

AI-Powered Internal Auditing: Transforming the Profession for a New Era

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ABSTRACT

Artificial Intelligence (AI) has seen widespread adoption in various sectors including healthcare, finance, manufacturing, and retail. In Malaysia, AI adoption is accelerating as the country seeks to enhance its competitiveness and foster innovation. Due to the emergence of AI in the organizational landscape, it has brought in change paradigm in the internal auditing profession. To remain effective, internal auditors must quickly adapt and capture AI capabilities into their work routine. This paper reviewed 31 journals published from various reliable academic resources. Three themes have been established: the roles of internal auditors, the benefits to internal auditors of adopting AI and the challenges of internal auditors in using AI for fraud detection. This paper highlights several roles of internal auditors using AI, it also highlights the benefits of adopting AI in the fraud detection process. The most prominent benefit of using AI is its ability to conduct real-time fraud detection, provide wider coverage, automate repetitive and labor-intensive tasks, and improving detection through its predictive analysis capability. Along with these advantages, this paper also discusses the significant challenges internal auditors run into when integrating AI into fraud detection, highlighting the difficulties in adjusting to this cutting-edge technology.

Keywords: Artificial Intelligence, Internal Auditor, Internal Audit, Fraud Detection

INTRODUCTION

In recent years, Artificial Intelligence (AI) has seen widespread adoption in various sectors including healthcare, finance, manufacturing, and retail (Forbes, 2024; Statista, 2024). This surge in AI utilization is reported to be driven by advancements in machine learning, natural language processing, and computer vision technologies. Artificial Intelligence is revolutionizing industries globally by enhancing operations and refining processes for making decisions. The growing adoption of AI by major corporations is revolutionizing modern business operations across multiple aspects. Major corporations are increasingly leveraging AI for tasks such as predictive analytics, customer service automation, and supply chain optimization, which highlights the transformative potential of AI in modern business operations. According to a report from Forbes (2024), the global AI market is projected to grow from \$196 billion in 2023 to over \$1 trillion by 2028.

In Malaysia, AI adoption is accelerating as the country seeks to enhance its competitiveness and foster innovation (Malay Mail, 2024; The Edge Malaysia, 2024). To promote AI integration across various sectors including healthcare, finance, and manufacturing, the Malaysian government has launched a special initiative under the name of Malaysia's National Artificial Intelligence (AI) Roadmap 2021-2025 (Malaysian Science and Technology Information Centre, 2021). According to a report by Malay Mail (2024), Malaysia is positioning itself as a regional leader in AI technology through significant investments in AI research and

development aimed at driving economic growth and improving public services. Businesses in Malaysia are increasingly utilizing AI to optimize operations, improve decision-making, and enhance customer experience.

As a result, integrating AI technologies is fundamentally transforming organisational landscapes. The usage of AI becomes deeply embedded in business processes; internal auditors must adapt to these changes to remain effective (Bernama, 30 September 2024). Therefore, this shift provides new challenges and opportunities for internal auditors and the AI integration reinventing internal audit and changing the conventional practices (Adelakun, 2022). Internal auditors must develop a robust understanding of AI technologies and their applications in auditing practices. To remain relevant and effective, internal auditors must integrate AI into their work processes, leveraging its capabilities to enhance fraud detection and uphold high standards of organisational integrity. Therefore, this paper discusses the roles, benefits and challenges internal auditors face when adopting AI in their work processes. This study proposes the following research questions: What and how do internal auditors adopt AI for their benefit? How does AI give benefits and challenges to internal auditors when adopting AI?

Through this paper, the discussion acknowledges the contribution of internal auditors in fraud detection. This discussion can be evidence of the widening scope of involvement of internal auditors in detecting fraud within the organisation. At the same time, this paper can help the Institute of Internal Auditors by highlighting the importance of integrating AI into auditing practices and the importance of ongoing professional development in order to provide auditors with the skills they need to tackle new fraud prevention and detection issues.

