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The Investigative Audit as a Pillar of Accountability: An Integrated Strategy for Detecting Fraud in the Digital Era

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Abstract

Indonesian fraud is a matter of great concern, with significant implications for economic stability and public trust in the government. This study analysed fraud detection and prevention through investigative auditing, internal auditing, forensic accounting, big data analytics, and whistleblowing mechanisms and offered an integrated framework. Investigative auditing is of great value in detecting fraud as it allows in-depth and flexible inquiry without formulaic constraints. Internal audit validates compliance and strengthens internal control procedures, whereas forensic accounting enables a thorough examination of finances to identify potential fraud. Big data analytics, when applied in conjunction with these procedures, facilitates the better detection of fraud through the analysis of sophisticated and bulk data, outlier identification, and the detection of suspicious transaction patterns. An effective whistleblowing scheme also fosters a culture of accountability and transparency, enabling fraud to be identified early. This research discovers that a comprehensive and inclusive model for fraud detection is a key factor in preventing fraud and ultimately leads to enhanced governance and organizational integrity.

Keywords: fraud, investigative, auditing, accounting, big data, whistleblowing system, internal audit.

Introduction

The most significant desire of the Indonesian government in President Prabowo Subianto's presidency is a firm pledge to eradicate corruption. This objective is an intentional component of the entire program of the government aimed at encouraging the welfare of the people, which remains elusive because of widespread corruption. Indonesia remains in a group of nations with a relatively high incidence of fraud, and corruption remains the most common form of fraud. Based on the 2020 Corruption Eradication Commission (KPK) report, the number of corruption cases showed an overall increasing trend from 2002 to 2019, with a total of 1,032 cases. Some of the high-profile corruption cases were still pending, such as the e-ID procurement scandal, the Bank Indonesia Liquidity Assistance (BLBI) case, the Bank Century bailout, and the Garuda Indonesia scandal (Rachman & Gatra, 2019).

Moreover, the Association of Certified Fraud Examiners (ACFE) Asia-Pacific Occupational Fraud 2022: A Report to the Nations ranked Indonesia fourth among the Asia-Pacific nations based on the number of reported fraud cases in 2022, with 23 cases. Most of them (64%) were corruption cases, followed by asset misappropriation (28.9%) and financial statement fraud (6.7%) (Patnistik, 2023).

Over the past decade, Transparency International's Corruption Perceptions Index has consistently shown that Indonesia has received relatively low scores, never surpassing 40 on a

scale of 0 to 100, reflecting widespread public sector corruption (Kompas, 2021). Data from the Indonesian Central Bureau of Statistics (BPS) show that the nation's Anti-Corruption Behavior Index declined from 3.92 in 2023 to 3.85 in 2024, based on a 0-to-5 scale. On this indicator, the greater the value, the greater the anti-corruption behavior of government members, and lower values indicate increasing acceptance among the public of corruption. The declining score reflects the imperative to reconsider the legitimacy of anti-corruption efforts and increase public awareness of the need for integrity in national progress.

The accelerated level of fraud in Indonesia suggests that better and more advanced models of fraud detection are needed. Defeating the challenge calls for collective efforts among researchers, practitioners, and regulators to research and utilize innovative approaches to detecting fraudulent behavior. The circumstances further necessitate the adoption of enhanced control mechanisms through the implementation of innovative technologies and modern auditing concepts.

Prior research (J. Inyada et al., 2019; Oyerogba, 2021) has demonstrated that investigative and internal audits are more effective mechanisms for addressing fraud-related problems. Investigative audits, especially those conducted by specialized teams, have been highly effective in uncovering fraud, including bribery (Eyisi & Agbaeze, 2014; Vukadinović et al., 2015), as they are not subject to the same rigorous standards. This freedom gives the investigative auditor a wide range of proactive and reactive methods strategically tailored to the individualized features of every case.

Theoretically and practically, investigative auditing is positioned strategically in the domain of fraud prevention. Conceptually, it provides an organized framework for understanding the mechanisms and dynamics of fraudulent activities, whereas operationally, it provides effective detection and response techniques. The constructive contributions of forensic accounting and investigative auditing to identifying financial mismanagement of public sector organizations have been established by Ramlan et al. (2023). These results concur with Butar Butar and Dedy Perdana (2017), who recognize the key role of professional skepticism by internal auditors in the detection of fraud and again emphasize the value added by qualitative methods of investigative audit practice.

Investigative audits, in the context of practical application, have a dual and complementary role in identifying and detecting fraudulent devices. Empirical data presented by Karmila et al. (2024) suggest that audit quality, good corporate governance practices, and the success of fraud prevention have a positive correlation. This is attested to by Mulyadi and Nawawi (2020), who establish that the professionalism of investigative auditors is significantly related to their ability to prevent fraudulent behavior. Additionally, Octavianingrum (2022) establishes that auditor independence and overall investigative experience positively mediate the success of audit procedures. This means that the improvement of auditor capacity through structured capacity development and practical exposure is a key step in reducing the risk of fraud.

