# Reimagining Accounting and Auditing Through AI, Blockchain, and Ethical Governance: a Systematic Literature Review

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**Abstract**

This study aims to examine the digital transformation of accounting and auditing through the integration of Artificial Intelligence (AI)**,** Blockchain**,** and technological ethics. The research focuses on how these innovations reshape accounting practices, public auditing, and professional governance in the era of automation and intelligent systems.The study employs a systematic literature review approach by analyzing nine international peer-reviewed articles published between 2024 and 2025 in leading journals such as *Emerald Publishing* and *Elsevier*. The selected papers were categorized into three thematic areas: (1) the adoption of AI and intelligent automation in accounting; (2) the implementation of blockchain for auditing and public accountability; and (3) ethical, security, and competency challenges within digital professions. The analysis synthesizes key findings, identifies research gaps, and explores emerging conceptual directions.The findings reveal that the adoption of AI and blockchain enhances efficiency, transparency, and accuracy in financial reporting**,** while simultaneously introducing challenges related to algorithmic bias, data protection, and professional integrity**.** The digital maturity model and blockchain-based audit framework emerge as potential solutions to strengthen accountability and reliability in financial systems.In conclusion, the future of accounting and auditing depends on the profession's ability to integrate advanced technologies while upholding ethical principles and public trust. The study implies the necessity for developing digital competencies, adaptive ethical frameworks for AI, and interdisciplinary regulations to ensure sustainable and responsible accounting practices in the digital era.

**Keywords**: Artificial Intelligence, Blockchain, Digital Accounting, Auditing, Ethics, Automation

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2nd International Conference on Islamic Community Studies (ICICS)
Theme: History of Malay Civilisation and Islamic Human Capacity and Halal Hub in the Globalization Era

## Introduction

The rapid advancement of digital technologies has significantly reshaped the landscape of accounting and auditing. Over the past decade, the convergence of Artificial Intelligence (AI), Blockchain, and automation has driven what scholars describe as the fourth digital revolution in financial information systems. Accounting, historically perceived as a rule-based and procedural discipline, is now transitioning into a data-driven and cognitive system that combines intelligent algorithms, distributed ledgers, and ethical governance frameworks to enhance decision-making, reliability, and transparency (Roos et al., 2025).

This research explores the intersection of AI, Blockchain, and ethical frameworks within accounting and auditing by reviewing nine recent international studies published between 2024 and 2025. The scope encompasses both theoretical and applied developments in digital accounting, intelligent automation, blockchain-based auditing, and AI ethics. Collectively, these studies reflect an interdisciplinary shift in accounting scholarship from procedural compliance toward strategic digital transformation which integrates computing, behavioral, and ethical dimensions into financial governance systems.

Earlier studies primarily addressed technology adoption in isolation. For instance, AI in accounting has been examined from an efficiency and automation perspective. (Roos et al., 2025) identified key prerequisites for successful AI adoption, including infrastructure readiness, high-quality data, and workforce upskilling. Similarly, (Leitner-hanetseder et al., 2025) demonstrated that large language models such as ChatGPT can perform accounting tasks with up to 77% accuracy indicating the potential for AI as an assistive tool in professional accounting environments.

At the same time, Blockchain technology has emerged as a transformative force in auditing. (Ziemba et al., 2025) developed a three-stage framework pre-implementation, implementation, and post-implementation for blockchain adoption, highlighting its role in ensuring transparency, data immutability, and real-time verification. Complementing this, (Doabi & Roodposhti, 2025) employed a mixed-method foresight analysis to predict that accounting and auditing processes will be fully automated on blockchain platforms, creating self-executing, tamper-resistant, and interoperable audit environments.

On the ethical and social front, the literature reveals growing concern about algorithmic fairness and human autonomy. Islam and Tookey (2025) proposed a dual-layered framework that balances representational inclusivity with user freedom through bias auditing and empowerment mechanisms, grounded in the Fairness, Accountability, Transparency (FAT) model and Stanford's Human-Centered AI principles. Meanwhile, (Andon & Mouritsen, 2025) examined the darker side of professional practice, showing how fraudsters exploit ritualized audit procedures to conceal misconduct, thus urging auditors to move beyond compliance-based routines toward skeptical, data-intensive assurance models.

Furthermore, (Nguyen & Kend, 2025) analyzed IT auditing practices in Vietnam's State Audit Office following national corruption scandals, concluding that the integration of technology is essential for restoring public trust in governmental financial oversight. (Lam et al., 2025) extended this argument to the cybersecurity domain, stressing that future accounting and audit professionals must possess not only technical knowledge but also ethical awareness and adaptive problem-solving skills to manage complex digital ecosystems. Finally, (Kortesalmi, 2025) introduced the Intelligent Accounting Digital Maturity Model (IADMM) for small and medium-sized firms, which provides a structured roadmap for progressing from manual processes to intelligent automation across 11 key dimensions, including data governance and cybersecurity.