METHODS

This paper reviewed 31 articles from various reliable academic resources such as ScienceDirect, Google Scholars and ResearchGate. The articles were selected using the search phrases “artificial intelligence” and “fraud detection” emphasising studies between 2020 and 2024 to recognise the recent journal published. All the chosen articles were written in English. This study utilised meta-synthesis to drive the theme of the study. The themes of this paper are the roles of internal auditors, the benefits of internal auditors of adopting AI and the challenges of internal auditors in using AI for fraud detection as pictured in the diagram below:

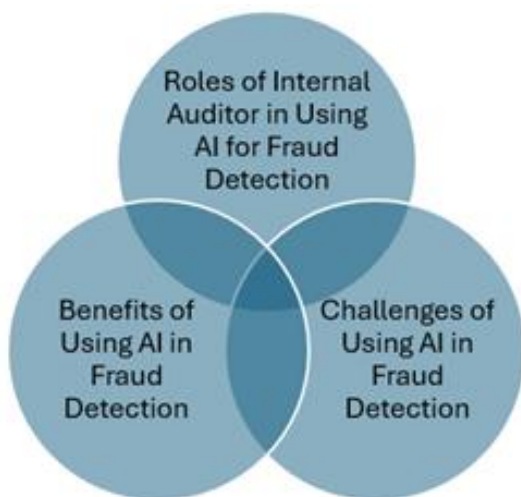


Figure 1: Thematic Analysis of the paper.

Roles of Internal Auditors in Using AI for Fraud Detection

Internal auditors' first and primary role is integrating AI-driven technologies into the organization's fraud detection framework (Ivakhnenkov, 2023). This integration includes using machine learning algorithms during the fraud detection processes. Machine learning algorithms are able to analyse large volumes of financial data. Analyzing financial and non-financial data helps identify anomalies indicative of fraud. This particular AI technology can significantly enhance fraud detection by internal auditors because it can spot unusual patterns

and behaviours that traditional audit methods might miss. For example, an invoice received can be matched with the relevant purchase order by machine learning algorithms, which can also identify the appropriate expenditure account for recognition and add it to a payment pool (Haq et al., 2020). The integration of AI-driven technologies such as machine learning (ML) and artificial intelligence (AI) tools in fraud detection has been demonstrated by internal auditors in the banking sectors in Harare, Zimbabwe (Lloyd Et al., 2024). One of the branches of machine learning is unsupervised learning techniques. Unsupervised learning techniques such as clustering and anomaly detection were employed in the risk management framework of banks in Harare, Zimbabwe. Both methods were used to flag unusual transactions that deviate from established norms. This proactive approach reduces the incidence of undetected fraud and minimises financial losses for the banks. This integration has eliminated delays and inaccuracies inherent in traditional methods.

After the successful integration of AI, internal auditors are responsible for enhancing the accuracy and efficiency of fraud detection (Ikhsan et al., 2022). The accuracy and efficiency of fraud detection can be enhanced through utilizing AI's advanced data processing capabilities. AI can cross-reference internal financial records with external data sources like social media, public records, and industry reports. This cross-referencing capability with external data sources helps identify discrepancies and potential fraud with greater precision. The results from this comprehensive AI analysis enable internal auditors to create robust fraud detection models that continuously improve as they learn from new data. Over time, the massive and growing data sets analysed by these models allows internal auditors to cover a broader scope within the same time frame.

Another role of internal auditors on fraud detection is to ensure compliance with regulatory standards (Kaawaase et al., 2021). According to Adelakun (2022), AI usage in internal audit not only ensures compliance to regulatory standard but enhances it. Governments and regulatory bodies increasingly demand stringent measures to detect and prevent fraud. This situation compels organisations to use AI to enhance their internal auditing capabilities. Implementing AI by the internal auditors effectively helps organizations meet these regulatory demands. However, the internal auditors must ensure that AI applications comply with legal and ethical standards. It can be done by using AI systems responsibly and ethically. It includes auditing AI algorithms for biases, ensuring data privacy, and maintaining transparency in AI decision-making processes. The good news is that AI systems can be programmed to ensure compliance with legal standards. AI systems are able to systematically evaluate and document audit trails to align with regulatory reporting and accountability practices. As a result, this ethical practice helps to build trust among stakeholders.