Moreover, the application of big data analytics for auditing is a paradigm shift toward an effective and proactive approach to fraud detection. Unlike traditional audit practices relying on sampling and open to overlooking pivotal discrepancies in large datasets, big data analytics allows auditors to examine entire populations of transactional data, thus opening room for deeper and richer insights (Jukić et al., 2015). For instance, advanced data mining techniques are able to identify subtle patterns of fraud, including incongruous sequences of transaction patterns or accounting statement discrepancies (Patil et al., 2018; Rasheed et al., 2021). The higher-end analytical power of this kind is especially effective in high-risk domains like the finance and banking industries, where transactions are high in volume and fraud is more likely to occur (Sheng et al., 2017).

Moreover, the application of Whistleblowing Systems (WBS) is a key supporting system for investigative audits. Achyarsyah (2022) argues that WBS is one of the contributory factors to the general efficacy of investigative audits in fraud control. This notion is upheld by Priyadi et al. (2022), who specifies that the effectiveness of investigative audits relies, to a large extent, on sound investigative skills in acquiring and analyzing suitable evidence. Thus, a supplementary combination of investigative auditing, whistleblowing frameworks, and rigorous internal audit procedures constitutes a more robust fraud-resistant organizational culture.

In this context, the importance of internal auditing cannot be overstated. Lubis et al. (2024) posit that well-executed internal audits would help prevent fraud through good internal control testing. In the same vein, Taufik and Dianita (2020) posit that good internal audit implementation is crucial to fraud prevention. The second time, it has been pointed out that internal audit needs to be a key element in any fraud prevention mechanism in an organization.

This article seeks to address and analyze an integrative model of fraud prevention and detection and suggest an integrative model that organizations, especially Indonesia, can adopt to establish accountable and anti-corruption governance systems. The following sections will elaborate on the terminology of accountability and integrity, basic audit theories, seriousness of fraud findings, and responsibilities of investigative auditing, internal auditing, big data, forensic accounting, and WBS as relevant elements in fraud prevention. Such an integrated and holistic approach is anticipated to increase fraud detection and prevention efficiency in most industries, especially in public institutions and risk-exposed businesses.

Literature Review

Accountability and Integrity

Accountability and integrity are two fundamental pillars of both public and private organizations. These are the main pillars that need to be maintained to maintain public trust and ensure the sustainable operation of organizations. Auditing is a valuable tool for verifying and enhancing accountability and integrity, as it has been found to contribute to ensuring assurance regarding the quality of information and organizational transparency (Wulandari, 2015; Umiyati, 2023).

Accountability in public organizations is strategic, given that the latter are directly answerable to the public regarding their decision and actions (Ritonga, 2024). Elements of accountability, such as transparency, responsibility, and public participation, are the fundamentals of effective public sector activity management. Auditing in this context aims to enhance accounting information quality for use in decision-making, with accountability being strengthened and organizational performance improved.

On the contrary, in the private sector, auditing has a significant function in upholding integrity. Recent financial scandals involving public accountants have significantly eroded public confidence in the profession. Consequently, unbiased audits of financial reports play a critical role in maintaining the quality and integrity of financial information generated by organizations.

In addition to its application in the private and public sectors, auditing can also be used as a means of enhancing overall accountability. Auditing enables organizations to enhance financial control, amplify transparency, and maximize the effective use of resources. Effective accountability mechanisms not only limit the scope for corruption but also bring extra public trust and organizational efficiency (Murtin & Rahmawati, 2023).

Thus, auditing plays an important role in enhancing responsibility and integrity in all fields. Through audits, organizations are able to improve the quality of information produced, enhance transparency, and gain public confidence. This makes auditing an important component in establishing good and sustainable governance.

Accountability is especially needed in public organizations since such organizations should hold themselves accountable to the public regarding their actions and decisions. Transparency, responsibility, and public participation in decision-making may be a basis for public organizations in the execution of activities. Auditing can improve the quality of accounting information utilized in making decisions and improve accountability and organizational performance (Dama Yanti & Angelin, 2024).

Moreover, auditing will make public and private organizations more accountable through improved financial management, openness, and more effective use of resources. Correct procedures of accountability will enhance public trust, minimize corruption, and make the organization perform more effectively (Murtin & Rahmawati, 2023).

Fundamentals of Auditing and the Need for Detection of Fraud

Auditing is a systematic, objective, and fair procedure aimed at ensuring that information meets certain requirements. In a business and financial setting, an audit is an essential independent process that is performed to review, analyze, and authenticate other organizations' business processes or accounting accounts. Its main function is to confirm whether the accounting requirements for financial reports are being obeyed and whether the information that is reported is accurate and reliable. Auditing is defined as the acquisition and inspection of evidence about information to estimate and report the extent to which that information is in accordance with pre-established standards (Arens et al., 2012).

