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AI in Financial Auditing: Addressing U.S. Audit Failures and Strengthening PCAOB/SEC Compliance

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Abstract: The adoption of Artificial Intelligence (AI) is transforming financial auditing by offering unprecedented opportunities to enhance audit quality, efficiency, and regulatory compliance. This paper examines the role of AI in addressing persistent audit failures in the United States and strengthening compliance with PCAOB and SEC standards. AI technologies, including machine learning, natural language processing, anomaly detection, and robotic process automation, enable auditors to analyze entire datasets, detect fraud, assess risks, and monitor compliance more effectively than traditional methods. Despite these benefits, adoption remains constrained by challenges such as algorithmic opacity, ethical concerns, data privacy risks, limited auditor expertise, and regulatory uncertainty. Using a systematic literature review of peer-reviewed academic studies and professional reports published between 2020 and 2025, this study highlights the potential of AI to mitigate recurring deficiencies identified in PCAOB inspections and support the SEC's investor-protection mandate. The findings underscore the need for robust ethical frameworks, targeted auditor reskilling, curriculum redesign, and updated regulatory guidance to ensure responsible and effective integration of AI into audit practices. This paper contributes to the understanding of AI's transformative potential in auditing and offers practical insights for auditors, regulators, and policymakers seeking to modernize financial reporting and restore public trust in the audit profession.

Keywords: Artificial intelligence (AI), Financial Auditing, Audit Quality, Public Company Accounting Oversight Board (PCAOB) & Securities and Exchange Commission (SEC) Compliance, Audit Failures.

INTRODUCTION

In the rapidly evolving digital economy, the financial auditing profession faces unprecedented challenges in maintaining public confidence, ensuring transparency, and safeguarding investor interests. Recent high-profile audit failures, including Wirecard and Silicon Valley Bank, demonstrate how traditional auditing methods fail to detect complex misstatements and systemic risks. Manual sampling, judgment-based assessments, and routine checks are often insufficient for analyzing large, complex datasets, leaving gaps in fraud detection and compliance monitoring (Boata *et al*., 2025; Alam *et al*., 2024).

Against this backdrop, AI encompasses various capabilities, including real-time information processing, trend identification, and task automation (Jagatheesaperumal *et al*. 2021). It is defined as "a system's ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation" (Leocádio *et al*.,2024). Therefore, integrating data-driven insights and automated processes enhances productivity and efficiency, complementing human decision-making (Seethamraju & Hecimovic 2023). AI is being used by accounting firms to enhance audit processes, risk assessments, transaction tests, analytics, and audit work-paper preparation for improved accuracy and compliance (Munoko *et al*. 2020).

In the United States, audit quality is regulated primarily by two institutions: the Public Company Accounting Oversight Board (PCAOB) and the Securities and Exchange Commission (SEC). PCAOB established under the Sarbanes-Oxley Act of 2002, oversees all auditors of SEC-registered companies, enforcing standards that emphasize audit quality, independence, and a risk-based approach (Gipper *et al*., 2020). The SEC complements this by mandating timely and accurate disclosures, enforcing compliance, and working closely with the PCAOB to protect capital market integrity (SEC, 2025). Despite these regulatory safeguards, PCAOB inspections continue to surface serious deficiencies especially in areas like risk assessment, journal-entry testing, and fraud detection highlighting persistent gaps in audit effectiveness.

AI technologies emerge as promising tools to enhance audit effectiveness. Empirical studies show AI tools, including machine learning, natural language processing, and anomaly detection, are improving audit efficiency and effectiveness. For

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example, Ghozi ,2024 found AI systems reduced audit time by approximately 30-40%. KPMG's Clara platform demonstrated AI's capability to proactively identify material misstatements before they escalate (Ibrahim,2025). These advancements complement PCAOB's risk-based auditing focus and the SEC's goals of fraud prevention, positioning AI as a strategic asset for audit quality improvement

Yet, the integration of AI into auditing is not without its challenges. Key concerns include the "black box" nature of many ML models, which can undermine transparency and auditability and questions of accountability when AI systems make or recommend decisions (Gu *et al*., 2024; Bai, 2025). According to Hassija *et al*.,2024, a black-box model in XAI refers to a machine learning model that operates as an opaque system where the internal workings of the model are not easily accessible or interpretable. There is also a growing body of literature arguing for a re-skilling of the audit workforce: traditional auditing skill sets are often inadequate in an AI-augmented world, and auditors must develop competencies in data science, model validation, and interpretability (Booker *et al*., 2023; Sexton & Rudman, 2022). On the governance front, scholars have called for updated regulatory standards and frameworks to manage AI risk, including proposals for an AI Audit Standards Board to oversee evolving AI auditing practices (Manheim *et al*., 2025; Munoko *et al*., 2020). This paper communicates the necessity for auditors to adapt to these technological advancements and advocates for the establishment of AI regulations and training programs to ensure ethical practices and the reliability of audit.