Benefits of Internal Auditors Using AI in Fraud Detection

Implementing AI in fraud detection offers numerous advantages that enhance the internal auditing. One of the primary benefits is the ability to conduct real-time fraud detection (Ajayi & Olalekan, 2023). AI systems can continuously monitor transactions and activities on a real-time basis. The real-time approach for fraud detection reduces the time lag between the occurrence and detection of fraud. This way, anomalies and potential fraudulent actions can be identified as they occur. This capability allows for quick reporting to the right channels. Hence, it allows fast action to be taken to reduce fraud risks. In return, this prompt action helps minimise financial losses and reputational damage in the long run.

According to Munoko et al. (2020), using AI in fraud detection has revolutionized the audit process by enabling real-time analysis of vast financial transactions. Hence, AI algorithms can detect complex fraudulent schemes that would go unnoticed. This is because traditional audit methods that rely on manual sampling could be susceptible to human error and limitations in scope. Conversely, AI can analyse entire datasets at speeds and accuracies unattainable by human auditors. For instance, AI algorithms can continuously, without rest, detect anomalies and patterns that may indicate fraudulent behaviour daily. Because AI technologies can analyze data in real-time, Noordin et al. (2022) claim that they can cut audit cycle times by as much as 40%.

The benefits of the real-time capabilities of AI are extensive. AI may also facilitate effective risk management through continuous monitoring and real-time reporting (Wassie & Lakatos, 2024). Traditional audit practices

often involve periodic reviews. Periodic reviews often result in delays in identifying and addressing risks. Furthermore, internal audit functions rely on reactive approaches to fraud detection. This means that they wait for fraud to happen before investigating. In contrast, AI for fraud detection allows auditors to be more proactive and predict where fraud might occur, making fraud prevention more effective overall. This continuous monitoring capability ensures that any deviations from expected patterns are quickly detected and addressed in the risk management process. Therefore, the opportunity for fraudulent activities can be reduced from its roots. Real-time risk monitoring and reporting empowers internal auditors to act swiftly and adapt to changing circumstances faster.

The significant advantage of AI in fraud detection is its capacity for wider coverage (Ikhsan et al., 2022). Traditional auditing methods often involve sampling, which may miss fraudulent activities that occur outside the sampled data. In comparison, AI can process large volumes of data across different subsidiaries and branches. This capability provides more comprehensive analysis that is not feasible through manual audits. Therefore, this broad data coverage ensures that fraudulent activities are detected across all areas of operations. This ability to scrutinize a larger amount of data enhances the audit reliability and effectiveness over time.

According to Malekolkalami et al. (2023), using big data and AI allows auditors to analyse extensive datasets. Analysis of extensive datasets helps uncover hidden patterns and correlations that may indicate fraudulent activities. This study highlights the application of various data mining methods, such as association rules, clustering, and classification, to scrutinise financial records and transactional data. One notable case, Maxis Berhad, an organisation where internal auditors utilised these techniques to monitor and analyse financial transactions continuously (Maxis, 11 September 2020). This approach enabled the detection of unusual patterns, such as repetitive small or large one-time transactions that did not align with the usual business operations. Therefore, it is evident that through the integration of data mining into their audit processes, internal auditors were able to detect and investigate potential fraud more effectively. Consequently, the financial integrity of the organisation is intricately protected.

The benefit that AI offers is manifested through automation (Ajayi & Olalekan, 2023). Technologies such as Robotic Process Automation (RPA) and Optical Character Recognition (OCR) can automate repetitive and labor-intensive tasks. At the same time, Technology-Assisted Review (TAR) focuses on the most relevant documents, reducing false positives and ensuring auditors focus on truly suspicious activities. These automation technologies minimize human errors and allow auditors to focus on more complex and critical aspects of fraud detection. In return, these technologies drastically reduce the time and effort required from auditors.

