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Implementation of Artificial Intelligence in Fraud Detection and Prevention in Internal Audit (Case Study in the Banking Sector)

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ABSTRACT

This study discusses the application of Artificial Intelligence (AI) in internal audit in the banking sector, with a focus on fraud detection and prevention. In the digital era, the need for efficiency and accuracy in auditing is increasingly pressing, and AI offers an innovative solution. Through real-time big data analysis, AI can identify suspicious patterns and anomalies that may be missed by traditional methods. This study uses a qualitative approach with interviews and questionnaires to employees in the banking sector. The results show that the application of AI improves the efficiency of the audit process, reduces human error, and increases customer trust. However, challenges in auditor training and data management remain a concern. Recommendations for the development of AI usage policies and periodic training for auditors are proposed to maximize the benefits of this technology.

Keywords
Artificial Intelligence, Internal Audit, Fraud Detection, Banking Sector, Efficiency.

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INTRODUCTION

AI is a computational technology that demonstrates various forms of human intelligence and encompasses several interrelated technologies, including data mining, machine learning, natural language processing, speech recognition, image control, and sentiment analysis (Seethamraju, R.C & Hecimovic, 2020). One of the industr *Efficiency* ies significantly impacted by AI is auditing. Auditing, traditionally a meticulous and labor-intensive process, now witnesses the integration of AI technology to enhance efficiency, effectiveness, and accuracy (Hidayatullah, 2023). This technology holds immense potential in various aspects of company operations, including internal audits. Several initiatives are being tested worldwide, and the Big Four accounting firms—EY, Deloitte, KPMG, and PwC—are investing millions of dollars in AI to establish more efficient and high-quality audits.

AI can be used as a tool to detect and prevent fraud in accounting processes and financial reporting. In this context, various forms of AI, such as Artificial Neural Networks (ANN) and Machine Learning, have been implemented in companies. According to Sadgali et al. (2019), Artificial Neural Networks (ANN) are computational systems inspired by the structure and function of biological neural networks in the human brain. The primary goal of ANN is to replicate the brain's ability to process information and make decisions. On the other hand, machine learning can also identify and prioritize unusual or suspicious transactions. By prioritizing such transactions, auditors can enhance the effectiveness and efficiency of the audit process, leading to more accurate audit opinions (Agustina & Risma Wandansari, 2023).

AI technology has opened new possibilities in detecting and preventing fraud and corruption with smarter and more adaptive approaches. Its ability to process and analyze large-scale data, along with learning from historical data, provides a significant advantage in identifying suspicious patterns (Kokasih et al., 2022). By utilizing machine learning and neural network algorithms, AI can recognize patterns that humans or traditional systems cannot detect (Bhastary M D, Lubis A R, 2023). However, the application of AI in detecting fraud and corruption also faces various challenges that need to be addressed (Rachmawati et al., 2023).

The recognition of fraud patterns is not a minor issue that can be overlooked; rather, it is a critical foundation for maintaining integrity and stability across various sectors, especially business and finance (Rosita R, Kosasih H., 2021). The impacts of these practices are significant, not only financially damaging but also capable of tarnishing the reputation of individuals and companies and affecting public trust as a whole (Kosasih, 2021). Common issues include fraud, which is defined as illegal actions characterized by deception, concealment, or breach of trust. This action does not depend on the use of threats or physical force. Fraud is perpetrated by individuals and organizations to obtain money, wealth, or services, avoid payment, or secure personal business profits.

The process of using Artificial Intelligence to detect and prevent fraud in the banking industry begins with collecting and organizing data, creating AI models based on algorithms that can detect anomalies, analyzing data, detecting fraud, and reporting findings for auditor opinions. In this AI process, the system will provide a response when fraud is detected, issuing alerts or notifications to auditors so they can identify the specific areas with anomalies and take immediate action.