Accordingly, this study investigates how AI technologies are being applied in U.S. financial auditing to enhance audit quality, fraud detection, and regulatory compliance, and assesses the extent to which AI-enabled audit tools address recurring deficiencies identified in PCAOB inspections while supporting the SEC's investor-protection mandate. The study further examines the technical, ethical, and regulatory constraints shaping AI adoption in audit practice. To address these issues, the paper employs a systematic literature review of peer-reviewed academic research, regulatory publications, and professional reports published between 2020 and 2025, focusing on AI applications in external financial audits within the U.S. regulatory context and excluding studies outside this domain or period.

LITERATURE REVIEW

The Evolution and Scope of AI in Auditing

Artificial intelligence (AI) has rapidly expanded within the auditing profession, transforming how auditors plan, conduct, and document engagements. Modern AI applications include predictive modeling, anomaly detection, natural language processing (NLP), and continuous auditing systems. These capabilities allow auditors to analyze entire datasets rather than rely on traditional sampling methods, improving both efficiency and coverage (Hima & Yusoff,2024). Recent studies show that audit firms increasingly integrate AI-enabled platforms such as KPMG's Clara and PwC's Halo to automate risk assessments, test transactions, and standardize audit documentation (Vitali, & Giuliani,2024). Systematic reviews conducted in 2024 and 2025 confirm a growing academic consensus: AI is fundamentally reshaping the audit process and is now considered essential to the future auditing model (Wijaya *et al*., 2025; Kokina *et al*., 2025).

Audit Failures and PCAOB Inspection Findings

Despite decades of reform, accounting scandals that involve deliberate manipulation of financial statements to falsely enhance a company's image persist in damaging corporate reputations and destabilizing markets. Notably Enron and WorldCom led to trillions in losses and the collapse of Arthur Andersen. More recently, Wirecard AG falsely reported the existence of €1.9 billion in trustee accounts to present a misleading picture of profitability. When the non-existent cash balances were uncovered in 2020, the company collapsed, causing substantial investor losses and further eroding confidence in global financial reporting and oversight mechanisms. These scandals exposed serious gaps in audit quality and regulatory oversight (Boata *et al*., 2025).

Persistent audit deficiencies in PCAOB inspection reports drive interest in AI as a quality-enhancing tool. PCAOB findings from 2022–2024 highlight recurring issues in risk assessment, journal entry testing, fraud evaluation, and internal control assessments areas that AI is well-positioned to support (PCAOB, 2024). The Securities and Exchange Commission (SEC) has similarly emphasized the need for technological modernization in audit practice to strengthen financial reporting integrity (SEC, 2024). Scholars argue that AI offers an opportunity to mitigate these deficiencies by enabling auditors to perform deeper, more consistent analytical procedures and

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by providing real-time insights not feasible under traditional audit methods (Gu *et al*., 2024; Leocádio *et al*.,2024). As regulatory scrutiny intensifies, AI adoption is becoming not only a technological innovation but also a compliance imperative.

Early evidence suggests AI can reduce these deficiencies through enhanced anomaly identification, expanded population testing, and improved fraud detection (Liu *et al*., 2023). Studies examining AI-assisted auditing report increases in efficiency and more accurate risk assessments, contributing to audit quality improvements (Fedyk *et al*., 2022). However, researchers caution that much of the existing evidence is correlational rather than causal, and more rigorous quasi-experimental studies are needed to substantiate claims regarding audit quality improvements and regulatory outcomes (Vitali & Giuliani,2024).

AI TOOLS IN AUDITING

The three main AI technologies that have gained prominence are Machine Learning (ML), Robotic Process Automation (RPA), and Natural Language Processing (NLP).

Machine Learning (ML), particularly in the form of supervised learning and anomaly detection algorithms, is widely used in audit for tasks such as fraud detection and risk assessment. Studies by Wei *et al*.,2024 and Bakumenko & Elragal,2022, demonstrate that ML models are capable of analyzing vast amounts of transaction data, uncovering hidden patterns, and identifying anomalies that may not be easily detectable by human auditors. ML's ability to improve data accuracy and identify outliers has revolutionized fraud detection by enabling more efficient and comprehensive risk analysis (Suyono *et al*.,2025).

Another promising AI tool for auditors is natural language processing (NLP). NLP enables computer systems to understand spoken or written natural language to provide insights or answers (Qatawneh, 2025). Although NLP is not considered ML, it relies on ML to be used effectively. Text mining, manual text analysis, and readability analysis are all examples of NLP (Zhang *et al*., 2020). Unstructured text is automatically processed, and relevant information can be extracted and summarized for an auditor's use. This creates an efficient audit process by saving time and enhancing productivity.