Fraud is a wide practice in many areas, ranging from financial transactions to healthcare services and business processes. It is intentional deception for gain and could take different forms, such as falsification, forgery, plagiarism, or theft (Bradshaw & Payne, 2019). Individuals engaging in fraud will tend to evolve and find means of evading preventive controls, with detection becoming more difficult. Detection of fraud is important because it can lead to huge financial losses as well as compromised service quality, especially in healthcare (Ikono et al., 2019).

These, according to the Association of Certified Fraud Examiners (ACFE), are divided into three general categories known as the "fraud tree": asset misappropriation, corruption, and fraudulent statements. Asset misappropriation is made up of the misuse or stealing of company or third-party assets. These comprise the use of cash and other non-cash assets for personal benefits (e.g., utilization of company facilities). Corruption involves activities like bribery, extortion, and abuse of confidential information for personal or group benefit. Corruption is usually hard to detect because it usually involves conspiracy on the part of the abuse. Dishonest statements involve deceptive action by corporate or governmental management or officials who falsify financial statements to create an unrealistic profile of fiscal well-being—usually called "window dressing."

The development of digital technologies has brought enormous advantages to all areas of life at the same time creating new challenges related to growth in complexity and facilitating fraud to hide (Daraojimba et al., 2023). The features of cyber-age fraud consist of misperception of the role of cyber technologies in public accountants' work, technology to enable fraudulent activities, and exploiting human mistakes and lack of technological literacy (Kristiyani & Hamidah, 2020; Ginting et al., 2023). In addition, technological advancements within cyber monetary systems, such as e-commerce and electronic payments, have created new avenues for fraud. In an attempt to forestall such menaces, a far-reaching and responsive fraud detection system must be developed. For example, forensic accounting and data analysis techniques using machine learning and data mining have proven effective in identifying increasingly complex fraud patterns (Daraojimba et al., 2023). However, the application of these technologies still faces various obstacles, including limited access to relevant datasets and the need for specialized expertise (Abbassi et al., 2024).

In parallel, improving public financial literacy is essential in preventing fraud, particularly in the context of investment. Furthermore, collaboration among financial institutions, regulators, and law enforcement agencies is critical to strengthening the systems used for detecting and preventing fraud in the digital era. Overall, the challenges of fraud in this technological age demand adaptation and innovation in detection and prevention strategies—ranging from technological solutions and regulatory frameworks to enhancing human resource capabilities. Only through a comprehensive effort can organizations safeguard integrity and accountability amid rapid technological advancements.

Agency Theory

Agency theory explains the relationship between principals and agents, in which the agent is expected to act in the principal's best interest (Jensen & Meckling, 1976). Problems arise when management (as agents) fails to fulfill their duties appropriately—a situation referred to as the agency problem. Corruption is a common example of such a problem. Agency theory is thus instrumental in proposing mechanisms to resolve agency-related issues within institutions.

Institutional Theory

According to institutional theory, organizations are viewed as rationalized systems—sets of interrelated roles and activities designed to reflect goal-oriented behavior aimed at achieving specific objectives. Institutional theory suggests that an institution is more likely to survive and evolve when operating within a competitive or pressured environment that necessitates adaptation (Gudono, 2017). This theory further explains that institutions will consistently seek various strategies to satisfy stakeholders, including efforts to detect and combat fraud. Several prior studies have employed this theory to explain its relevance in fraud prevention and detection.

Empirical Studies on Fraud in Indonesia: A Multi-Model Approach

Fraud Triangle Model

The Fraud Triangle Model is a fundamental framework used to detect fraud in financial statements. This concept encompasses three key elements: pressure, opportunity, and rationalization. Various studies have explored the application and effectiveness of the fraud triangle in identifying fraudulent activities in financial reporting (Indriani & Rohman, 2022; Dama Yanti & Monica, 2024). These studies empirically examine how the components of the fraud triangle influence the detection of fraudulent financial statements, particularly in sectors such as banking, state-owned enterprises (SOEs), and manufacturing.

The fraud triangle provides a basis for establishing solid fraud detection controls and systems with a focus on realizing the necessity to recognize the interaction between pressure, opportunity, and rationalization in financial fraud. Examining the risk factors that have been established within the fraud triangle can help companies enhance their financial misstatement detection and prevention capabilities. Besides, the fraud triangle has also been contrasted with other fraud detection models, e.g., Beneish M-Score, to determine the extent of its usefulness (Indriani & Rohman, 2022). This contrast highlights the singular insights and value contribution of the fraud triangle in detecting fraudulent financial reporting.

Briefly, the fraud triangle is still one of the prominent theories in detecting fraud based on an underlying premise to learn about the very essence of those factors most likely to cause financial reporting fraud. Taking pressure, opportunity, and rationalization into account, firms can implement robust fraud detection systems and avoid the threat of financial fraud. In conclusion, the fraud triangle remains a pivotal concept in the domain of fraud detection, offering a fundamental framework to understand the core factors that may lead to fraudulent behavior in financial reporting. By considering pressure, opportunity, and rationalization, organizations can strengthen their fraud detection strategies and mitigate the risks associated with financial fraud.