According to a study by Nurlayli et al. (2023), AI can assist auditors in document assessments, reduce examination time, and improve the efficiency of detecting financial statement fraud. However, AI cannot fully replace auditors, as some processes still require human judgment. A study by Sandari (2022) shows that AI systems have a positive and significant impact on fraud detection but a less significant impact on combating corruption. Therefore, fraud detection by forensic auditors is crucial in uncovering corruption cases.

Research by Demirel & Topcu (2024) found that using time-series data showed that chatbots have a more significant impact on improving operational efficiency and customer experience in the banking sector. Meanwhile, a study by Daliri (2020), titled "Using Harmony Search Algorithm in Neural Networks to Improve Fraud Detection in Banking Systems," developed a model based on Artificial Neural Networks (ANN) and the Harmony Search Algorithm (HAS) to detect fraud in banking systems. This model can identify hidden patterns between normal and fraudulent data with an accuracy rate of up to 86% based on a German dataset, despite challenges related to imbalanced data.

Artificial Intelligence (AI) has immense potential in detecting unusual patterns, analyzing large datasets, and providing more accurate and faster recommendations. The implementation of AI in internal audits can help identify anomalies or potential fraud that were previously difficult to detect with conventional methods. This article aims to explore the potential application of AI in improving the effectiveness of internal audits, focusing on how AI can be leveraged to identify unusual transaction patterns and detect potential fraud early. Based on this, the researcher aims to explore how this technology can assist internal audits in detecting and preventing fraud effectively and efficiently.

RESEARCH METHODE

This study uses a qualitative approach aimed at describing and analyzing the use of Artificial Intelligence (AI) in detecting, preventing, and evaluating fraud in internal audits within the banking sector. The data collection for this research is intended to understand the phenomenon being studied, and the process of data collection is carried out through observation and interviews.

The informants in this study consist of ten individuals who were selected purposively in accordance with the research topic. The information is gathered from various positions, including the Chief Operating Officer, Risk Management, and Internal Auditors, all of whom play important roles in the internal audit process. The data collection process includes triangulation, reduction, presentation, and verification. The data analysis used is qualitative

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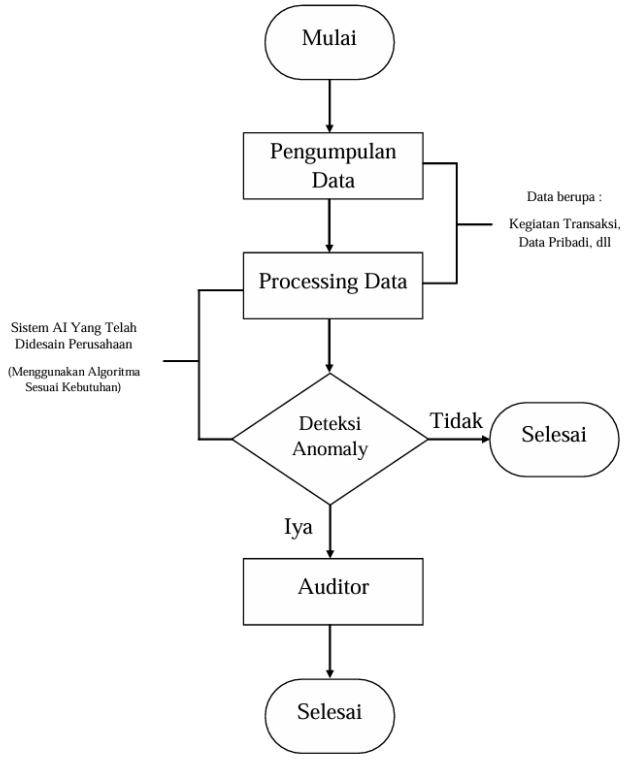
descriptive analysis, which includes the determination of criteria for the effectiveness of AI implementation. Based on the results of the analysis, the researcher will provide recommendations to improve the effectiveness and efficiency of internal audits through the utilization of AI technology.