Robotic Process Automation (RPA) refers to software "bots" programmed to execute repetitive, rule-based tasks such as data extraction, form-filling, ledger reconciliation, or file transfers across disparate information systems. In an audit context, RPA enables automated execution of many routine procedures, thereby streamlining audit workflows and reducing manual workload. Empirical evidence shows that RPA can deliver substantial efficiency gains, reduce human error, and free auditors to focus on higher-value, judgment-based tasks (Oko-Odion & Udoh, 2024; Alassuli, 2025). When combined with artificial intelligence tools, RPA supports continuous monitoring of audit trails and seamless integration of audit tasks, enhancing audit coverage, improving consistency, and enabling more comprehensive, data-driven assurance (Akande *et al*.,2025; Vitali & Giuliani,2024).

How AI Addresses U.S. Audit Failures

Artificial Intelligence (AI) has become a transformative tool in auditing, enhancing the accuracy, scope, and efficiency of financial audits. AI applications in auditing span several areas, including fraud detection, risk assessment, audit testing, compliance monitoring, and financial reporting accuracy. These technologies enable auditors to analyze entire datasets, identify anomalies, and detect irregularities that traditional sampling and manual methods may overlook.

Fraud Detection Using Machine Learning

Machine learning (ML) has emerged as one of the most transformative innovations in modern auditing, capable of analyzing vast volumes of financial and transactional data to identify anomalies, inconsistencies, or potential fraud. For instance, Indra *et al*.,2024 found that supervised ML models achieved higher precision in detecting fraudulent journal entries compared to traditional logistic regression and rule-based systems. Similarly, Lan *et al*., 2025 highlights that ML's pattern recognition capabilities can reveal non-linear relationships in financial data that conventional sampling and manual procedures typically overlook. These models not only flag anomalous transactions but can also generate predictive insights about areas most vulnerable to manipulation, thereby supporting auditors in proactive risk assessment.

According to Alaka, *et al*.,2025 unsupervised learning models (e.g., autoencoders, isolation forests, and clustering algorithms) achieved significantly higher fraud-detection accuracy

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compared to rule-based approaches. Similarly, integrating predictive analytics and anomaly detection into audit planning enables earlier detection of misstatements and reduces the likelihood of material restatements (Indra *et al*.,2024)

NLP for Analyzing Disclosures

Natural Language Processing (NLP) is increasingly reshaping auditors' ability to identify irregularities and compliance risks embedded in large volumes of unstructured corporate disclosures. In the aftermath of high-profile U.S. audit failures such as Enron's off-balance-sheet arrangements and Lehman Brothers' misleading repo transactions a persistent limitation has been auditors' difficulty in efficiently reviewing and interpreting extensive narrative information contained in annual reports, MD&A sections, contracts, and internal communications (Zhang *et al*., 2020; Wibowo & Istianah, 2024). Conventional audit approaches, which depend on manual reading and selective sampling, are inadequate for detecting subtle linguistic cues associated with misrepresentation or concealment.

Contemporary NLP methods including sentiment analysis, topic modeling, and transformer-based classification enable the detection of deceptive tone, contradictory risk disclosures, and strategic wording often linked to earnings manipulation or environmental "greenwashing." Empirical evidence supports this improvement: Lan *et al*. (2025) demonstrate that NLP systems can identify linguistic deception patterns in financial narratives that precede SEC enforcement actions, effectively providing early indicators of potential fraud or regulatory violations. By allowing auditors to analyze the full corpus of textual disclosures rather than a narrow subset, NLP significantly enhances the comprehensiveness and precision of audit procedures.

AI in Risk Assessment & Audit Planning

Risk assessment plays a pivotal role in auditing, serving as the foundation for effective audit planning and execution. Identifying and mitigating risks is crucial for ensuring the accuracy and reliability of financial statements, as well as safeguarding against fraud and errors (Alazzabi *et al*.,2023; Mandal, 2023; Roszkowska, 2021). However, traditional risk assessment methods are often time-consuming and labor-intensive, limiting their effectiveness in today's rapidly evolving business landscape. Artificial intelligence (AI) is transforming audit planning and execution by offering improved risk assessment capabilities that outperform traditional methods in terms of accuracy, speed, and comprehensiveness. By leveraging machine learning algorithms and big data analytics, AI-powered tools can identify patterns and anomalies that human auditors may miss, leading to more focused and efficient audits. Unlike manual processes that are time-consuming and prone to errors and biases (Al-Ateeq *et al*., 2022).