Fraud Diamond Model

The Fraud Diamond Model, an extension of the fraud triangle, adds a fourth element: capability, alongside pressure, opportunity, and rationalization. Research indicates that all four elements play critical roles in the detection of financial statement fraud. Numerous studies have evaluated the effectiveness of the fraud diamond in identifying fraudulent financial activities (Fadli & Junaidi, 2022). This model has also been applied in various contexts, including analyses of publicly listed companies on the Indonesia Stock Exchange.

The fraud diamond provides a more integrated means of determining drivers of financial fraud. By exploring the interaction between pressure, opportunity, rationalization, and capability, organizations are able to enhance their process of detecting fraud and the risk of financial misreporting.

Fraud Pentagon Model

The Fraud Pentagon Model is a comprehensive model that has become top in the identification of fraudulent financial statements. The model is made up of five essential components: pressure, opportunity, rationalization, capability, and arrogance. Studies have established that these factors are crucial in fraudulent financial reporting detection. Compared to traditional models such as the fraud triangle and fraud diamond, the fraud pentagon provides a more holistic approach to identifying and preventing financial fraud (Devi et al., 2021; Widiastika & Junaidi, 2021).

Multiple studies have examined the effectiveness of the fraud pentagon model across sectors such as state-owned enterprises in transportation and mining, as well as government ministries, in detecting financial statement fraud. These studies highlight the significance of elements like pressure, rationalization, and capability in revealing potential fraudulent activities (Devi et al., 2021; Widiastika & Junaidi, 2021).

Furthermore, the fraud pentagon model has been compared to other fraud detection models, such as the F-Score model (Situngkir & Triyanto, 2020). These comparisons suggest that the fraud Pentagon provides unique insights and capabilities in detecting fraudulent financial reporting (Situngkir & Triyanto, 2020; Ratmono et al., 2020).

Overall, the fraud pentagon offers a robust framework for detecting fraudulent financial statements by considering a broader array of contributing factors. Analyzing the elements of pressure, opportunity, rationalization, capability, and arrogance enables organizations to reinforce their fraud detection systems and reduce the risk of financial misconduct.

Fraud Hexagon Model

The Fraud Hexagon Model presents a comprehensive framework for detecting financial statement fraud, encompassing six key elements: pressure/stimulus, opportunity, capability, ego/arrogance, rationalization, and collusion. This model expands upon foundational fraud theories such as the fraud triangle and fraud diamond, offering a more holistic approach to identifying and addressing fraudulent behavior in financial reporting (Sukmadilaga et al., 2022).

Several studies have assessed the effectiveness of the fraud hexagon model in detecting financial statement fraud across various sectors, including Indonesian state-owned enterprises, financial institutions, the mining industry (Imtikhani, 2021), and consumer goods manufacturing firms listed on the Indonesia Stock Exchange. These studies emphasize the importance of elements such as pressure, opportunity, capability, ego/arrogance, rationalization, and collusion in uncovering and preventing fraudulent reporting (Azhari & Lenggogeni, 2024).

The fraud hexagon model gives us a more sophisticated understanding of the nature of financial fraud through its recognition of the interaction among multiple dimensions that can lead to fraud. By taking into account a more extensive list of risk factors than traditional fraud

theories, organizations are better equipped to enrich their models of fraud detection and bolster their defense against financial statement fraud.

Empirical research has also employed the fraud hexagon model in hypothesis testing and in examining the interrelationships among its components and financial misstatement occurrence. The research seeks to shed light on causes of financial fraud and how much pressure, rationalization, capability, and collusion are responsible for fraudulent activities in organizations.

In conclusion, the fraud hexagon model provides a lively model for financial statement fraud detection with the incorporation of six fundamental elements that encapsulate the multifaceted nature of false actions. Use of the knowledge in this model helps organizations to enhance their fraud detection ability and reduce the chances of fraudulent financial reporting.

Research Method

This study employs a descriptive qualitative approach using a literature review method. This approach was selected to provide an in-depth understanding of integrated strategies for detecting and preventing fraud in the digital era. The research focuses on the synthesis of theoretical frameworks, prior empirical findings, and critical analyses of concepts including investigative auditing, internal auditing, forensic accounting, big data analytics, and whistleblowing systems.

Data for this study were collected through literature review techniques, which involve gathering, examining, and analyzing various secondary sources, including:

- a. Peer-reviewed journal articles relevant to the topic.
- b. Academic and professional research reports.
- c. Official publications from institutions such as the Corruption Eradication Commission (KPK), Statistics Indonesia (BPS), Transparency International, and the Association of Certified Fraud Examiners (ACFE).
- d. Literature related to fraud theories, including the Fraud Triangle, Fraud Diamond, Fraud Pentagon, and Fraud Hexagon models.

The data utilized in this research are qualitative secondary data, comprising prior research findings, report documentation, academic theories, and published statistical data.