RESULT AND DISCUSSION

Internal audit in the banking sector has taken strategic steps by adopting Artificial Intelligence (AI) technology to increase effectiveness and efficiency in detecting and preventing fraud. The application of AI in internal audit aims to process large amounts of data quickly and accurately, so as to identify potential risks and anomalies in financial statements and transactions.

In this research, the following flowchart will illustrate how a system can utilize the power of AI to automatically analyze data and detect anomalies. With this system, companies can make early detection of potential problems, improve data security, and make better business decisions.



Explanation of the flowchart stages above, including:

1. Start
   The process starts from this point, which marks the beginning of the entire workflow.

2. Data Collection
   At this stage, data is collected from various sources. The data collected can be transaction data, personal data, or any other type of data that is relevant to the purpose of the analysis.
3. Data Processing
   The data that has been collected will then be processed using an AI system that has been specifically designed by the company. This AI system uses certain algorithms tailored to the specific needs of the company to analyze the data.
4. Anomaly Detection
   The AI system will detect any anomalies in the data found. These anomalies can be in the form of unusual data patterns, extreme data values, or other things that deviate from normal patterns.
5. Result Branching
   - If an anomaly is found then the process will continue to the auditor stage, and the auditor will conduct further examination of the detected anomaly to ascertain its cause and impact.
   - If no anomaly is found then the process will go straight to the finish stage, which means no further action is required.
6. Auditor
   The auditor will conduct an in-depth analysis of the anomalies that have been detected, the goal is to understand the cause of the anomalies detected by the AI and take the necessary actions to resolve the problem.
7. Finish
   The process ends at this point, either after anomaly detection and audit, or if no anomaly is found.

The flowchart above shows that AI systems in banking can detect patterns that are unusual or deviate from normal behavior, which is often an early indication of fraud. Another advantage of AI is its ability to respond to large data in a short time, this allows fraud detection to be done in real-time and more accurately. In addition, AI's adaptive capabilities allow the system to learn and improve accuracy along with the amount of data processed. Therefore, AI can inspire new fraud schemes that are constantly emerging.

The results of the interviews show that most agree that using AI in internal audit is very beneficial and that AI not only speeds up the audit process but also improves cooperation between company divisions. Researchers also distributed questionnaires to several employees, and 85% of them said that AI improves operational efficiency, 90% felt that AI can reduce the possibility of

human error in the audit process, and 80% of them said that the application of AI increases customer confidence in the banking services they receive.

The company designs AI systems using algorithms and methods such as artificial intelligence network (ANN) and machine learning, resulting in better reporting. AI also enables rapid response to regulatory changes, maintains company compliance, and has continuous learning capabilities that increase effectiveness in detecting new threats. Recommendations for AI improvement include: AI capacity building, auditor training and complete format adjustments. In this case, it is in line with research from (Zhang et al., 2018), which explains that the development of a Convolutrion Neural Network (CNN) based model that is able to process transaction data directly. This model recorded a precision of 91% and a reminder of 94%, which is higher than conventional CNN in showing the effectiveness of CNN-based approaches in detecting online fraud. In addition, this research is also supported by (Wei et al., 2021) through a study entitled A Machine Learning Approach to Evaluate the Performance of Rural Banks, which utilizes a boosting tree regression algorithm to evaluate the performance of rural banks in 30 provinces in China, the results of the study show the superiority of this algorithm in revealing complex patterns compared to traditional causal models, with higher accuracy in predicting bank performance based on multi-dimensional data.

CONCLUSION

The application of Artificial Intelligence (AI) in the internal audit process in the banking sector has had a significant impact in detecting and preventing fraud. AI is able to process large amounts of data quickly and accurately, identify suspicious transaction patterns in real-time and reduce the risk of human error. This technology also improves operational efficiency, speeds up audit turnaround time, and strengthens customer trust in banking services.

However, the application of AI will not completely replace the role of human auditors. Some aspects such as in-depth analysis and decision-making that require ethical considerations, still require human intervention. In addition, there are several challenges such as the need for auditor training, AI capacity building, and system format adjustments are also major concerns for optimal AI implementation.

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