INTERNATIONAL CONFERENCE PROCEEDINGS
UNIVERSITAS ISLAM BALITAR BLITAR
Empowering Education and Society through Digital Transformation
Volume 1 (2025)

The Use of Artificial Intelligence (AI) in Fraud Detection by Government Auditors: A Systematic Literature Review

An Suci Azzahra[1]
Pembangunan Panca Budi University

Keywords:
Artificial Intelligence (AI), Fraud Detection, Government Auditors, Public Sector Auditing, Literature Review.

***Correspondence Address:**
ansuci@dosen.pancabudi.ac.id

Abstract: This study examines the role of artificial intelligence (AI) in fraud detection by government auditors through a systematic literature review of 17 scientific articles published between 2023 and 2025. The increasing complexity of financial transactions and the limitations of traditional audit methods underscore the need for innovative solutions. This review aims to identify the benefits, challenges, and driving factors for the adoption of AI technology in fraud detection. Using a systematic approach, the study analyzes the potential of AI, particularly machine learning and data mining techniques, in enhancing efficiency and accuracy in detecting data anomalies. The findings indicate that AI significantly strengthens auditors' capabilities but faces challenges such as skilled human resource limitations, privacy and ethical issues, and infrastructure needs. The successful adoption of AI depends on organizational readiness, regulatory support, and auditor competence. AI serves as a powerful supporting tool rather than a replacement for auditors. Integration with technologies like blockchain can further enhance fraud detection systems. This review provides strategic recommendations for academics and practitioners in the public sector, contributing to a holistic understanding of AI's role in fraud detection.

INTRODUCTION

Fraud, especially in the public sector, is a serious problem that harms state finances and undermines public trust. Traditional audit methods that rely on manual and checklist-based approaches are often inadequate for detecting increasingly complex and hidden fraud. With the advent of the digital age, there is a growing need to adopt advanced technologies such as artificial intelligence (AI), big data, and blockchain to enhance the effectiveness of fraud detection.

This literature review focuses on how AI can specifically help government auditors detect fraud. By reviewing recent articles, this study aims to identify trends, benefits, challenges, and recommendations that emerge from recent studies.

Fraud is a serious problem that continues to threaten the integrity and stability of organizations, including in the government sector. Auditors play a vital role in

detecting fraud in financial statements and business processes. However, traditional auditing methods that rely on a checklist-based approach are often inadequate for dealing with the complexity of business and large volumes of data in today's digital age. (Simanjuntak & Mare, 2025) note that previous studies have tended to focus on single aspects of fraud detection. This fact is reinforced by (Simanjuntak & Mare, 2025), which highlights systemic issues and research gaps. Therefore, there is an urgent need to explore the use of advanced technologies such as artificial intelligence (AI) to enhance audit effectiveness.

There is a gap between the crucial role of auditors in detecting fraud and the limitations of traditional methods in dealing with complex digital environments. Technological developments, particularly AI and big data, have brought about major changes in operational systems and digital payments (Caseba & Dewayanto, 2024). However, these changes have also increased the risk of increasingly sophisticated fraud. The main challenges faced by government auditors include a shortage of skilled human resources, privacy and data security issues, and resistance to change, which hinder the adoption of technologies like AI (Rahmarta, Pontoh, et al., 2024) A comprehensive understanding is still needed regarding how AI can be effectively implemented to detect fraud, as well as the benefits and challenges associated with it, particularly in the context of public sector audits.

The objectives of this literature review are:

1. To identify and analyze the role and benefits of applying artificial intelligence (AI) in fraud detection (Prasetyo & Dewayanto, 2024; Syahronny & Dewayanto, 2024).
2. To identify the challenges and obstacles faced in implementing AI technology in the audit process (Rahmarta, Pontoh, et al., 2024).
3. To synthesize findings from relevant literature to develop a holistic understanding of the factors that influence the adoption of AI and its effectiveness in detecting fraud by government auditors.