The data analysis technique employed is content analysis. The analysis process involved the following steps:

- a. Identifying and categorizing key themes related to fraud detection and prevention.
- b. Synthesizing various concepts such as investigative audit, internal audit, forensic accounting, big data analytics, and whistleblowing systems.
- c. Analyzing the relevance of fraud detection models (Fraud Triangle, Fraud Diamond, Fraud Pentagon, and Fraud Hexagon) within the context of their practical application in Indonesia.
- d. Constructing a holistic and integrated fraud detection model based on the literature review findings.

To ensure the validity of the research findings, source triangulation was conducted by comparing information from multiple credible references and strengthening the analysis with evidence from indexed journals, official reports, and the latest empirical research.

Results and Discussion

An investigative audit is a systematic and methodical process of searching for, discovering, and collecting evidence to determine whether fraudulent acts have occurred. It can be defined as a series of specialized activities, including data collection, verification, processing, analysis, and reporting, the results of which serve as legal evidence in litigation processes involving fraud or other illegal acts under investigation (Nejad et al., 2024).

Based on the above explanation, it can be concluded that the outcomes of an investigative audit are inherently legal in nature and are intended to support litigation procedures. Therefore, it is not surprising that auditors assigned to investigative audits must be capable of mastering and integrating knowledge from various disciplines, such as criminology, information technology, law and litigation, communication, and others—beyond the conventional domains of accounting and auditing. The interdisciplinary nature of this audit type allows the auditor to tailor their approach according to the specific characteristics of the case under investigation.

Moreover, one of the key reasons why investigative audits are considered highly effective in detecting various types of fraud is the flexibility granted to the auditors. They are not constrained by standardized auditing frameworks or strict time limitations, allowing them to select customized methods and approaches and to conduct the audit for as long as necessary until legally admissible evidence is obtained. This flexibility further underscores the reason why numerous prior studies have demonstrated the effectiveness of investigative audits in uncovering fraudulent activity.

The stages of an investigative audit generally include: planning, evidence collection, examination, and reporting, which can be illustrated as follows:



Figure 1. Stage of Investigative Audit

The planning phase in an investigative audit is setting the objectives and scope of the audit, conducting preliminary risk identification, obtaining preliminary information, creating strategies and audit teams, and planning the audit program. The evidence-gathering phase is the collection of information and evidence in support of or refutation of fraud or misconduct allegations.

The examination stage aims to understand how fraud occurred, who was involved, and its impact. The findings at this stage form the basis for the investigative audit report. Evidence validation is very critical because it will determine the reliability and credibility of the final report, as it will be a legal report. Validation at this stage entails authenticity verification of evidence, documentation, and electronic information, verification of findings by triangulation, and determination of the quality of the cumulative evidence. The later reporting process must be transparent and thorough as it normally forms the foundation of remedial or legal action.

Fraud detection and prevention are necessary elements of an effective internal control system. Effective internal audit mechanisms are crucial in preventing fraud risks by ensuring compliance with set policies and procedures and, therefore, improving organizational accountability and integrity. Previous studies indicate that the effectiveness of internal audits

14 is significantly influenced by audit quality, the strength of internal controls, and the implementation of sound corporate governance practices.

The relationship between internal audit quality and fraud prevention is well documented in the literature. For instance, Karmila et al. (2024) highlight that audit quality, an effective internal audit function, and good corporate governance practices are key determinants in preventing fraud at PT Perkebunan Nusantara XIV Takalar. Similarly, Fernando et al. (2020) found that internal audits, control quality, and dysfunctional behaviors among accounting staff significantly influence accounting fraud, emphasizing the importance of effective internal controls. Sayekthi (2022) further supports this by demonstrating the strategic role of robust internal audit functions and sound corporate governance in fraud prevention, particularly in the public service and procurement sectors.

Auditor competence is another critical variable in detecting fraud. Highly competent auditors are more likely to maintain audit quality and thus enhance their capacity to detect fraudulent activities (Arum & Wahyudi, 2021). Hakim and Suryatimur (2022) also assert that optimal operational audits combined with enhanced internal controls are effective strategies for fraud detection and prevention. In this context, a professional internal audit function is crucial for risk mitigation (Rachman & Gatra, 2019).

The implementation of comprehensive internal control systems is equally important in fraud prevention. A well-structured control system ensures continuous compliance with organizational objectives and facilitates effective monitoring of potential fraud risks. Internal control serves as the first line of defense against fraud, ensuring organizational processes align with established standards.

Therefore, the integration of a competent internal audit function, sound corporate governance, and effective internal controls forms the cornerstone of a sustainable anti-fraud system. This strategy is not only relevant to the private sector but is also essential for fostering accountable governance in the public sector.

