Journal of
Information System and Technology Auditing

Review Paper

Integration of Artificial Intelligence in Auditing: Challenges and Benefits[1,2]

Ali Rahmani[3], Samira Maanavi[*4] and Nafiseh Haddadi[5]

Journal of Information System and Technology Auditing
Iranian Information Technology Audit Scientific Association
Vol. 1, No. 1, Spring & Summer 2025
pp. 1-8

Received: 2025.02.05
Revised: 2025.06.06
Accepted: 2025.09.02

1. Introduction

Artificial Intelligence (AI) has emerged as a transformative technology in various industries, including auditing. By leveraging AI technologies such as machine learning algorithms, natural language processing, and big data analytics, auditing firms can enhance efficiency, accuracy, and decision-making processes (Seethamraju & Hecimovic, 2023). The Big Four accounting firms—PwC, Ernst & Young, KPMG, and Deloitte—have collectively invested over $9 billion in AI-driven auditing solutions. Despite its potential, AI integration in auditing encounters numerous challenges, including ethical concerns, accountability issues, regulatory requirements, and resistance to change (Hasan, 2021). This abstract examines the benefits, challenges, and implications of adopting AI in auditing, drawing on a comprehensive review of existing literature.

---

[1] https://doi.org/10.22034/JISTA. 2025.528769.1051
[2] Selected Paper of 22nd National Accounting Conference of Iran
[3] Professor, Department of Accounting, Faculty of Social Sciences and Economics, Alzahra University, Tehran, Iran. Email: rahmani@alzahra.ac.ir
[4] Ph.D.Student, Department of Accounting, Faculty of Social Sciences and Economics, Alzahra University, Tehran, Iran. (Corresponding Author). Email: samiramaanavi.acc@gmail.com
[5] Ph.D.Student, Department of Accounting, Faculty of Social Sciences and Economics, Alzahra University, Tehran, Iran. Email: nahd1374@gmail.com

2. MATERIALS AND METHODS

This study adopts a qualitative research methodology, incorporating a systematic literature review of peer-reviewed articles, industry reports, and regulatory guidelines. The selection criteria for sources included relevance to AI applications in auditing, publication within the last decade, and empirical or theoretical contributions. The data collection process involved identifying key themes, categorizing challenges and benefits, and synthesizing findings from various sources. Additionally, case studies of AI applications in auditing were examined, focusing on their impact on efficiency, fraud detection, and risk assessment. AI-driven tools such as robotic process automation (RPA) and natural language processing (NLP) were analyzed in the context of contemporary auditing practices.

3. RESULTS AND DISCUSSION

The findings reveal several advantages of AI in auditing. AI-powered systems improve efficiency by automating routine audit tasks, reducing human errors, and enhancing fraud detection capabilities (Rozario & Vasarhelyi, 2018). AI also enables continuous auditing by analyzing large datasets in real-time, providing auditors with deeper insights into financial statements (Bizarro & Dorian, 2017). Additionally, AI contributes to risk assessment and predictive analytics, allowing auditors to identify potential financial irregularities before they escalate (Lin & Hazelbaker, 2019). AI-based anomaly detection tools assist in uncovering fraudulent transactions, thereby improving the reliability of financial reports. Moreover, AI-driven algorithms can streamline audit sampling, allowing auditors to analyze entire datasets rather than relying on traditional sampling techniques, which often introduce bias and inefficiencies. In practice, AI has demonstrated significant potential in enhancing audit planning through predictive analytics and dynamic risk modeling. These technologies enable auditors to proactively adjust their procedures based on emerging risks identified in real time. Moreover, AI is being integrated with

continuous monitoring systems, allowing for automated alerts when irregularities occur, thus shortening response time and improving overall audit agility. The integration of AI with blockchain is also being explored as a means to improve the traceability and immutability of financial records, providing auditors with enhanced tools for verification and transparency.