This literature review refers to several relevant theoretical frameworks. Among them are the Fraud Triangle Theory, Fraud Diamond, Fraud Pentagon, and Fraud

Hexagon. These theories provide an understanding of the elements that trigger fraud, such as pressure, opportunity, rationalization, and capability.

In addition, this review also refers to the Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB). These theories are relevant for understanding the factors that influence the acceptance and adoption of new technologies such as AI by auditors and organizations. Accounting concepts such as triple-entry accounting.

This literature review integrates various theoretical frameworks and concepts relevant to auditing, fraud detection, and technology adoption. Understanding fraud is inseparable from theories such as the Fraud Triangle Theory, which later developed into the Fraud Diamond, Fraud Pentagon, and Fraud Hexagon. (Rahmarta, Pontoh, et al., 2024; Syahronny & Dewayanto, 2024) use these theories to provide an understanding of the elements that trigger fraud, such as pressure, opportunity, rationalization, and capability. (Tito & Siregar, 2024) also discuss the factors that trigger and inhibit fraud in the National Health Insurance program, which is relevant to the public sector context.

In addition, this review also refers to literature related to the role of auditors, both internal and external. (Simanjuntak & Mare, 2025) highlight that the effectiveness of fraud detection is influenced by internal factors such as professional skepticism, audit experience, and auditor knowledge, as well as external factors such as transaction complexity and the regulatory environment. (Irianti et al., 2021) specifically reviews the role of internal auditors in fraud prevention.

In the context of technology adoption, this review uses a conceptual framework relevant to Accounting Information Systems (AIS). (Novida, 2025) discusses the evolution of AIS in the digital era, which requires adaptation to technologies such as cloud computing, big data, AI, and blockchain. (Pribadi & Dewayanto, 2025) also reviews the impact of AI implementation on the effectiveness of accounting information systems. Specifically, (Nurarifah & Kuntadi, 2024; Prasetyo & Dewayanto, 2024) discuss how AI, through techniques such as machine learning, deep learning, and data mining, can be used to enhance fraud detection. The integration of AI with other technologies such as blockchain is also discussed by

(Caseba & Dewayanto, 2024) due to its ability to enhance data integrity and transparency. The literature review also covers the modernization of public sector accounting in the digital era (Putra et al., 2025), as well as the use of AI to improve tax compliance (Korat & Munandar, 2025).

This literature review integrates various theoretical frameworks and concepts relevant to auditing, fraud detection, and technology adoption, with reference to findings from the reviewed literature.

Fraud Theory

Understanding fraud cannot be separated from the theories that explain why fraud occurs. This review covers the Fraud Triangle Theory, which later developed into the Fraud Diamond, Fraud Pentagon, and Fraud Hexagon. These theories provide an in-depth understanding of the elements that trigger fraud, such as pressure, opportunity, and rationalization. (Rahmarta, Pontoh, et al., 2024; Syahronny & Dewayanto, 2024) use these theories as a basis for analyzing and understanding the factors that trigger fraud in the context of auditing, which is relevant to public sector auditing. Furthermore, (Tito & Siregar, 2024) discuss the factors that trigger and inhibit fraud in the national health insurance program, providing a specific context for fraud in the public sector.

The Role of Auditors and Influencing Factors

The reviewed literature highlights the central role of auditors, both internal and external. (Simanjuntak & Mare, 2025) identify that the effectiveness of fraud detection is greatly influenced by internal and external factors. Internal factors include professional skepticism, integrity, audit experience, knowledge of fraud schemes, cognitive control, and analytical skills. Meanwhile, external factors include the complexity of client transactions, the regulatory environment, client pressure, and audit technology capabilities. (Irianti et al., 2021) specifically reviewed the role of internal auditors in fraud prevention, emphasizing their important role in internal control systems.

Technology Adoption in Auditing

This study also integrates a conceptual framework relevant to technology adoption in auditing. (Novida, 2025) discusses the evolution of Accounting Information Systems (AIS) in the digital age, which requires adaptation to technologies such as cloud computing, big data, AI, and blockchain. These developments form the basis for auditors to use more sophisticated tools. Furthermore, (Pribadi & Dewayanto, 2025) reviews the impact of AI implementation on AIS effectiveness. This is relevant to (Putra et al., 2025) which discusses the modernization of public sector accounting, showing that AI implementation is part of a larger digital transformation.