With the advancement of technology and increasingly diverse data types, big data can serve as a powerful tool for auditors, facilitating faster, more accurate, and more efficient fraud detection (Cahyani et al., 2023). Prior studies reveal that internal audit functions supported by big data and data analytics tools are more effective in identifying various types of fraud (Jarrah et al., 2022). Likewise, other studies show that big data enables auditors—including investigative auditors—to rapidly and accurately analyze vast volumes of both structured and unstructured data, thereby increasing the success rate of fraud detection (Junaidi et al., 2024). Notably, unstructured data often presents challenges during audits, making big data tools especially valuable.

Forensic accounting plays a crucial role in fraud prevention, particularly in detecting and investigating fraud across both public and private sectors. Research shows that forensic accounting not only serves as a tool for identifying fraud but also as a proactive measure to prevent it. One of its main strengths is the ability to detect and analyze suspicious patterns in financial reports. Forensic accounting significantly aids fraud detection, with investigative skills and techniques proving effective in identifying potential misconduct (Umar et al., 2020). Similar findings are reported by Gbegi and Adebisi (2014) and Mahsun et al. (2023), who emphasize the impact of forensic accounting skills and techniques in uncovering and reducing fraud, particularly in the public sector.

Moreover, Rehman and Hashim (2021) argue that forensic accounting enhances sustainable corporate governance by reducing fraud and corruption levels. This highlights its role not just in detection but also as an integral part of broader risk management strategies. Muse et al. (2015) also show that effective fraud risk assessment enhances auditors' ability to detect and prevent organizational fraud.

In fraud prevention, forensic accounting also strengthens internal audit systems. According to Suleiman and Ahmi (2018), forensic accounting techniques help mitigate corruption and improve public sector performance. The application of forensic techniques in internal audits has proven effective in enhancing transparency and accountability—two critical factors in fraud prevention.

Dunaev et al. (2021) further note that forensic accounting comprises a series of control measures designed to prevent illegal activities and investigate fraud. Thus, forensic accounting serves both reactive and proactive roles in creating a safer organizational environment.

Overall, forensic accounting is a highly effective tool in fraud prevention and detection. By combining robust investigative skills, advanced analytical techniques, and integration with internal audit systems, forensic accounting helps organizations reduce fraud risk and enhance financial report integrity.

Whistleblowing systems are also highly effective in organizational fraud prevention. Studies show that such systems encourage active employee participation in reporting violations, thereby facilitating fraud detection and prevention. Putri et al. (2022) found that whistleblowing systems significantly influence fraud disclosure, aligning with prosocial organizational behavior theory, which posits that individual actions to report misconduct enhance overall organizational well-being. This is reinforced by Triantoro et al. (2019), who describe whistleblowing systems as deterrents to potential fraud due to their clear reporting mechanisms.

Furthermore, whistleblowing systems enhance the effectiveness of audit committees and internal audits in fraud detection. Citranagari (2022) shows that whistleblowing mechanisms strengthen the ability of audit committees and internal auditors to detect fraud. This highlights the importance of synergy between whistleblowing systems and auditing functions in fostering a less fraud-tolerant environment. Similarly, Meitasir et al. (2022), in a literature review, affirm that whistleblowing systems play a strategic role in fraud prevention by encouraging individuals to report workplace misconduct.

Whistleblowing systems also help shape ethical organizational cultures. Effective mechanisms protect whistleblowers' anonymity, encouraging them to report suspected fraud without fear of retaliation (Nurul & Herliansyah, 2021). This underscores the importance of supportive organizational cultures in enhancing whistleblowing effectiveness. Maulida and Indah (2021) further add that whistleblowing effectiveness can be measured by the rate of fraud detection, prevention, and response speed compared to other methods.

Ramadhani et al. (2022) emphasize that whistleblowing implementation is vital for fraud prevention as it fosters mutual accountability among employees. Sari (2023) also finds that companies implementing whistleblowing systems report fewer violations, suggesting their effectiveness in deterring fraud. Wulandari et al. (2024) further support that whistleblowing systems are dominant variables in controlling accounting fraud.

In conclusion, whistleblowing systems are key components in fraud prevention strategies. By promoting transparency, accountability, and a safe environment for reporting misconduct, organizations can significantly reduce fraud risk and strengthen operational integrity.

A holistic fraud detection model that integrates investigative auditing, internal auditing, big data, forensic accounting, and whistleblowing systems represents a highly relevant approach in the fight against organizational fraud and can be illustrated as follows:

The planning phase in an investigative audit is setting the objectives and scope of the audit, conducting preliminary risk identification, obtaining preliminary information, creating strategies and audit teams, and planning the audit program. The evidence-gathering phase is the collection of information and evidence in support of or refutation of fraud or misconduct allegations.

The examination stage aims to understand how fraud occurred, who was involved, and its impact. The findings at this stage form the basis for the investigative audit report. Evidence validation is very critical because it will determine the reliability and credibility of the final report, as it will be a legal report. Validation at this stage entails authenticity verification of evidence, documentation, and electronic information, verification of findings by triangulation, and determination of the quality of the cumulative evidence. The later reporting process must be transparent and thorough as it normally forms the foundation of remedial or legal action.