A study by Ikhsan et al., (2022) has highlighted that internal auditors who utilize AI automation technologies can better scrutinize business processes, assess associated risks, and follow up on anomalies more effectively than those relying solely on traditional methods. According to Chatterjee et al., (2022), auditors can concentrate on a higher-value activities as AI can automate tedious and time-consuming tasks. Traditional auditing methods are time-consuming and resource intensive. Hence, automation of routine tasks allows internal auditors to focus on more complex aspects of fraud detection such as investigating the root causes of anomalies, applying professional judgment to assess their significance, and designing and implementing more effective internal controls.

One notable application of automation in fraud detection is the Artificial Immune System (AIS) (Ghahfarokhi et al., 2022). Inspired by the human immune system, AIS can detect new and unknown fraud patterns, making them effective in changing environments. Research shows that AIS can reduce false positives and improve detection rates. It was achieved by recognising patterns that are different from the usual or expected patterns. It is similar to how the human immune system responds to pathogens. This adaptive approach allows AIS to remain effective against new and emerging fraud techniques. Consequently, it offers robust, continuous protection for the financial systems.

Finally, the fourth and last advantage of utilising AI is improving detection through its predictive analysis capability (Adelakun., 2022). AI's predictive analytics offer a proactive approach to fraud detection. AI

systems have the potential to improve their ability to spot patterns and trends in data, which will enable more precise forecasts of potential risks and opportunities in the future (Fedyk et al., 2022; Shabani et al., 2022). This predictive power allows internal auditors to focus their efforts on high-risk areas and prioritise their resources effectively to detect fraud. For example, predictive models can highlight transactions or behaviours that are likely to lead to fraudulent activities. Internal auditors are then able to take preventive measures before any fraud occurs. This forward-looking approach improves the effectiveness of fraud detection and enhances the overall risk management framework within organizations.

One significant application of AI's predictive analysis in fraud detection is incorporating machine learning algorithms that can adapt and evolve (Vyas, 2023; Negi, 2021). Traditional rule-based systems are becoming outdated because they struggle to keep up with the constantly changing tactics of fraudulent activities. Thus, machine learning models, especially those utilising deep learning, offer a solution by continuously learning from new data. This allows internal auditors to detect complex patterns and anomalies that traditional systems might miss. At the same time, these complex patterns and anomalies can improve the AI's predictive accuracy over time. There are two key techniques in deep learning, which are convolutional neural networks (CNNs) that can detect fraudulent activities in image-based transactions and recurrent neural networks (RNNs) which is to analyze sequences of transactions over time to detect fraud patterns. The continuous learning capability of these two models ensures that they remain effective even as fraud patterns evolve.

Another promising application of AI's predictive analysis is integrating AI with graph computing principles (Kurshan et al., 2020). Graph neural networks (GNNs) analyze relationships between different entities like accounts, transactions, and others in a network. This helps detect fraud schemes involving multiple connected transactions. GNNs can detect subtle signs of collusion and organized fraud that traditional methods might miss by analyzing connections and interactions between entities.

Challenges for Internal Auditors Using AI in Fraud Detection

Integrating Artificial Intelligence (AI) into internal auditing to detect fraud comes with several challenges. Firstly, internal auditors are likely to struggle with adapting to using AI in their work processes (Ajayi & Olalekan, 2023; Lloyd et al., 2024). This is because AI systems are highly complex and require auditors to have advanced technical skills. Internal auditors need to grasp not only the technical aspects of the AI systems but also how AI works in fraud detection, which involves complex patterns and large datasets. However, many traditional auditors lack these skills which makes it difficult for them to interpret and use AI findings effectively. Furthermore, the rapid evolution of AI technology widens this skill gap, requiring auditors for ongoing training to stay current. Therefore, the steep learning curve and the need for specialized knowledge make it a challenge for auditors to effectively use AI tools in auditing practices. It requires ongoing education and training for auditors to develop their proficiency in AI technologies. Without these skills, auditors may struggle to confidently utilize AI findings for fraud detection and investigation.

