Journal of Financial Supervision and Audit
Volume 4, Number 1, 2025

The Impact of Internal Auditor Training Effectiveness on Enhancing Anomaly Detection Rates

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Abstract

Article history:
Received: January 19, 2025
Revised: February 28, 2025
Accepted: April 17, 2025
Published: June 30, 2025

Keywords:
Auditor Competence,
Audit Technology,
Deviation Detection,
Internal Audit,
Internal Auditor Training.

Identifier:
Zera Open
Page: 28-42
https://zeraopen.com/journal/jfsa

This study investigates the critical role of internal auditor training effectiveness in improving the detection of organizational anomalies. High-quality training is essential for equipping auditors with the necessary skills, knowledge, and professional skepticism to identify irregularities, such as fraud or procedural violations, that can jeopardize organizational integrity. By conducting a qualitative literature review, this research explores how training quality influences auditors' ability to detect anomalies, emphasizing factors such as curriculum relevance, teaching methodologies, and technological integration. The findings highlight that comprehensive, adaptive, and practical training significantly enhances auditors' competence in recognizing complex irregularities, thereby strengthening internal control systems. This study addresses a gap in existing research by focusing on training as a primary determinant of audit effectiveness and offers practical insights for organizations to develop targeted training programs that bolster anomaly detection and governance.

1. Introduction

Internal auditing serves as a cornerstone of robust organizational governance, playing a pivotal role in upholding financial integrity, ensuring regulatory compliance, and identifying anomalies that could undermine institutional stability. As the first line of defense in internal oversight, auditors act as a critical early warning system against irregularities and fraudulent activities. However, the growing complexity of organizational operations has heightened the risk of undetected fraud and non-compliance. According to a 2022 report by the Association of Certified Fraud Examiners (ACFE), global fraud-related losses reached USD 4.7 trillion annually, with internal audits being instrumental in uncovering approximately 42% of these cases. This highlights the indispensable role of internal auditing in mitigating risks and reinforcing control mechanisms.

In Indonesia, delayed detection of irregularities remains a persistent challenge. The 2023 Supreme Audit Agency (*Badan Pemeriksa Keuangan*/BPK) report revealed over 14,000 instances of non-compliance in local government financial management, leading to losses of IDR 18.3 trillion. Many of these issues could have been mitigated through timely and effective internal audits. However, limitations in auditors' expertise, technical proficiency, and preparedness for evolving fraud schemes often hinder their effectiveness.

A key determinant of internal audit success is the quality of training provided to auditors. Effective training goes beyond routine formalities, serving as a vital tool to enhance auditors' capabilities in understanding regulations, mastering modern audit techniques, leveraging data analytics, and honing investigative skills. High-

quality training must be practical, relevant to contemporary challenges, and adaptable to technological advancements and sophisticated fraud tactics. Unfortunately, many existing training programs are overly generic, lacking the depth and specificity needed to address modern fraud dynamics, and often fail to undergo rigorous evaluation of their impact on auditors' detection capabilities.

While prior research has extensively explored factors such as auditor independence, experience, and ethical conduct in relation to audit quality, the specific influence of training quality on anomaly detection has received limited attention. Studies like those by Grima et al. (2023) and Abdulai et al. (2021) have focused on independence and experience, respectively, but few have delved into how training directly enhances auditors' ability to identify irregularities. Research by Siahaan et al. (2024) and Wahyuni (2023) acknowledges the importance of auditor capacity building but lacks detailed insights into the specific training components, such as content, methods, and evaluation, that drive effective anomaly detection.

This study seeks to address this gap by examining how the quality of internal auditor training impacts the detection of organizational irregularities. It aims to identify critical training elements, including instructional approaches, duration, content specificity, and evaluation methods, that significantly enhance auditors' practical capabilities. By shedding light on these factors, the research intends to provide actionable recommendations for organizations to design targeted, high-impact training programs. Ultimately, the findings aim to guide policymakers and institutional leaders in strengthening internal audit systems, improving risk management, and fortifying organizational governance.

2. Methods

This study employs a qualitative approach through a comprehensive literature review to explore the relationship between the effectiveness of internal auditor training and the rate of anomaly detection. The qualitative methodology is well-suited for this research, as it facilitates an in-depth examination of the interplay between the independent variable, training quality, and the dependent variable, anomaly detection rates. The research process involves a systematic analysis of academic literature, scholarly articles, and other credible sources relevant to the topic.