Fraud detection and prevention are necessary elements of an effective internal control system. Effective internal audit mechanisms are crucial in preventing fraud risks by ensuring compliance with set policies and procedures and, therefore, improving organizational accountability and integrity. Previous studies indicate that the effectiveness of internal audits is significantly influenced by audit quality, the strength of internal controls, and the implementation of sound corporate governance practices.

The relationship between internal audit quality and fraud prevention is well documented in the literature. For instance, Karmila et al. (2024) highlight that audit quality, an effective internal audit function, and good corporate governance practices are key determinants in preventing fraud at PT Perkebunan Nusantara XIV Takalar. Similarly, Fernando et al. (2020) found that internal audits, control quality, and dysfunctional behaviors among accounting staff significantly influence accounting fraud, emphasizing the importance of effective internal controls. Sayekthi (2022) further supports this by demonstrating the strategic role of robust internal audit functions and sound corporate governance in fraud prevention, particularly in the public service and procurement sectors.

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The implementation of comprehensive internal control systems is equally important in fraud prevention. A well-structured control system ensures continuous compliance with organizational objectives and facilitates effective monitoring of potential fraud risks. Internal control serves as the first line of defense against fraud, ensuring organizational processes align with established standards.

Therefore, the integration of a competent internal audit function, sound corporate governance, and effective internal controls forms the cornerstone of a sustainable anti-fraud system. This strategy is not only relevant to the private sector but is also essential for fostering accountable governance in the public sector.

With the advancement of technology and increasingly diverse data types, big data can serve as a powerful tool for auditors, facilitating faster, more accurate, and more efficient fraud detection (Cahyani et al., 2023). Prior studies reveal that internal audit functions supported by big data and data analytics tools are more effective in identifying various types of fraud (Jarrah et al., 2022). Likewise, other studies show that big data enables auditors—including investigative auditors—to rapidly and accurately analyze vast volumes of both structured and unstructured data, thereby increasing the success rate of fraud detection (Junaidi et al., 2024). Notably, unstructured data often presents challenges during audits, making big data tools especially valuable.

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financial reports. Forensic accounting significantly aids fraud detection, with investigative skills and techniques proving effective in identifying potential misconduct (Umar et al., 2020). Similar findings are reported by Gbegi and Adebisi (2014) and Mahsun et al. (2023), who emphasize the impact of forensic accounting skills and techniques in uncovering and reducing fraud, particularly in the public sector.

Moreover, Rehman and Hashim (2021) argue that forensic accounting enhances sustainable corporate governance by reducing fraud and corruption levels. This highlights its role not just in detection but also as an integral part of broader risk management strategies. Muse et al. (2015) also show that effective fraud risk assessment enhances auditors' ability to detect and prevent organizational fraud.

In fraud prevention, forensic accounting also strengthens internal audit systems. According to Suleiman and Ahmi (2018), forensic accounting techniques help mitigate corruption and improve public sector performance. The application of forensic techniques in internal audits has proven effective in enhancing transparency and accountability—two critical factors in fraud prevention.

Dunaev et al. (2021) further note that forensic accounting comprises a series of control measures designed to prevent illegal activities and investigate fraud. Thus, forensic accounting serves both reactive and proactive roles in creating a safer organizational environment.

Overall, forensic accounting is a highly effective tool in fraud prevention and detection. By combining robust investigative skills, advanced analytical techniques, and integration with internal audit systems, forensic accounting helps organizations reduce fraud risk and enhance financial report integrity.

Whistleblowing systems are also highly effective in organizational fraud prevention. Studies show that such systems encourage active employee participation in reporting violations, thereby facilitating fraud detection and prevention. Putri et al. (2022) found that whistleblowing systems significantly influence fraud disclosure, aligning with prosocial organizational behavior theory, which posits that individual actions to report misconduct enhance overall organizational well-being. This is reinforced by Triantoro et al. (2019), who describe whistleblowing systems as deterrents to potential fraud due to their clear reporting mechanisms.

Furthermore, whistleblowing systems enhance the effectiveness of audit committees and internal audits in fraud detection. Citranagari (2022) shows that whistleblowing mechanisms strengthen the ability of audit committees and internal auditors to detect fraud. This highlights the importance of synergy between whistleblowing systems and auditing functions in fostering a less fraud-tolerant environment. Similarly, Meitasir et al. (2022), in a literature review, affirm that whistleblowing systems play a strategic role in fraud prevention by encouraging individuals to report workplace misconduct.

Whistleblowing systems also help shape ethical organizational cultures. Effective mechanisms protect whistleblowers' anonymity, encouraging them to report suspected fraud without fear of retaliation (Nurul & Herliansyah, 2021). This underscores the importance of supportive organizational cultures in enhancing whistleblowing effectiveness. Maulida and Indah (2021) further add that whistleblowing effectiveness can be measured by the rate of fraud detection, prevention, and response speed compared to other methods.