AI has also introduced the potential for reducing audit costs while increasing audit scope. The ability of AI-driven systems to analyze large volumes of financial transactions quickly allows for more thorough and extensive audits. This reduces the likelihood of oversight or human errors in audit procedures. Furthermore, AI systems can detect subtle patterns and correlations in financial data that might be overlooked by human auditors. These capabilities can significantly improve the effectiveness of forensic auditing and fraud investigations.

Another important aspect of AI in auditing is its role in supporting decision-making processes. AI-powered tools can provide auditors with real-time insights and recommendations based on data-driven analyses. This helps auditors make more informed decisions and enhances the accuracy of financial reporting. By automating repetitive audit tasks, AI allows auditors to focus on higher-value activities such as risk assessment and strategic advisory services. The integration of AI into auditing workflows fosters a more data-driven and analytical approach to financial oversight.

Despite these advantages, AI adoption in auditing is not without its risks. One of the key risks is the potential for AI-generated errors or misinterpretations of financial data. AI models rely on large datasets for training, and if these datasets contain biased or incomplete information, the AI system's outputs may also be flawed. This highlights the need for human oversight and validation in AI-powered audit processes. One major concern is algorithmic bias, which can compromise audit fairness and reliability (Camilleri, 2024). Data security and privacy issues also pose significant risks, as AI systems require access to sensitive financial information (Ouabouch & Yahyaoui, 2025). Furthermore, the "black box" nature

of some AI algorithms creates transparency issues, making it difficult for auditors to explain AI-generated decisions to stakeholders (Zhong & Goel, 2024). Regulatory bodies have begun addressing these concerns by developing AI governance frameworks to ensure accountability and ethical AI use in auditing (Eisikovits, Johnson, & Markelevich, 2024). Additionally, AI adoption requires substantial investment in infrastructure and talent development. Auditors must acquire technical skills to interpret AI-generated insights effectively, necessitating ongoing training and upskilling programs. Firms must also establish robust governance frameworks to ensure compliance with emerging regulations.

4. CONCLUSION

AI has the potential to revolutionize auditing by increasing efficiency, improving fraud detection, and enabling continuous monitoring of financial activities. However, its integration requires addressing key challenges, including regulatory compliance, data security, and algorithmic transparency. Future research should explore strategies for mitigating AI biases, enhancing interpretability, and establishing ethical guidelines for AI-driven audits. Collaboration among policymakers, accounting firms, and technology developers is essential to foster responsible AI adoption in auditing. Additionally, exploring hybrid auditing models that combine AI capabilities with human expertise can enhance decision-making and mitigate risks associated with algorithmic biases. Organizations should focus on integrating explainable AI (XAI) techniques to improve transparency and stakeholder trust. Ethical considerations and legal frameworks must evolve alongside AI advancements to ensure fair and unbiased auditing processes. Finally, the role of AI in forensic auditing should be further examined, as AI-driven analytics hold promise in detecting financial misconduct with greater precision and speed. Looking ahead, the auditing profession must not only embrace AI but also foster a culture of ethical innovation. As AI models evolve, continuous reassessment of their assumptions, training data, and output validity

will be necessary to uphold audit integrity. Furthermore, investing in interdisciplinary education that combines accounting, data science, and ethics will be crucial for preparing future auditors to work effectively alongside intelligent systems.

As AI continues to reshape the auditing landscape, firms and regulators must work together to develop best practices and governance mechanisms that promote responsible AI use. AI-driven audits should complement, rather than replace, human judgment in audit engagements. The combination of AI technology and professional auditor expertise will lead to more comprehensive and reliable financial oversight. Continued innovation and research in AI applications for auditing will be crucial for maximizing the benefits of this technology while minimizing its risks.

Keywords: Auditing, Artificial Intelligence, Benefits, Challenges

JEL classification: *M41, M42, I23, C88, O33*

References

Acemoglu, D., Autor, D., Hazell, J., & Restrepo, P. (2022). Artificial intelligence and jobs: Evidence from online vacancies. *Journal of Labor Economics, 40(S1),* S293-S340.

Agustí, M. A., & Orta-Pérez, M. (2023). Big data and artificial intelligence in the fields of accounting and auditing: a bibliometric analysis. *Spanish Journal of Finance and Accounting/Revista Española de Financiación y Contabilidad*, *52*(3), 412-438.