AI Technology and Its Specific Applications

Specifically, this review examines how AI, through techniques such as machine learning, deep learning, and data mining, is used to improve fraud detection. (Nurarifah & Kuntadi, 2024; Prasetyo & Dewayanto, 2024) discuss in detail how these techniques can identify anomalous patterns that are missed by traditional audit methods. Additionally, the integration of AI with other technologies such as blockchain is discussed by (Caseba & Dewayanto, 2024), who explore the synergistic potential in enhancing data integrity and fraud detection. The concept (Korat & Munandar, 2025) of implementing the Core Tax Administration System (CTAS) also provides a concrete example of how system modernization can support the use of AI to improve compliance and prevent fraud in the tax sector.

RESEARCH METHODS

This study uses the Systematic Literature Review (SLR) methodology to identify, evaluate, and synthesize findings from existing studies. This method was chosen because it allows for a comprehensive, objective, and replicable review of the topic at hand. The SLR process in this study follows three main stages: search strategy, selection process, and data analysis.

Data Collection Method

The search strategy was conducted systematically using relevant keywords in various scientific databases. The search focused on articles published between 2023 and 2025. The keywords used include, but are not limited to, "AI for Fraud Detection by Government Auditors," "artificial intelligence in government audit," "fraud detection with AI," and "machine learning for public sector auditing." This strategy aims to collect (17) relevant articles, covering various methodological approaches and findings.

Selection Process

The article selection process was carried out by applying clear inclusion and exclusion criteria. The inclusion criteria included:

1. Articles published between 2023 and 2025.
2. Articles discussing the use of AI, machine learning, or related technologies in the context of fraud detection.
3. Articles focusing on the public or government sector.

Exclusion criteria include articles that (discuss AI or fraud in general without touching on aspects of government auditing), single case studies that do not provide generalizations, and articles that are not published in scientific journals. This process ensures that the articles analyzed are highly relevant to the research topic.

Data Analysis

Data from the 17 selected articles were then analyzed qualitatively. This analysis involved mapping the literature to identify key themes, trends, benefits, and challenges that emerged from each article. Some of the themes analyzed included (the most frequently used AI methods, the most frequently mentioned benefits, and the most common implementation barriers). By synthesizing the findings from various articles, this study aims to present a comprehensive overview of the role of AI in fraud detection in the public sector.

RESULTS AND DISCUSSION

Data analysis from the 17 selected articles identified three main themes: the benefits and application of AI in fraud detection, challenges and obstacles to implementation, and key factors affecting its effectiveness. This discussion presents a synthesis of findings from various studies to provide a comprehensive overview.

Benefits and Applications of AI in Fraud Detection

Based on a review of articles, the application of AI, particularly machine learning, deep learning, and data mining, has significant benefits. Some key findings identified from these articles are;

1. Increased Accuracy and Efficiency: AI can improve fraud detection accuracy by up to 34% in some contexts and even reach 96.58% in some studies. This is due to AI's ability to process large amounts of data faster and more accurately than manual methods.
2. Anomaly Identification: AI helps auditors identify anomalous patterns that are not visible to the human eye, which are strong indicators of fraud.
3. Technology Integration: The adoption of AI is often paired with other technologies such as blockchain to enhance data integrity and transparency, which synergistically strengthen fraud detection capabilities.

Various studies show that AI, especially through machine learning and data mining techniques, has great potential to improve auditors' ability to detect fraud. (Prasetyo & Dewayanto, 2024) reviewed the application of machine learning, deep learning, and data mining in detecting financial statement fraud. They found that these methods are capable of identifying anomalies and patterns that are difficult to find manually, thereby improving detection accuracy.