Ramadhani et al. (2022) emphasize that whistleblowing implementation is vital for fraud prevention as it fosters mutual accountability among employees. Sari (2023) also finds that companies implementing whistleblowing systems report fewer violations, suggesting their effectiveness in deterring fraud. Wulandari et al. (2024) further support that whistleblowing systems are dominant variables in controlling accounting fraud.

In conclusion, whistleblowing systems are key components in fraud prevention strategies. By promoting transparency, accountability, and a safe environment for reporting misconduct, organizations can significantly reduce fraud risk and strengthen operational integrity.

A holistic fraud detection model that integrates investigative auditing, internal auditing, big data, forensic accounting, and whistleblowing systems represents a highly relevant approach in the fight against organizational fraud and can be illustrated as follows:



Figure 2. Fraud Detection Model

Investigative auditing has proven effective in detecting fraud through more focused and detailed procedures. Its core components include investigative techniques, evidence collection, and case analysis. Research indicates that investigative audits not only expedite the fraud disclosure process but also enhance the accuracy of fraud identification (Anthony et al., 2023).

Internal auditing also plays a vital role in fraud prevention, particularly in the digital era. Key components of internal audit include internal control evaluation, risk assessment, and compliance checks. Studies have shown that the application of information technology in internal auditing significantly enhances its effectiveness in detecting and preventing fraud. Through the use of e-audit applications, auditors can perform deeper data analyses and identify potential fraud at an earlier stage (Lonto & Pandowo, 2023). Furthermore, high-quality internal audits—characterized by auditor independence and competence—contribute substantially to improved fraud management.

The application of professional skepticism by internal auditors is also a critical factor in fraud detection. Auditors with strong investigative skills and practical experience tend to be more effective in executing audit procedures and uncovering fraud. This underscores the importance of ongoing competency development through training and hands-on experience to enhance audit effectiveness (Octavianingrum, 2022).

Moreover, the integration of big data into the audit process offers significant opportunities for improving fraud detection. The use of big data technologies allows auditors to analyze vast and complex datasets, enabling the identification of patterns and anomalies that may indicate fraudulent activities (Nugrahanti et al., 2023). Empirical findings demonstrate that the integration of big data positively impacts audit effectiveness, thereby strengthening an organization's ability to detect and prevent fraud (Nugrahanti et al., 2023).

Forensic accounting also plays a crucial role in both fraud prevention and detection, across public and private sectors. Beyond identifying fraud, forensic accounting functions proactively to prevent it by analyzing suspicious patterns within financial reports. Investigative skills and techniques utilized in forensic accounting have proven effective in uncovering and mitigating fraud while also reinforcing sustainable corporate governance. Additionally,

forensic accounting strengthens internal audit systems, enhances transparency, and mitigates fraud risks, making it an essential component of organizational risk management and control strategies.

Whistleblowing systems have also emerged as effective tools for fraud detection and prevention within organizations. Research shows that these systems encourage active employee participation in reporting violations, thereby contributing to fraud disclosure and enhancing organizational well-being. Furthermore, whistleblowing mechanisms enhance the roles of audit committees and internal auditors in detecting fraud, fostering a critical synergy in establishing an anti-fraud environment. These systems also help shape ethical organizational cultures by protecting whistleblowers from retaliation, and by promoting transparency and accountability. Overall, the implementation of an effective whistleblowing system can significantly reduce fraud risk, strengthen operational integrity, and support a more comprehensive prevention strategy.

The holistic model that integrates investigative audit, internal audit, big data, forensic accounting, and whistleblowing systems provides a more comprehensive approach to fraud detection and prevention. The strategic use of modern technologies, coupled with the enhancement of auditor quality and competencies, equips organizations to better confront future fraud challenges.

Conclusion

Fraud remains a significant challenge in Indonesia, posing serious threats to economic stability and public trust. This paper highlights the critical importance of adopting a holistic and integrated approach to fraud detection and prevention—one that combines investigative auditing, internal auditing, forensic accounting, big data analytics, and whistleblowing systems. Investigative audits, with their flexible and in-depth methodologies, have demonstrated high effectiveness in uncovering fraudulent activities, while internal audits play a key role in reinforcing internal controls and ensuring regulatory compliance. Forensic accounting contributes through rigorous financial analysis aimed at detecting anomalies, and big data analytics enhances the capability to process large-scale datasets to identify suspicious patterns. Furthermore, an effective whistleblowing system fosters transparency and accountability, enabling earlier detection of fraud.

The findings suggest that a comprehensive fraud detection model significantly strengthens prevention efforts, contributing to improved governance and organizational integrity. Moving forward, stakeholders must adopt this integrated strategy by leveraging technological advancements and cultivating ethical behavior across all organizational levels. By doing so, Indonesia can reduce the risk of fraud, rebuild public trust, and achieve sustainable economic growth. Future research should explore the practical challenges associated with implementing such models and assess their adaptability across different sectors to further enhance the national fraud prevention framework.

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