Research by Bakumenko *et al*. (2024) shows that AI models can detect abnormal journal entries more effectively than manual reviews. Similarly, Alotaibi ,(2023) found that integrating predictive models into audit planning enhances accuracy while reducing workload, allowing auditors to focus on high-risk areas. These tools align with the PCAOB Auditing Standard (AS 2110) by strengthening risk assessment and improving auditors' understanding of client environments.

Audit Testing and Compliance Monitoring

In the field of audit testing, AI has automated the process of examining financial records for errors, inconsistencies, or misstatements. Adelakun *et al*. (2024) demonstrated that AI tools can perform complex statistical testing more efficiently and with greater accuracy than manual methods. AI-enabled audit testing has proven to be highly effective in verifying the correctness of financial statements and ensuring that they comply with regulatory requirements.

Additionally, AI technologies are increasingly leveraged to support regulatory compliance efforts. According to Leocádio *et al*. (2024), automated AI systems can assist auditors in evaluating whether organizations are following applicable tax, financial, and legal requirements. By processing large datasets and identifying irregularities or potential violations, AI enhances auditors' ability to detect non-compliant behaviors and helps reduce associated compliance risks.

Financial Reporting Accuracy

Artificial Intelligence (AI) is enhancing financial reporting accuracy by automating verification, detecting inconsistencies, and strengthening compliance with PCAOB and SEC standards. Machine learning models identify unusual accounting patterns and potential misstatements, while natural language processing (NLP) tools analyze management disclosures, ESG reports, and footnotes for deceptive or inconsistent language (Schumann & Marx,2021). These applications

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directly support PCAOB Auditing Standards AS 2301 and AS 2810 by improving fraud detection and reinforcing professional skepticism through data-driven insights. Research by Alotaibi (2023) shows that AI-driven analytics reduce human error and accelerate audit review cycles, enabling earlier identification of reporting anomalies that could undermine investor confidence. From a regulatory perspective, the PCAOB (2024) and SEC (2023) emphasize that transparent, explainable AI systems can improve audit quality and disclosure reliability, provided they maintain traceable logic and adequate oversight to sustain market integrity and investor trust.

AI IN STRENGTHENING PCAOB/SEC COMPLIANCE

Machine learning-based anomaly detection is a transformative technology that significantly strengthens compliance with PCAOB auditing standards (AS 2301 and AS 2401) and SEC regulations by directly addressing prominent audit deficiencies such as inadequate risk assessment, failure to detect management override, and improper revenue recognition. By providing auditors with objective, data-driven risk insights, anomaly detection fosters enhanced professional skepticism and thorough fraud assessments, critical components of the PCAOB's audit quality priorities (Olaiya,2024). From the SEC's perspective, this technology underpins the integrity of financial markets by improving the reliability of disclosures, enabling real-time or interim detection of anomalies that financial firms and auditors can address before they escalate into major misstatements or regulatory enforcement actions (Ilori,2023). This proactive approach aids in preventing costly financial restatements and enforcement penalties, thereby supporting the SEC's core mission to protect investors and maintain fair, orderly markets. Integrating anomaly detection technology into audit workflows represents a crucial advancement toward restoring public trust in financial reporting and audit reliability after decades marked by audit failures, positioning U.S. financial institutions to meet stringent regulatory demands with greater precision and vigilance

Natural Language Processing (NLP) directly enhances compliance with PCAOB Auditing Standard (AS) 2110 by enabling auditors to identify and assess risks of material misstatement through a more comprehensive understanding of the entity and its environment (Oyewole *et al*.,2024). NLP-driven text analytics quantifies qualitative risks embedded in narrative disclosures, ensuring auditors target substantive procedures on higher-risk areas, thereby aligning tightly with PCAOB's audit quality expectations. Additionally, NLP improves audit documentation and accountability, which are critical inspection priorities for the PCAOB. From a regulatory standpoint, integrating NLP into audit workflows advances the SEC's investor-protection mandate by enhancing transparency and reducing the risk of misleading or incomplete narrative disclosures (Du *et al*.,2025). Automated analysis of filings, communications, and disclosures allows continuous monitoring and timely identification of changes in tone, omissions, or contradictions that traditional audit sampling often fails to detect, thereby strengthening the reliability of financial reporting and supporting investors (Boulieris *et al*.,2024)

Predictive analytics supports the PCAOB's goal of enhancing audit quality and the SEC's mission to protect investors through earlier risk detection and more reliable audit planning. As such, AI in risk assessment and audit planning not only improves operational efficiency but also reinforces compliance, transparency, and confidence in the integrity of U.S. financial reporting (Azubuike,2024).

CHALLENGES IN AI ADOPTION IN AUDITING

Although AI offers substantial benefits to audit quality, efficiency, and regulatory compliance, its integration into audit practice remains constrained by several critical challenges. Recent literature highlights that issues related to data privacy, ethical concerns, auditor competency, and regulatory uncertainty continue to impede widespread adoption across the profession.