Due to this challenge, the integration of AI in fraud detection is reshaping the roles and skills required of internal auditors (Steira & Bangsund, 2023). The traditional skill set of auditors is now expanding to include data analytics, programming, and understanding of AI algorithms. This paradigm shift necessitates continuous learning and adaptation for auditors in using sophisticated AI tools and interpreting their outputs. Therefore, internal auditors need to stay abreast with the latest advancements and adopts AI technologies to develop the digital and IT skills (Betti et al., 2021). This ongoing education ensures that auditors can leverage the latest tools and methodologies to enhance their fraud detection capabilities. Through continuously upgrading their skills, internal auditors can ensure that they are well-equipped to handle the evolving landscape of fraud and financial crimes.

Another significant challenge is ensuring the quality and availability of data necessary for AI to perform optimally (Handoko et.al, 2020). AI systems rely heavily on extensive, high-quality data to detect anomalies and potential fraud. However, internal auditors often face poor data quality such as data silos, incomplete records, and inconsistent data formats. Poor quality data can hinder AI's accuracy and reliability in AI-

powered auditing process (Adelakun, 2022). Due to data silos, internal auditors have to integrate different data sources into one complete dataset for AI analysis. This integration process can be complicated and resource intensive. To address these challenges, establishing clear guidelines and procedures for managing data (data governance framework) is crucial. If data management is poor, it can result in false positives or negatives that reduce the credibility of AI applications in auditing. A well-established data governance framework ensures that AI systems can use high-quality data to make precise assessments and enhance the reliability of fraud detection efforts.

As mentioned previously, one of the roles of internal auditors is making sure that AI complies with ethical and regulatory requirements. The ethical and legal implications of using AI can pose significant challenges to internal auditors (Mohammed & Rahman, 2024; Adelakun, 2022; Munoko et.al, 2020). AI systems can unintentionally reinforce biases present in historical data that leads to unfair outcomes. For example, fraud detection models might overlook fraudulent activities in certain sectors because those sectors were historically underreported. On the other hand, compliance with data protection regulations like General Data Protection Regulation (GDPR) further complicates matters (Bekkum & Borgesius, 2022). This is because AI often relies on personal and highly confidential data. The confidentiality and secrecy of these data must be of utmost priority to internal auditors. It is imperative to implement mechanisms to safeguard confidential information, identify and address biases in AI algorithms, and guarantee that judgments made by AI are transparent and fair (Falco, et al., 2021). To address these ethical challenges, internal auditors must ensure that AI tools are transparent and that their decision-making processes are understandable and justifiable. Furthermore, they must also ensure that the handling of AI data complies with GDPR and other data protection laws. Navigating these regulatory landscapes demands meticulous attention to legal standards and ethical considerations. It requires ethical scrutiny and establishing frameworks for the accountability of AI systems.

CONCLUSION

In conclusion, the future of internal auditing hinges on a symbiotic relationship between human expertise and AI capabilities. AI presents unprecedented opportunities to conduct real-time fraud detection, provide wider coverage, automate repetitive and labor-intensive tasks, and improve detection through its predictive analysis capability. Auditors will need to cultivate a growth mindset, continuously sharpening their technical skills in data analysis, AI interpretation, and ethical considerations to meet the challenges posed by AI integration. This transformation necessitates robust professional development programs that equip auditors to leverage the power of AI effectively.

However, this study is not without limitations. This study primarily examines the integration of AI in the context of fraud detection, leaving up the possibility of investigating other important areas of internal auditing that AI can impact, including operational effectiveness, compliance monitoring, and strategic risk assessment. Additionally, this study only highlights challenges such as the steep learning curve, issues on the quality and availability of data, and ethical considerations. Future research can focus on small and medium-sized enterprises (SMEs), which may have other challenges in terms of resource. Future studies could also explore and delve deeper into the methods of using artificial intelligence to identify each type and characteristic of fraud.

In the end, even though AI is an effective tool, human judgment cannot be replaced by it. AI and auditors working together in harmony will guarantee that internal audits continue to be an essential part of corporate governance, capable of handling the complexity of a digital landscape that is changing quickly.

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