Despite substantial progress, the existing body of literature remains fragmented. Prior reviews typically concentrate on single dimensions either AI, blockchain, or ethics without synthesizing their interdependencies. Consequently, there is a lack of an integrated framework

explaining how these technologies collectively influence accounting practices, audit methodologies, and professional ethics. This gap highlights the need for a comprehensive synthesis connecting technological innovation with governance, accountability, and trust in financial systems.

The scientific novelty of this study lies in its integrative approach: it systematically combines technological, ethical, and organizational perspectives to conceptualize the digital transformation of accounting and auditing. By uniting insights from AI, blockchain, digital maturity, and ethics, this paper offers a new understanding of how emerging technologies jointly redefine professional judgment, assurance quality, and social legitimacy within the accounting discipline.

The main research problem addressed in this review is: How do AI, blockchain, and ethical frameworks collectively transform accounting and auditing practices while maintaining transparency, accountability, and trust?

Accordingly, the objective of this scientific article is to synthesize contemporary literature to (1) identify technological and ethical enablers of digital transformation, (2) analyze their implications for accounting and auditing standards, and (3) propose an integrated conceptual direction for future research and practice.

Ultimately, this study aims to bridge the gap between innovation and integrity, contributing to the development of sustainable, ethical, and technologically competent accounting and auditing ecosystems in the digital era.

## Literature Review

### Digital Transformation in Accounting and Auditing

The digital transformation of accounting and auditing represents one of the most profound paradigm shifts in modern financial reporting and assurance practices. The proliferation of artificial intelligence (AI), blockchain technology, and intelligent automation has enabled organizations to process, analyze, and verify financial data with unprecedented speed and accuracy. As noted by Roos, Schlegel, and Kraus (2025), AI technologies have evolved from simple rule-based automation to learning-based decision systems capable of performing complex accounting operations such as invoice processing, anomaly detection, and tax compliance. This transformation is not merely technological but also structural, influencing how professional accountants interpret data, exercise judgment, and uphold ethical standards within digitally mediated environments.

Accounting, as a data-centric discipline, is increasingly intertwined with data science and computational analytics. The convergence of these fields has given rise to what scholars term “intelligent accounting”, where machine learning algorithms augment human decision-making. Leitner-Hanetseder et al. (2025) empirically tested the performance of ChatGPT on accounting assessment tasks and reported an accuracy of 77%, underscoring AI’s potential to assist accounting educators and practitioners in enhancing analytical reasoning and financial interpretation. However, the study also warns that while AI enhances productivity, it cannot replace the need for ethical reasoning and contextual understanding the human elements at the heart of the accounting profession.

### Artificial Intelligence and Intelligent Automation

Artificial intelligence in accounting has been explored extensively through the lens of automation and process optimization. Roos et al. (2025) proposed that the successful implementation of AI requires several prerequisites: (1) robust IT infrastructure; (2) access to reliable, high-quality financial data; (3) regulatory alignment with national and international standards; and (4) upskilling of accounting professionals to work effectively with AI systems. These factors reflect the dual challenge of technological readiness and organizational adaptation.

Complementarily, Kortesalmi (2025) developed the Intelligent Accounting Digital Maturity Model (IADMM) for small and medium-sized accounting firms. This model evaluates organizational maturity across 11 dimensions including technology, processes, leadership, data governance, and cybersecurity and establishes a pathway from "manual accounting" to "intelligent accounting." Empirical validation in Finnish accounting firms showed that SMEs face significant resource and knowledge constraints, limiting their ability to transition toward AI-enabled accounting. The study highlights the need for incremental capability building and the cultivation of a "digital culture" within the accounting profession.

From a broader view, Doabi et al. (2025) in Digital Transformation and Society argued that automation will fundamentally redefine accounting and auditing functions. Employing Fuzzy Delphi and machine learning analysis, their research forecasted that by the next decade, automated accounting and auditing on blockchain platforms will become the dominant paradigm, characterized by transparency, traceability, and immutability of data. This vision positions AI not only as an auxiliary tool but as the core mechanism enabling continuous and self-verifying audit processes.