Data privacy and confidentiality risks pose a significant barrier to AI deployment in auditing. Auditors frequently work with sensitive financial information, and the use of AI tools often hosted on cloud platforms or using external data processors raises concerns regarding data security, unauthorized access, and compliance with data protection regulations. According to Zhang *et al*. (2022), the extensive data requirements of AI models increase exposure to cybersecurity threats and create uncertainties about the proper governance of client data. Similarly, Leocádio *et al*.,(2024), emphasizes that breaches involving AI

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systems could compromise the integrity of audit evidence, undermining trust in the audit process.

In addition to privacy concerns, ethical implications associated with AI adoption have prompted substantial scholarly debate. Machine learning models may inadvertently perpetuate biases embedded in training data, raising questions about fairness and objectivity in audit judgments (Murikah *et al*., 2024). The "black-box" nature of many algorithms also challenges the auditor's ability to justify audit conclusions, potentially weakening accountability and transparency (Hassija *et al*, 2024). Laine *et al*. (2024) argue that these issues underscore the importance of developing ethical frameworks governing AI use in assurance engagements.

A further obstacle involves the lack of auditor expertise and skills necessary to operate, interpret, and validate AI tools. Studies consistently show that many auditors are not fully equipped with competencies in data analytics, machine learning, and model governance. This skills gap can lead to overreliance on AI outputs or misinterpretation of model results, thereby increasing audit risk rather than reducing it (Leocádio *et al*.,2024). Hu, (2025) emphasizes that substantial reskilling and curriculum redesign are required for auditors to effectively integrate AI into their workflows.

Finally, regulatory uncertainty remains a major impediment to full AI integration. Current PCAOB and SEC auditing standards were not designed with advanced AI tools in mind, leaving ambiguity about the acceptability of AI-generated evidence, appropriate documentation, and the standards for evaluating model reliability (Kokina *et al*, 2025). Recent regulatory commentaries highlight the need for updated guidance that addresses algorithmic risk, vendor oversight, and model transparency to ensure that AI use aligns with audit quality expectations (Leocádio *et al*.,2024). Without clear regulatory frameworks, audit firms may hesitate to adopt advanced AI systems due to concerns over compliance and inspection outcomes.

Taken together, these challenges illustrate that while AI holds transformative potential for auditing, its successful adoption requires addressing technological, ethical, human, and regulatory constraints. Continued research, updated professional standards, and comprehensive auditor training will be essential to realizing the full benefits of AI in the auditing profession.

IMPLEMENTATION CHALLENGES

Despite the clear benefits, the implementation of AI in auditing faces several critical challenges. One major concern is data quality. The quality of AI output is heavily dependent on the accuracy and objectivity of the underlying data. Many organizations do not maintain clean, complete, or consistent datasets that AI systems can readily process. The lack of structured and standardized data formats can limit the efficiency and accuracy of AI tools (Kokina *et al*, 2025). Since AI systems heavily depend on high quality and structured data, incomplete or inaccurate data can lead to misleading audit results

Another challenge is the limited technical competency among auditors. Most auditors are trained in traditional audit procedures and accounting standards but lack the necessary data literacy and analytical skills to effectively use AI technologies. This competency gap can result in underutilization of AI tools or overreliance on automated results without sufficient professional skepticism (Kokina *et al*, 2025).

Regulatory uncertainty and ethical concerns also present barriers to AI adoption. The absence of clear audit standards regarding AI usage, concerns over algorithmic bias, and questions about accountability in automated decision-making must be addressed to foster trust in AI-enabled audits. Moreover, the cost of implementing and maintaining AI systems, including software, training, and infrastructure, can be prohibitive for small and medium-sized audit firms (Suyono *et al*.,2025)

RECOMMENDATION

The following recommendations are proposed for audit practitioners, regulatory bodies (PCAOB and SEC), and policymakers to ensure responsible and effective adoption of AI in financial auditing:

Establish AI Governance Frameworks

Audit firms should create formal governance structures for all AI tools used in audits. This framework
should cover:

a). Model development, validation, and performance monitoring.

b). Documentation of algorithms, data sources, parameters, and audit evidence generated.

c). Periodic independent reviews to assess accuracy, bias, and compliance

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Enhance PCAOB and SEC Oversight
Regulatory bodies should update their inspection and enforcement protocols to reflect AI usage in audits:
a). Require firms to disclose when and how AI tools are used in forming audit opinions.
b). Conduct targeted inspections on AI-assisted audits to evaluate evidence reliability.
c). Develop PCAOB guidance for "AI-assisted auditing standards" to ensure uniform practices.