Aitkazinov, A. (2023). The role of artificial intelligence in auditing: Opportunities and challenges. *International Journal of Research in Engineering, Science and Management*, *6*(6), 117-119.

Albawwat, I., & Frijat, Y. (2021). An analysis of auditors' perceptions towards artificial intelligence and its contribution to audit quality. *Accounting*, *7*(4), 755-762.

Al-Sayyed, S., Al-Aroud, S., & Zayed, L. (2021). The effect of artificial intelligence technologies on audit evidence. *Accounting*, *7*(2), 281-288.

Amiram, D., Bozanic, Z., & Rouen, E. (2015). Financial statement errors: Evidence from the distributional properties of financial statement numbers. *Review of accounting studies*, *20*, 1540-1593.

Asadollahi, M. (2024). A study and review of the role of technology and artificial intelligence in accounting and auditing: Improving financial performance. *The 7th International Conference on New Ideas in Management, Economics, Accounting, and Banking.* Retrieved from https://civilica.com/doc/2023936 (In Persian).

Babina, T., Fedyk, A., He, A. X., & Hodson, J. (2020). Artificial Intelligence, Firm Growth, and Industry Concentration. SSRN Scholarly Paper ID 3651052. *Social Science Research Network, Rochester, NY*

Bizarro, P. A., & Dorian, M. (2017). Artificial intelligence: The future of auditing. *Internal Auditing*, *5*(1), 21-26.

Camilleri, M. A. (2024). Artificial intelligence governance: Ethical considerations and implications for social responsibility. *Expert systems*, *41*(7), e13406.

Carpenter, R., & McGregor, D. (2020). The implications, applications, and benefits of emerging technologies in audit. *The Business and Management Review*, *1*, 36

Cohen, M., Rozario, A., & Zhang, C. (2019). Exploring the Use of Robotic Process Automation (RPA) in Substantive Audit Procedures. *CPA Journal*, *89*(7).

Congressional Research Service, 2020, Artificial Intelligence and National Security, https://sgp.fas.org/crs/natsec/R45178.pdf

Eisikovits, N., Johnson, W. C., & Markelevich, A. (2024). Should accountants be afraid of AI? Risks and opportunities of incorporating artificial intelligence into accounting and auditing. *Accounting Horizons*, 1-7.

Emett, S. A., Eulerich, M., Lovejoy, K., Summers, S. L., & Wood, D. A. (2024). Bridging the digital skills gap in accounting: The process mining audit professional curriculum and badge. *Accounting Horizons*, *38*(3), 43-58.

EU-US Terminology and Taxonomy for Artificial Intelligence, 2023, European Commission,https://digital-strategy.ec.europa.eu/en/library/eu-us-terminology-and-taxonomyartificial-intelligence

Farhad Touski, O. and doostian, R. (2025). Artificial intelligence and new technology development in internal audit. *Journal of Investment Knowledge*, *14*(55), 597-612. doi: 10.30495/jik.2025.23638 (In Persian).

Fedyk, A., Hodson, J., Khimich, N., & Fedyk, T. (2022). Is artificial intelligence improving the audit process?. *Review of Accounting Studies*, *27*(3), 938-985.

Gu, H., Schreyer, M., Moffitt, K., & Vasarhelyi, M. (2024). Artificial intelligence co-piloted auditing. *International Journal of Accounting Information Systems*, *54*, 100698.

Han, H., Shiwakoti, R. K., Jarvis, R., Mordi, C., & Botchie, D. (2023). Accounting and auditing with blockchain technology and artificial Intelligence: A literature review. *International Journal of Accounting Information Systems*, *48*, 100598.

Hasan, A. R. (2021). Artificial Intelligence (AI) in accounting & auditing: A Literature review. *Open Journal of Business and Management*, *10*(1), 440-465.

Hickman, E., & Petrin, M. (2021). Trustworthy AI and corporate governance: the EU's ethics guidelines for trustworthy artificial intelligence from a company law perspective. *European Business Organization Law Review*, *22*, 593-625.