Several other articles also highlight the role of AI in improving the efficiency and effectiveness of audits. (Nurarifah & Kuntadi, 2024) found that data mining and forensic accounting are factors that influence the detection of financial statement fraud. Meanwhile, (Caseba & Dewayanto, 2024) linked the use of AI and

blockchain in fintech payments to reduce the risk of computer fraud. This integration demonstrates the synergy between AI for data analysis and blockchain for data integrity.

The reviewed literature consistently highlights that AI, through its various techniques, provides significant advantages over traditional auditing methods. (Prasetyo & Dewayanto, 2024), through their systematic literature review, confirm that the application of machine learning, deep learning, and data mining can effectively detect financial statement fraud. These methods enable auditors to process large volumes of data (big data) more quickly and accurately, as well as identify anomalous patterns that escape human observation.

Furthermore, (Caseba & Dewayanto, 2024) demonstrate how the synergy between AI and blockchain can strengthen fraud detection systems. They found that the use of blockchain in digital transactions enhances data integrity, while AI analyzes the authenticated data to detect potential fraud. This approach is relevant in the context of government finance, where the integrity of transaction data is crucial. Additionally, (Nurarifah & Kuntadi, 2024) emphasize that data mining and forensic accounting are factors influencing fraud detection, indicating that the adoption of these advanced technological tools has become a necessity.

Challenges and Obstacles to Implementation

Despite its significant benefits, the adoption of AI in public sector auditing still faces various challenges. (Rahmarta, Pontoh, et al., 2024) highlight that organizational and systemic factors are both strengths and obstacles in fraud prevention. These challenges include a lack of skilled human resources, inadequate infrastructure, and resistance to change.

Additionally, specific technology-related issues also pose barriers. (Simanjuntak & Mare, 2025) mention that audit technology capabilities are one of the external factors influencing auditors' capabilities. (Novida, 2025) also discusses challenges and opportunities in the evolution of accounting information systems in the digital era, which are relevant to AI implementation. On the other hand, (Bakti et al., 2025; Jaiz et al., 2024) discuss risks arising from technology, such as online fraud

and academic data falsification, indicating that technology can also be a tool for fraud if not managed properly.

Although AI has enormous potential, its implementation in the public sector faces various challenges. (Simanjuntak & Mare, 2025) identify that audit technology capabilities are one of the external factors that influence auditors. This indicates that the availability and capability of adequate technology are prerequisites. However, (Rahmarta, Pontoh, et al., 2024) highlight that the greatest obstacles are often internal, namely the lack of skilled human resources (HR) and resistance to change. (Novida, 2025) also discusses the challenges in the evolution of Accounting Information Systems (AIS) in the digital era, indicating that government agencies need to invest time and resources to develop appropriate infrastructure and human resources.

Ethical and regulatory issues also pose obstacles. (Bakti et al., 2025) although in an academic context, touches on the issue of data falsification, which shows that fraud can exploit technological loopholes. This underscores the importance of a strict ethical framework and clear regulations in the use of AI. (Paraswansa & Utomo, 2024) highlight the importance of whistleblowing systems in preventing corruption, which can be an important source of data for AI systems, but their implementation also requires strong regulations to protect whistleblowers.

Key Factors for Effectiveness

The success of AI implementation depends heavily on several key factors. (Simanjuntak & Mare, 2025) emphasize the importance of internal factors, such as professional skepticism, experience, and auditor knowledge. This shows that AI is not a replacement for auditors, but rather a tool that must be operated by competent auditors.

Regulatory and ethical aspects also play a significant role. (Paraswansa & Utomo, 2024) highlight the importance of whistleblowing systems in preventing corruption in the public sector, which can be synergized with AI to analyze reports of fraud. (Rahmarta, Nirwana, et al., 2024) also discuss fraud prevention strategies in procurement, an area highly susceptible to fraud. Meanwhile, (Irianti

et al., 2021) emphasize that internal auditors play a crucial role in prevention, which can be strengthened through the use of AI.

This review also found that the modernization of public sector accounting (Putra et al., 2025) and the implementation of a modern tax administration system (Korat & Munandar, 2025) are important steps in creating an environment conducive to AI adoption. This shows that AI adoption is part of a larger digital transformation.

