while considering ethical and regulatory challenges. Most existing studies have concentrated on enhancing operational efficiency and fraud detection in large organizations, whereas auditor readiness and their ability to handle AI systems, as well as the comprehensive auditability of these systems, remain underexplored.

Furthermore, there is a clear gap in developing standard frameworks for ethical governance and minimizing algorithmic biases that may affect result reliability. This underscores the need for applied and field studies that evaluate the impact of AI on audit quality and efficiency, emphasizing regulatory and ethical aspects, and preparing auditors for transitioning into technology-driven work environments.

In summary, current research has yet to adequately cover the interconnected aspects of audit efficiency, fraud detection, ethical governance, and professional auditor readiness in the context of AI adoption, particularly in SMEs, constituting a research gap that requires in-depth future studies.

Discussion and Critical Analysis

The literature review indicates that AI is a strategic and pivotal tool for enhancing accounting audit practices, improving operational efficiency, audit quality, and organizations' ability to detect financial fraud. Studies show that tools such as machine learning, deep learning, and predictive analytics enable the processing of vast datasets with speed and accuracy exceeding traditional methods, reflecting a qualitative shift in auditors' tasks (Murikah et al., 2024; Mahmoud & Kareem, 2025). Integrating explainable AI (XAI) further supports precise decision-making and regulatory compliance, fostering greater trust among stakeholders (Rebstadt et al., 2022).

Despite these benefits, several challenges affect the practical effectiveness of AI in auditing. First, governance and ethical issues are critical, requiring clear frameworks for transparency, algorithmic bias mitigation, and protection of confidential data, alongside ongoing human oversight to ensure result reliability (IESBA Technology Working Group, 2022; Ference, 2023). Second, literature highlights that auditor competence and readiness to interact with AI systems represent significant challenges, particularly in SMEs that may lack technical infrastructure and

advanced skills, necessitating the development of standard training programs and continuous monitoring mechanisms (Li & Goel, 2025; Mökander et al., 2023).

The review also underscores the importance of adopting hybrid models combining traditional machine learning with deep learning to reduce algorithmic bias risks and enhance fraud detection accuracy while adhering to regulatory and ethical requirements (Al-Daoud & Abu-ALSondos, 2025; Adalakun et al., 2024). Moreover, integrating emerging tools such as blockchain, IoT, and cloud computing increases audit flexibility and efficiency, balancing innovation with operational risk mitigation (Sayal et al., 2025; Durant et al., 2025).

Critically, literature confirms that AI is no longer merely a supportive tool for auditors but has become central to restructuring audit tasks, with auditors transitioning to supervisory and strategic roles focused on evaluation and in-depth analysis rather than routine activities. The major challenge lies in addressing research gaps related to SMEs, developing comprehensive ethical governance frameworks, minimizing biases, and enhancing auditor readiness through advanced and continuous training.

In conclusion, the discussion suggests that AI provides significant opportunities to enhance audit quality and efficiency but requires integrated management covering technical, professional, and ethical aspects. Successful utilization depends on combining innovation, regulation, and compliance, with an emphasis on developing standard frameworks that support transparency, accountability, and sustainable auditing operations, especially in resource-constrained business environments.

Conclusions

1. **Fundamental transformation of auditing:** The literature review shows that AI is no longer merely a supportive tool but a core element in auditing practice development, restructuring auditors' tasks from routine activities to supervisory and strategic roles focused on in-depth analysis and evaluation.
2. **Enhancement of audit efficiency and quality:** AI tools such as machine learning, deep learning, and predictive analytics enable processing large datasets quickly and accurately, improving audit quality and financial fraud detection more effectively than traditional methods.
3. **Importance of governance and ethics:** Establishing clear regulatory and ethical frameworks for AI in auditing is vital, including data protection, minimizing algorithmic bias, and human oversight to ensure audit reliability and credibility.
4. **Challenges for SMEs:** Despite AI's significant benefits, SMEs face additional challenges related to technical infrastructure, professional skills, and limited resources, highlighting a practical research gap that requires applied field studies.

5. **Importance of training and professional readiness:** The research emphasizes developing standard training programs to enhance auditor readiness for AI systems, including technical, ethical, and professional knowledge, ensuring optimal utilization of modern technologies.

Recommendations

1. **Develop standard frameworks for ethical governance:** Organizations and practitioners should adopt clear policies defining the scope of AI use in auditing, ensuring transparency, data protection, and minimization of algorithmic bias.
2. **Adopt hybrid models and advanced techniques:** It is recommended to combine traditional machine learning with deep learning and integrate emerging technologies such as blockchain, IoT, and cloud computing to enhance audit flexibility and efficiency.
3. **Enhance auditor training:** Establish continuous and specialized training programs to improve technical and professional skills, focusing on evaluating and analyzing AI systems and ensuring their auditability.
4. **Encourage field studies in SMEs:** Conduct applied research to assess AI's impact on audit quality and efficiency in resource-constrained business environments, emphasizing regulatory and ethical challenges.
5. **Strengthen continuous monitoring and oversight:** Implement ongoing supervisory mechanisms to evaluate AI systems' performance in auditing and ensure compliance with professional and regulatory standards, with periodic updates to models and policies according to technological developments.

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