Mandate Human-in-the-Loop Controls.
AI outputs should inform, not dictate, audit conclusions. Auditors must:
a). Exercise professional skepticism on AI findings.
b). Perform corroborating procedures to confirm algorithmic results.
c). Remain fully responsible for audit opinions under PCAOB standards.

Strengthen Auditor Competence and Training.
Audit professionals should be equipped with the skills to interpret, validate, and challenge AI systems:
a). Incorporate AI, data analytics, and model risk management into continuing professional education (CPE).
b). Establish certification programs on AI auditing tools in collaboration with the AICPA and PCAOB.
c). Promote cross-disciplinary teams combining auditors and data scientists.

Ensure Transparency and Explainability.
AI models used in auditing must be explainable to regulators and clients:
a). Firms should adopt explainable AI (XAI) techniques to interpret model outcomes.
b). Document the rationale for AI-based conclusions in audit working papers.
c). Avoid black-box systems that cannot be validated or audited for compliance.

CONCLUSION

Artificial Intelligence (AI) is revolutionizing financial auditing by enhancing audit quality, efficiency, and regulatory compliance. Its applications, including machine learning, anomaly detection, natural language processing, and robotic process automation, enable auditors to analyze full datasets, detect fraud, assess risks, and monitor compliance more effectively than traditional methods. These capabilities directly address recurring deficiencies highlighted in PCAOB inspections and support the SEC's mandate to protect investors and ensure reliable financial reporting.

However, AI adoption faces critical challenges, including ethical concerns, algorithmic opacity, data privacy risks, limited auditor expertise, and regulatory uncertainty. Overcoming these barriers requires robust ethical frameworks, auditor reskilling, curriculum redesign, and updated guidance from regulatory bodies to ensure AI is applied responsibly and effectively.

In sum, AI is not merely a technological tool but a strategic enabler for modern auditing. By integrating AI thoughtfully, audit firms can strengthen compliance, improve transparency, mitigate recurring audit failures, and restore public trust in financial reporting, positioning U.S. financial audits to meet the demands of increasingly complex and data-driven markets.

REFERENCES

1. Adelakun, B. O., Antwi, B. O., Fatogun, D. T., & Olaiya, O. P. "Enhancing audit accuracy: The role of AI in detecting financial anomalies and fraud." *Finance & Accounting Research Journal* 6.6 (2024): 1049-1068.
2. Akande, B., Elly, B., & Joy, D. "The Impact of Robotic Process Automation (RPA) on the Accuracy and Timeliness of Financial Reporting." (2025).
3. Alaka, E., Akindayo, A. E., Ilemore, O., & Emmanuel, I. "The integration of artificial intelligence in forensic auditing and its implications for real-time fraud detection in global financial institutions." *International Journal of Innovative Science and Research Technology*, 10.9 (2025). 1688–1707.
4. Alam, P., Cheng, Y., Rickett, L. K., & Skomra, J. "PCAOB inspection deficiencies and audit fees." *Journal of Corporate Accounting & Finance* 35.1 (2024): 228-249.
5. Alassuli, A. "Impact of artificial intelligence using the robotic process automation system on the efficiency of internal audit operations at Jordanian commercial banks." *Banks and Bank Systems* 20.1 (2025): 122.
6. Al-Ateeq, B. A., Sawan, N., Al-Hajaya, K., Altarawneh, M., & Al-Makhadmeh, A. "Big data analytics in auditing and the consequences for audit quality: A study using the technology acceptance model (TAM)." *Corporate Governance and Organizational Behavior Review* 6.1 (2022): 64-78.