The success of AI adoption depends heavily on a combination of technological, human, and organizational factors. (Simanjuntak & Mare, 2025) emphasize the central role of the auditor themselves, where professional skepticism and knowledge of fraud schemes are important internal factors. This confirms that AI serves as a tool, not a replacement, for the auditor's expertise. Therefore, investment in auditor training and competency development is very important (Pribadi & Dewayanto, 2025).

Support from the organizational aspect is also crucial. (Putra et al., 2025) discusses the modernization of public sector accounting in the digital age, which creates a stronger foundation for technology adoption. (Korat & Munandar, 2025) also review the successful implementation of the Core Tax Administration System (CTAS), which is a real-world example of how system modernization in the public sector can pave the way for the use of data analytics and AI. This demonstrates that AI adoption should be part of a larger and more comprehensive digital transformation strategy.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

This literature review concludes that the adoption of artificial intelligence (AI) is an important strategic step to improve the ability of government auditors to detect fraud. Analysis of 17 articles shows that AI, particularly through machine learning and data mining techniques, has great potential to improve audit efficiency and accuracy by identifying anomalies and patterns that are undetectable by traditional methods. Integrating AI with other technologies such as blockchain also

strengthens data integrity and transparency, providing auditors with more robust tools.

However, the success of AI implementation does not only depend on the sophistication of the technology itself. Findings from the literature indicate that significant challenges still need to be overcome, including a lack of skilled human resources, data privacy and security issues, and resistance to change. Therefore, the success of AI adoption is highly dependent on organizational readiness, adequate regulatory support, and the development of auditor competencies. AI is not a replacement for auditors but rather a supporting tool that transforms the role of auditors to be more analytical and strategic.

Recommendations

Based on the findings of this literature review, several recommendations can be made for future research, practitioners, and policymakers:

1. Auditor Competency Development: Educational institutions and professional training organizations should revise their curricula to include topics such as AI, data analytics, and forensic accounting. This is important to ensure that auditors have the skills needed to operate and interpret the results of AI systems effectively.
2. Harmonization of Regulations and Ethics: A clear regulatory framework and updated auditing standards are needed to regulate the use of AI in public sector auditing. This is important to address issues such as transparency (black box) and accountability of AI systems.
3. Investment in Infrastructure and Technology: Government audit institutions need to allocate adequate budgets for investment in secure and reliable technology infrastructure, as well as relevant AI solutions.
4. Multistakeholder Collaboration: Closer collaboration between audit institutions, technology providers, and academics is needed to develop AI solutions tailored to the needs of public sector auditing.
5. Further Empirical Studies: Future research should focus more on empirical case studies of the impact of AI on audit quality and the effectiveness of fraud detection in specific government agencies.

6. Curriculum Development: Universities and professional training programs should revise their curricula to include topics such as AI, machine learning, and data analytics in the fields of accounting and auditing.
7. Harmonization: Updates to auditing standards (such as ISA 240) and regulations are needed to support the ethical and effective use of AI.

REFERENCES

Bakti, S., Pratiwi, E., Marpaung, D., & Siregar, N. H. A. (2025). Model Heisqual Sebagai Instrumen Deteksi Dini Krisis Integritas Akademik: Tinjauan Literatur Terhadap Kasus Pemalsuan Ijazah di Indonesia. *Kalianda Halok Gagas*, *8*(2), 97–106.

Caseba, F. L., & Dewayanto, T. (2024). Penerapan Artificial Intelligence, Big Data, Dan Blockchain Dalam Fintech Payment Terhadap Risiko Penipuan Komputer (Computer Fraud Risk): a Systematic Literature Review. *Diponegoro Journal Of Accounting*, 1–15.

Irianti, L. R., Nuswantara, D. A., & Pujiono. (2021). The Role of Internal Auditors in Fraud Prevention: A Systematic Literature Review (SLR). *Journal of Business and Information Systems*, *3*(1), 34–48.