Kokina, J., & Davenport, T. H. (2017). The emergence of artificial intelligence: How automation is changing auditing. *Journal of emerging technologies in accounting*, *14*(1), 115-122.

Lehner, O. M., Ittonen, K., Silvola, H., Ström, E., & Wührleitner, A. (2022). Artificial intelligence based decision-making in accounting and auditing: ethical challenges and normative thinking. *Accounting, Auditing & Accountability Journal*, *35*(9), 109-135.

Libby, R., & Witz, P. D. (2024). Artificial Intelligence in Auditing: How Auditor AI Use Can Mitigate Legal Liability. *Current Issues in Auditing*, 1-11.

Lin, P., & Hazelbaker, T. (2019). Meeting the challenge of artificial intelligence: what CPAs need to know. *The CPA Journal*, *89*(6), 48-52

Mertens, F. (2023). The use of artificial intelligence in corporate decision-making at board level: A preliminary legal analysis

Minkkinen, M., Laine, J., & Mäntymäki, M. (2022). Continuous auditing of artificial intelligence: A conceptualization and assessment of tools and frameworks. *Digital Society*, *1*(3), 21.

Mohammad, S. J., Hamad, A. K., Borgi, H., Thu, P. A., Sial, M. S., & Alhadidi, A. A. (2020). How artificial intelligence changes the future of accounting industry. *International Journal of Economics and Business Administration*, *8*(3), 478-488.

Munoko, I., Brown-Liburd, H. L., & Vasarhelyi, M. (2020). The ethical implications of using artificial intelligence in auditing. *Journal of business ethics*, *167*(2), 209-234

NICKERSON, M. A. (2019). AI: New Risks And Rewards: Will reliance on AI increase accounting and financial fraud?. *Strategic Finance*, *100*(10).

Noordin, N. A., Hussainey, K., & Hayek, A. F. (2022). The use of artificial intelligence and audit quality: An analysis from the perspectives of external auditors in the UAE. *Journal of Risk and Financial Management*, *15*(8), 339.

Omoteso, K. (2012). The application of artificial intelligence in auditing: Looking back to the future. *Expert Systems with Applications*, *39*(9), 8490-8495.

Ouabouch, B., & Yahyaoui, T. (2025). Artificial intelligence and corporate governance: A review of recent literature. *International Journal of Strategic Management and Economic Studies (IJSMES)*, *4*(1), 52-66.

Pishvaei, S. T. (2016). The evolutionary process of auditing in the world and Iran. *Comprehensive Conference on Management and Accounting Sciences, Tehran. Retrieved from* https://civilica.com/doc/605814 (In Persian).

Rock, D. (2019). Engineering value: The returns to technological talent and investments in artificial intelligence. *Available at SSRN 3427412*.

Rozario, A. M., & Vasarhelyi, M. A. (2018). How Robotic Process Automation Is Transforming Accounting and Auditing. *CPA Journal*, *88*(6).

Seethamraju, R., & Hecimovic, A. (2023). Adoption of artificial intelligence in auditing: An exploratory study. *Australian Journal of Management*, *48*(4), 780-800.

Shaw, A. (2019). intelligence and ethics. Ethics and the dawn of decision-making machines. *Harvard Magazine*

Sutton, S. G., Holt, M., & Arnold, V. (2016). "The reports of my death are greatly exaggerated"—Artificial intelligence research in accounting. *International Journal of Accounting Information Systems*, *22*, 60-73.

Verbeek, P. P. (2006). Persuasive Technology and Moral Responsibility Toward an ethical framework for persuasive technologies. *Persuasive*, *6*(1), 15

Zemankova, A. (2019, December). Artificial intelligence in audit and accounting: Development, current trends, opportunities and threats-literature review. In *2019 International Conference on Control, Artificial Intelligence, Robotics & Optimization (ICCAIRO)* (pp. 148-154). IEEE.

Zhong, C., & Goel, S. (2024). Transparent AI in Auditing through Explainable AI. *Current Issues in Auditing*, 1-14.