Publisher: SARC Publisher

7. Alazzabi, W. Y. E., Mustafa, H., & Karage, A. I. "Risk management, top management support, internal audit activities and fraud mitigation." *Journal of Financial Crime* 30.2 (2023): 569-582.
8. Alotaibi, E. M. "Risk assessment using predictive analytics." *International Journal of Professional Business Review: Int. J. Prof. Bus. Rev.* 8.5 (2023): 59.
9. Azubuike, J. I. "The role of predictive analytics in automating risk management and regulatory compliance in the US financial sector." *European Journal of Accounting, Auditing and Finance Research* 12.10 (2024): 19-31.
10. Bai, X. "Machine Learning in Auditing: Problems, Solutions, Guidelines, Future Directions." (2025).
11. Bakumenko, A., & Elragal, A. "Detecting anomalies in financial data using machine learning algorithms." *Systems* 10.5 (2022): 130.
12. Bakumenko, A., Hlaváčková-Schindler, K., Plant, C., & Hubig, N. C. "Advancing anomaly detection: Non-semantic financial data encoding with llms." *arXiv preprint arXiv:2406.03614* (2024).
13. Boata, A., Frempong, E., & Ansah, M. F. "PERSISTENT DYNAMICS: THE ENDURING PHENOMENON OF ACCOUNTING SCANDALS AND THEIR RESILIENCE DESPITE NEGATIVE IMPACTS.DOI: 10.52589/AJAFROKKDVZOT." (2025).
14. Booker, D. D., Pelzer, J. R., & Richardson, J. R. "Integrating data analytics into the auditing curriculum: Insights and perceptions from early-career auditors." *Journal of Accounting Education* 64 (2023): 100856.
15. Boulieris, P., Pavlopoulos, J., Xenos, A., & Vassalos, V. "Fraud detection with natural language processing." *Machine Learning* 113.8 (2024): 5087-5108.
16. Chen, X., Wang, Y., & Zhang, Y. "Detecting financial statement fraud using machine-learning methods." *FinTech Research and Applications: Challenges and Opportunities*. 2023. 235-263.
17. Dennis, A., & Jenkins, J. G. "Using technology to boost audit quality: With tools such as artificial intelligence, auditors can implement new processes that enhance effectiveness and efficiency." *Journal of Accountancy* 237.1 (2024): 18-23.
18. Du, K., Zhao, Y., Mao, R., Xing, F., & Cambria, E. "Natural language processing in finance: A survey." *Information Fusion* 115 (2025): 102755.
19. Fedyk, A., Hodson, J., Khimich, N., & Fedyk, T. "Is artificial intelligence improving the audit process?." *Review of Accounting Studies* 27.3 (2022): 938-985.
20. Ghozi, H. S. A. "Artificial Intelligence in Internal Auditing: Enhancing Decision-Making and Audit Quality in the Saudi Accounting Sector." *Decision Making: Applications in Management and Engineering* 7.2 (2024): 678-694.
21. Gipper, B., Leuz, C., & Maffett, M. "Public oversight and reporting credibility: Evidence from the PCAOB audit inspection regime." *The Review of Financial Studies* 33.10 (2020): 4532-4579.
22. Gu, H., Schreyer, M., Moffitt, K., & Vasarhelyi, M. "Artificial intelligence co-piloted auditing." *International Journal of Accounting Information Systems* 54 (2024): 100698.
23. Hassija, V., Chamola, V., Mahapatra, A., Singal, A., Goel, D., Huang, K., ... & Hussain, A. "Interpreting black-box models: a review on explainable artificial intelligence." *Cognitive Computation* 16.1 (2024): 45-74.
24. Hima, Z., & Yusoff, W. S. "Big Data and Audit Quality: Theoretical Study." *South Asian Journal of Social Sciences & Humanities* 5.1 (2024).
25. Hu, N. "Influence and applications of AI in accounting and audit practice." *Advances in Economics, Management and Political Sciences*, 219.1 (2025): 28–38.
26. Benettayeb, I. "The Impact of AI on Financial Reporting and External Auditing: A Case Study of KPMG." *Recherchers economiques manageriales* 19.1 (2025): 300-318.
27. Ilori, O. "AI-driven audit analytics: A conceptual model for real-time risk detection and compliance monitoring." *Finance & Accounting Research Journal* 5.12 (2023): 502-527.
28. INDRA, R. M., PHANINDRA, K. K., ABHISHEK, T., OM, G., & PANDI, K. G. "Machine learning applications in fraud detection for financial institutions." *DARPAN INTERNATIONAL RESEARCH ANALYSIS Учредители: Shodh Sagar* 12.3 (2024): 711-743.