**Blockchain Technology and the Evolution of Auditing**

Blockchain has emerged as a pivotal technology capable of transforming the structure of financial audits. Its decentralized, transparent, and tamper-resistant nature offers a potential solution to long-standing challenges in audit credibility and fraud detection. (Ziemba et al., 2025) conducted a systematic review of blockchain adoption in auditing and developed a three-phase framework covering pre-implementation (awareness and justification), implementation (integration and operationalization), and post-implementation (evaluation and value realization). Their analysis emphasized that blockchain promotes audit traceability, immutability, and interoperability, thereby strengthening public confidence in financial statements.

Supporting this perspective, (Doabi & Roodposhti, 2025) extended the blockchain discussion by integrating it into the broader automation ecosystem. Their foresight-based study revealed that blockchain's full integration into accounting will create autonomous auditing systems in which transactions are verified and recorded in real-time through smart contracts. These systems, once combined with AI and machine learning algorithms, will redefine assurance procedures from periodic, manual inspections to continuous auditing frameworks capable of instant anomaly detection.

Despite its promise, the transition to blockchain-based auditing remains limited by several factors, including high implementation costs, lack of interoperability across jurisdictions, and insufficient regulatory guidance. Studies such as Nguyen and Kend (2025) further illustrated these challenges in the context of developing economies. Their investigation into the State Audit Office of Vietnam found that while IT auditing technologies are being adopted, the practical effectiveness of such systems depends heavily on auditor competence, data security infrastructure, and the political commitment to transparency. Hence, blockchain adoption in public sector auditing requires not only technological innovation but also governance reform and ethical oversight.

**Ethics, Accountability, and AI Governance**

The intersection of technology and ethics is central to the sustainability of digital transformation. As AI and blockchain systems become embedded in professional accounting, the ethical dimensions surrounding algorithmic fairness, transparency, and human autonomy become increasingly urgent. Islam and Tookey (2025) proposed an ethical AI framework that reconciles inclusivity with individual freedom, integrating the Fairness, Accountability, and Transparency (FAT) model with Stanford's Human-Centered AI framework. This dual-layered

approach combining system-level bias auditing with user-level empowermentaims to ensure that ethical interventions do not unintentionally restrict user autonomy.

Meanwhile, Andon et al. (2025) revealed through qualitative interviews with 23 convicted fraudsters how unethical actors exploit the ritualized nature of audits to conceal misdeeds. Their findings underscore that traditional audit ritualssuch as excessive reliance on documentation or unquestioned procedural compliance can be manipulated through impression management techniques, such as "bamboozling" and "ingratiation." This study challenges the profession to move beyond formal compliance toward critical skepticism and forensic awareness, emphasizing that ethical reasoning and data-driven analysis must coexist to safeguard audit integrity.

Together, these ethical studies demonstrate that digital transformation is not merely a technical phenomenon; it is a moral evolution of the accounting profession. AI and blockchain cannot guarantee ethical outcomes unless they are guided by transparent governance, inclusive design, and responsible use of data.

## Cybersecurity, Professional Competence, and the Future Workforce

Technological innovation introduces not only opportunities but also new forms of risk. Lam et al. (2025) explored how the expansion of automation, AI, and large language models will reshape the competencies required for cybersecurity defense teams insights that are equally relevant for accountants and auditors who operate in highly digital environments. Their study identified that future professionals will need hybrid skills that combine technical literacy, ethical judgment, communication, and critical thinking to manage evolving cyber threats and compliance regulations.

The emphasis on soft skills and continuous learning reflects a broader transformation of professional identity. Accountants and auditors are no longer mere "record-keepers"; they are evolving into data guardians and ethical interpreters, responsible for securing information integrity in interconnected ecosystems. This shift parallels findings from Kortesalmi (2025), who emphasized that digital maturity also depends on human adaptability the willingness of accountants to embrace AI as a collaborator rather than a competitor.

## Research Methodology

This study employed a Systematic Literature Review (SLR) to analyze and synthesize contemporary research concerning the integration of Artificial Intelligence (AI), Blockchain, and ethical governance within accounting and auditing. Following the PRISMA framework, the review process involved four stages: identification, screening, eligibility assessment, and inclusion. A total of nine international peer-reviewed journal articles published between 2024 and 2025 were examined covering themes such as AI automation, blockchain-based auditing, digital maturity, cybersecurity, and ethical accountability. The instrument used was a structured document analysis matrix that categorized each study according to bibliographic data, research methods, theoretical framework, and practical implications. The inclusion criteria required that all articles be scholarly, published in English, and directly related to accounting and auditing transformation. Data were analyzed using qualitative thematic analysis, involving coding, categorization, and conceptual integration to identify recurring patterns and research gaps. The analysis technique emphasized cross-case synthesis to connect findings across technological and ethical dimensions. To ensure validity and reliability, data triangulation, transparency in inclusion criteria, and replication of analytical procedures were maintained throughout the review. The research approach allows a comprehensive understanding of how AI and blockchain jointly transform accounting and auditing practices while highlighting emerging challenges of ethics, governance, and digital competence in the profession.