Jaiz, Z., Azmi, S. N. S., Hasini, N. F. M., Samsudin, S. N., Izhar, N. I., Idris, N. A., & Hassan, S. A. A. A. (2024). Online Scam: A Systematic Literature Review. *Jurnal 'Ulwan*, *9*(1), 257–280.

Korat, C., & Munandar, A. (2025). Penerapan Core Tax Administration System (CTAS) Langkah Meningkatkan Kepatuhan Perpajakan Di Indonesia. *Jurnal Riset Akuntansi Politala*, *8*(1), 16–29. https://doi.org/10.34128/jra.v8i1.453

Novida, D. R. (2025). Evolusi Sistem Informasi Akuntansi dalam Era Digital: Tinjauan Literatur tentang Tren, Tantangan, dan Peluang. *Jurnal Minfo Polgan*, *14*(1), 77–85. https://doi.org/10.33395/jmp.v14i1.14628

Nurarifah, S., & Kuntadi, C. (2024). Factors Affecting Financial Statement Fraud Disclosure: Data Mining, Forensic Accounting and Investigation Audit. *TECHNOVATE: Journal of Information Technology and Strategic Innovation Management*, *1*(4), 177–184. https://doi.org/10.52432/technovate.1.4.2024.177-184

Paraswansa, A. D., & Utomo, D. C. (2024). Whistleblowing dan Korupsi Pada Sektor Publik: A Systematic Review. *Jurnal Akademi Akuntansi*, *7*(1), 94–113. https://doi.org/10.22219/jaa.v7i1.31336

Prasetyo, S., & Dewayanto, T. (2024). Penerapan Machine Learning, Deep Learning, Dan Data Mining Dalam Deteksi Kecurangan Laporan Keuangan-A Systematic Literature Review. *Diponegoro Journal of Accounting*, *13*(3), 1–12. http://ejournal-s1.undip.ac.id/index.php/accounting

Pribadi, L. A., & Dewayanto, T. (2025). Systematic Literature Review : Pengaruh Penerapan Artificial Intelligence Terhadap Efektivitas Sistem Informasi

Akuntansi. *Diponegoro Journal of Accounting*, *14*(3), 1–14.

Putra, D. R., Maulana, M. F., & Maulana, A. R. (2025). Literature Review : Modernisasi Akuntansi Sektor Publik dI Era Digital. *Venture: Jurnal Kajian Ekonomi Dan Bisnis*, *1*(1), 10–16.

Rahmarta, V., Nirwana, & Syamsuddin. (2024). Strategi Pencegahan Fraud dalam Pemilihan Penyedia Jasa Konstruksi : Pendekatan Tinjauan Literatur Sistematik. *J-CEKI : Jurnal Cendekia Ilmiah*, *3*(5), 4444–4454.

Rahmarta, V., Pontoh, G. T., & Said, D. (2024). Kekuatan Organisasional Dan Sistem Dalam Pencegahan Fraud: Suatu Tinjauan System Literature Review. *Substansi: Sumber Artikel Akuntansi Auditing Dan Keuangan Vokasi*, *8*(1), 28–43. https://doi.org/10.36733/jia.v2i1.9046

Simanjuntak, R. B., & Mare, R. N. J. (2025). Analisis faktor yang memengaruhi kemampuan auditor dalam mendeteksi kecurangan : Kajian literatur sistematis. *Journal of Accounting and Digital Finance*, *5*(2), 159–167.

Syahronny, M. R., & Dewayanto, T. (2024). Penerapan Teknologi Artificial Intelligence Dan Blockchain Dalam Mendeteksi Fraud Pada Proses Audit: Systematic Literature Review. *Diponegoro Journal of Accounting*, *13*(3), 1–14. http://ejournal-s1.undip.ac.id/index.php/accounting

Tito, J. S., & Siregar, K. N. (2024). Faktor Pemicu dan Penghambat Fraud dalam Program Jaminan Kesehatan Nasional dan Strategi Pencegahannya: Sebuah Scoping Review. *Jurnal Ekonomi Kesehatan Indonesia*, *9*(2). https://doi.org/10.7454/eki.v9i2.1124