Publisher: SARC Publisher

29. Jagatheesaperumal, S. K., Rahouti, M., Ahmad, K., Al-Fuqaha, A., & Guizani, M. "The duo of artificial intelligence and big data for industry 4.0: Applications, techniques, challenges, and future research directions." *IEEE Internet of Things Journal* 9.15 (2021): 12861-12885.
30. Kokina, J., Blanchette, S., Davenport, T. H., & Pachamanova, D. "Challenges and opportunities for artificial intelligence in auditing: Evidence from the field." *International Journal of Accounting Information Systems* 56 (2025): 100734.
31. Laine, J., Minkkinen, M., & Mäntymäki, M. "Ethics-based AI auditing: A systematic literature review on conceptualizations of ethical principles and knowledge contributions to stakeholders." *Information & Management* 61.5 (2024): 103969.
32. Lan, C., Mohammed, K., Elly, B., & Happiness, D. "The Role of Natural Language Processing (NLP) in Identifying Fraudulent Activities in Financial Communication and Documentation." (2025).
33. Leocádio, D., Malheiro, L., & Reis, J. "Artificial intelligence in auditing: A conceptual framework for auditing practices." *Administrative Sciences* 14.10 (2024): 238.
34. Liu, Y., Wu, B., & Zhang, M. "Can independent directors identify the company's risk of financial fraud: Evidence from predicting financial fraud based on machine learning." *China Journal of Accounting Studies* 11.3 (2023): 465-492.
35. Mandal, A., & S, A. "Preventing financial statement fraud in the corporate sector: insights from auditors." *Journal of Financial Reporting and Accounting* 23.1 (2025): 56-80.
36. Manheim, D., Martin, S., Bailey, M., Samin, M., & Greutzmacher, R. "The necessity of AI audit standards boards." *AI & SOCIETY* (2025): 1-16.
37. Munoko, I., Brown-Liburd, H. L., & Vasarhelyi, M. "The ethical implications of using artificial intelligence in auditing." *Journal of business ethics* (2020): 209-234.
38. Murikah, W., Nthenge, J. K., & Musyoka, F. M. "Bias and ethics of AI systems applied in auditing-A systematic review." *Scientific African* 25 (2024): e02281.
39. Oko-Odion, C., & Udoh, O. R. "Leveraging technology in internal audit processes for streamlined management and risk oversight." (2024).
40. Olaiya, O. "Enhancing audit accuracy: The role of AI in detecting financial anomalies and fraud." *Finance & Accounting Research Journa* (2024).
41. Oyewole, A. T., Adeoye, O. B., Addy, W. A., Okoye, C. C., Ofodile, O. C., & Ugochukwu, C. E. "Automating financial reporting with natural language processing: A review and case analysis." *World Journal of Advanced Research and Reviews* 21.3 (2024): 575-589.
42. PCAOB. "AI and the pursuit of audit quality: A regulatory perspective." (2024).
43. Qatawneh, A. M. "The role of artificial intelligence in auditing and fraud detection in accounting information systems: moderating role of natural language processing." *International Journal of Organizational Analysis* 33.6 (2025): 1391-1409.
44. Roszkowska, P. "Fintech in financial reporting and audit for fraud prevention and safeguarding equity investments." *Journal of Accounting & Organizational Change* 17.2 (2021): 164-196.
45. Schumann, G., & Marx Gómez, J. "Natural Language Processing in Internal Auditing–a Structured Literature Review." (2021).
46. Seethamraju, R., & Hecimovic, A. "Adoption of artificial intelligence in auditing: An exploratory study." *Australian Journal of Management* 48.4 (2023): 780-800.
47. Sexton, N. D., & Rudman, R. "Program renewal: students perception on changes to teaching pedagogy in auditing." *South African Journal of Higher Education* 36.3 (2022): 249-268.
48. Suyono, W. P., Puspa, E. S., Anugrah, S., & Firnanda, R. "Artificial Intelligence in Auditing: A Systematic Review of Tools, Applications, and Challenges." *RIGGS: Journal of Artificial Intelligence and Digital Business* 4.2 (2025): 3393-3401.
49. Suyono, W. P., Puspa, E. S., Anugrah, S., & Firnanda, R. "Artificial Intelligence in Auditing: A Systematic Review of Tools, Applications, and Challenges." *RIGGS: Journal of Artificial Intelligence and Digital Business* 4.2 (2025): 3393-3401.
50. U.S. Securities and Exchange Commission. "Statement on PCAOB amendments to modernize audit standards for technology-assisted data analysis." (2024).

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51. Vitali, S., & Giuliani, M. "Emerging digital technologies and auditing firms: Opportunities and challenges." *International Journal of Accounting Information Systems* 53 (2024): 100676.
52. Wei, D., Cho, S., Vasarhelyi, M. A., & Te-Wierik, L. "Outlier detection in auditing: Integrating unsupervised learning within a multilevel framework for general ledger analysis." *Journal of Information Systems* 38.2 (2024): 123-142.
53. Wibowo, A. S., & Istianah, I. "Reading Between the Lines: Incorporating Text Mining and Machine Learning in Financial Fraud Detection." *Asia Pacific Fraud Journal* 10.1 (2025): 73-93.
54. Wijaya, J. R. T., Prasetyo, I., Rahmatika, D. N., & Indriasih, D. "ARTIFICIAL INTELLIGENCE AND AUDIT QUALITY: AN EMPIRICAL LITERATURE REVIEW FROM SCOPUS DATABASE." *Fokus Ekonomi: Jurnal Ilmiah Ekonomi* 20.1 (2025): 61-76.
55. Zhang, Y., Xiong, F., Xie, Y., Fan, X., & Gu, H. "The impact of artificial intelligence and blockchain on the accounting profession." *Ieee Access* 8 (2020): 110461-110477.
56. Zhao, Y. "Challenges and limitations of traditional financial auditing in the big data environment." *International Journal of Finance and Investment*. (2025).

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