## Results

Across all reviewed studies, AI and blockchain are recognized as dual engines of technological acceleration in accounting. AI improves the precision and speed of data analytics, while blockchain ensures data integrity and transparency in real time. The studies of Roos et al. (2025) and Doabi et al. (2025) confirm that automation will not eliminate the profession but transform it into a more analytical and interpretive role, consistent with the digital neo-Darwinism concept introduced by Doabi et al. (2025). The intersection of ethics and technology emerges as a critical challenge. (Islam & Tookey, 2025) present a dual-layered Fairness Accountability Transparency (FAT) and Human-Centered AI (HAI) framework that operationalizes ethical auditing and user autonomy. Their framework complements Andon et al. (2025), who expose the manipulation of audit procedures by unethical actors, emphasizing that digital transformation must be guided by ethical infrastructure and oversight mechanisms. Studies by Ziemba et al. (2025) and Doabi et al. (2025) converge in arguing that blockchain will redefine auditing as a continuous, self-verifying process. Smart contracts and decentralized ledgers minimize human error, while immutable audit trails elevate accountability. However, both emphasize that successful blockchain adoption depends on political support, technical readiness, and regulatory harmonization, especially in public institutions as examined by Nguyen & Kend (2025). The reviewed literature underscores a strong call for competency transformation in accounting education and practice. Lam et al. (2025) highlight the necessity for hybrid skillsets combining AI literacy, cybersecurity awareness, and ethical reasoning. Kortesalmi (2025) adds that small and medium accounting firms must assess their digital maturity through structured frameworks to bridge capability gaps incrementally. Synthesizing these studies reveals that the future of accounting and auditing lies in integrative governance where AI supports analysis, blockchain ensures verifiability, and ethical models guide professional conduct. The literature thus positions ethical accountability as the "regulator" of automation, ensuring that technological adoption enhances not undermines public trust and professional integrity.

**Table: Literature Review**

| Author & Year | Focus Area | Method | Key Findings | Implications for Accounting & Auditing |
|---|---|---|---|---|
| **Roos, Schlegel & Kraus (2025) –** ***Journal of Business & Digital Economics*** | AI adoption in accounting | Systematic Review | Identified key drivers of AI adoption: IT infrastructure, data quality, regulation, and workforce skills | Firms must invest in digital readiness and continuous training to maximize AI benefits |
| **Leitner-Hanetseder et al. (2025) –** ***Accounting, Auditing & Accountability Journal*** | ChatGPT in accounting education | Experimental | ChatGPT accuracy in accounting tasks reached 77%; higher with structured data | AI assists in learning and judgment support but cannot replace ethical human oversight |

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| **Doabi et al. (2025) – *Digital Transformation and Society*** | Blockchain-based auditing | Mixed-method & Fuzzy Delphi | Blockchain can automate auditing and accounting; technical factors most influential | Automation will enhance transparency, efficiency, and accountability |
| **Ziemba et al. (2025) – *Contemporary Economics and Management Journal*** | Blockchain framework for auditing | Systematic Review (63 studies) | Proposed 3-stage model (pre-, implementation, post-); need for auditor digital upskilling | Blockchain ensures traceability and tamper-proof audit data |
| **Andon et al. (2025) – *Accounting, Auditing & Accountability Journal*** | Fraud and audit rituals | Qualitative interviews | Fraudsters exploit ritualized audit practices ("bamboozling" and "ingratiation") | Auditors must enhance skepticism and data-driven vigilance |
| **Islam & Tookey (2025) – *Journal of Ethics in Entrepreneurship & Technology*** | Ethical AI framework | Conceptual synthesis | Proposed dual-layered FAT–HAI ethical model balancing fairness and autonomy | Introduces ethical governance model for AI in accounting systems |
| **Nguyen & Kend (2025) – *International Journal of Public Auditing & Finance*** | IT auditing in public sector | Case Study | Adoption of IT audit strengthens public trust but requires policy and skill reform | Emerging economies need digital audit capacity-building |
| **Lam et al. (2025) – *Information and Cybersecurity Studies*** | Cybersecurity competence in digital professions | Delphi study | Future professionals need hybrid skills: technical, analytical, ethical | Accounting education must integrate cybersecurity and AI literacy |
| **Kortesalmi (2025) – *Journal of Public Business and Accounting Finance*** | Digital Maturity Model (IADMM) | Framework development | Identified 11 maturity dimensions for intelligent accounting | Provides roadmap for gradual AI and automation integration |

The integration of findings demonstrates that digital transformation is both a technological and ethical evolution. AI-driven automation promises unprecedented efficiency, but without an ethical compass, it risks creating algorithmic opacity and moral hazards. Blockchain, in turn, provides structural integrity to the audit process, ensuring transparency and trust. However, as emphasized by Roos et al. (2025) and Islam & Tookey (2025), digital transformation must be accompanied by ethical literacy, data governance, and adaptive policy frameworks.

Ultimately, these results highlight a unified conceptual framework for the next generation of accounting one that is intelligent, transparent, and ethically grounded. The synergy among AI, blockchain, and ethics represents not only technological progress but also the foundation for sustainable, trustworthy, and socially responsible accounting in the digital era.

**Conclusion**

This study concludes that the digital transformation of accounting and auditing is fundamentally driven by the convergence of Artificial Intelligence (AI), Blockchain, and ethical governance frameworks. Through a systematic literature review of nine international journal articles published between 2024 and 2025, this research synthesizes how these technologies collectively reshape professional practices, decision-making, and accountability in the digital era.

The reviewed studies consistently demonstrate that AI enhances operational efficiency and analytical capacity in accounting by automating repetitive processes and supporting financial decision-making. However, its implementation requires robust data quality, infrastructure readiness, and professional competence. Simultaneously, Blockchain technology introduces transparency, immutability, and real-time verification into auditing systems, establishing the foundation for continuous and automated assurance. These technological advancements, while transformative, necessitate strong ethical guidance to ensure fairness, accountability, and public trust.

The synthesis also reveals that ethical and governance challenges are as critical as technical ones. The dual-layered ethical AI framework (FAT–HAI) proposed by Islam and Tookey (2025) provides a crucial foundation for balancing algorithmic transparency with user autonomy. Meanwhile, research by Doabi et al. (2025) and Ziemba et al. (2025) confirms that successful blockchain implementation depends on policy support, technical literacy, and interdisciplinary collaboration. Collectively, these findings imply that the future accountant must evolve into a digitally competent and ethically conscious professional who can interpret, audit, and govern technology-driven systems.

From a theoretical perspective, this study contributes to the emerging discourse on integrated digital ethics in accounting by combining technological, ethical, and governance insights into one conceptual framework. Practically, it provides guidance for educators, practitioners, and policymakers to align curriculum design, professional standards, and regulatory frameworks with digital realities.

## References

[1] Aliah, N., Rizkina, M., Susilawaty, T. E., & Nasution, N. (2025). Audit and Coaching Finance: The Role of Auditors as MSME Consultant. JOURNAL INTELEKTUAL, 4(1), 29-34.

[2] Andon, P., & Mouritsen, J. (2025). *Ritualistic exploitation : fraud offender perspectives on auditing and auditors*. *38*(9), 402–429. https://doi.org/10.1108/AAAJ-11-2024-7530

[3] Doabi, P. N., & Roodposhti, F. R. (2025). *Automated accounting and auditing in the platform of blockchain technology*. *November*. https://doi.org/10.1108/DTS-10-2024-0197

[4] Islam, A. S. M. T., & Tookey, J. (2025). *Designing ethical AI : balancing inclusion and autonomy*. *November*. https://doi.org/10.1108/JEET-05-2025-0027

[5] Kortesalmi, H. (2025). *Intelligent accounting digital maturity model for small and medium-sized accounting firms*. *21*(7), 307–329. https://doi.org/10.1108/JAOC-03-2025-0084

[6] Lam, T. K., Bongiovanni, I., & Carthouser, B. (2025). *Future skills of a cybersecurity defence team*. *November*. https://doi.org/10.1108/ICS-09-2024-0227

[7] Leitner-hanetseder, S., Perkhofer, L., Frenkenberger, S., & Eisl, C. (2025). *ChatGPT as digital accounting assistant : evaluating output performance in financial accounting tasks*. *November*. https://doi.org/10.1108/IJAIM-01-2025-0017

[8] Nguyen, P. T., & Kend, M. (2025). *Information technology , public audits and the challenges for the state audit office of Vietnam*. *November*. https://doi.org/10.1108/JPBAFM-12-2024-0256

[9] Roos, D., Schlegel, D., & Kraus, P. (2025). *Adopting artificial intelligence in accounting : prerequisites and applications*. *November*. https://doi.org/10.1108/JEBDE-03-2025-0023

[10] Ziemba, E. W., Renik, K., & Maruszewska, E. W. (2025). *Blockchain adoption in auditing : a systematic literature review*. *November*. https://doi.org/10.1108/CEMJ-06-2024-0196