The literature selection process was methodical, prioritizing sources based on three key criteria: relevance to the research variables, recency of publication to ensure up-to-date insights, and the credibility of the sources to maintain academic rigor. Selected materials were carefully reviewed to identify patterns, theoretical frameworks, and empirical evidence that elucidate how training quality influences auditors' ability to detect irregularities.

Data analysis was conducted using a descriptive-qualitative approach, focusing on interpreting and synthesizing findings from the literature to construct a cohesive conceptual framework. Rather than pursuing statistical quantification, the study emphasizes theoretical and interpretive insights to provide a nuanced understanding of the relationship between training quality and anomaly detection. The resulting framework aims to contribute to both academic discourse and practical applications, offering valuable guidance for organizations seeking to enhance their

internal audit processes and strengthen governance through improved training strategies.

3. Results

3.1. The Role of Effective Auditor Training in Enhancing Anomaly Detection

The quality of training provided to internal auditors is a pivotal factor in their ability to identify irregularities, such as fraud, procedural non-compliance, or material errors, which can significantly impact an organization's operational and financial integrity. Effective training equips auditors with the technical expertise, analytical acumen, and professional skepticism necessary to navigate the complexities of modern audit environments. This section explores how high-quality training influences auditors' capacity to detect anomalies, drawing on recent studies and expert perspectives (Pulliam et al., 2022).

Training quality is defined by its ability to deliver relevant content, employ effective teaching methodologies, leverage qualified instructors, and integrate advanced technological tools. Well-designed training programs provide auditors with a deep understanding of regulatory frameworks, contemporary auditing techniques, and data analysis skills, while fostering ethical conduct and independence (Abdulai et al., 2021). Beyond theoretical knowledge, effective training incorporates practical elements such as real-world case studies, fraud detection simulations, and the use of cutting-edge tools like data analytics and artificial intelligence. These components enable auditors to address dynamic and intricate audit challenges effectively (Nonnenmacher & Gómez, 2021).

The link between training quality and anomaly detection is evident in auditors' enhanced ability to recognize signs of irregularities. High-quality training empowers auditors to pinpoint high-risk areas within organizational processes, such as procurement, inventory management, or financial reporting, where manipulations are more likely to occur. For instance, training focused on risk assessment enables auditors to develop targeted audit strategies that uncover potential anomalies (Khan et al., 2020). Additionally, programs that emphasize investigative techniques, such as forensic accounting and in-depth data analysis, allow auditors to adopt a proactive stance in identifying irregularities that may not surface during standard audits (Bonrath & Eulerich, 2024).

Technological advancements play a crucial role in modern auditor training. Programs that incorporate tools like data analytics software enable auditors to efficiently analyze large datasets, identifying suspicious patterns such as irregular transactions or duplicate payments. For example, training in data analytics equips auditors to detect anomalies like unauthorized transfers or transactions occurring outside normal operational hours, which are often indicative of fraudulent activity (Bonrath & Eulerich, 2024). Such technological proficiency is increasingly vital in today's digital landscape, where organizations generate vast amounts of complex data.

In summary, high-quality training enhances auditors' technical and analytical capabilities, enabling them to detect anomalies with greater precision and efficiency. By integrating relevant content, practical exercises, and technology-driven approaches, training programs empower auditors to serve as effective gatekeepers

of organizational integrity, safeguarding against financial and reputational risks (Chiarini et al., 2021).

3.2. Theoretical Perspectives, Empirical Findings, and Strategic Implications

The effectiveness of internal auditor training is a cornerstone of audit quality, directly influencing the ability to detect anomalies such as fraud, material errors, and procedural violations. This section provides an in-depth exploration of the theoretical foundations, empirical evidence, and practical implications of how high-quality training enhances auditors' anomaly detection capabilities. By synthesizing scholarly perspectives and empirical findings, this discussion constructs a comprehensive framework to guide organizations in developing training programs that strengthen internal controls and safeguard organizational integrity.

Theoretical perspectives emphasize that training is essential for equipping auditors with the technical and professional competencies needed to address the complexities of modern auditing. Christ et al. (2021) argue that audit quality relies heavily on auditors' technical expertise and practical experience, both of which are cultivated through structured, continuous training programs. They highlight that training must go beyond basic compliance to develop auditors' ability to tackle sophisticated fraud schemes and regulatory challenges. Grima et al. (2023) further assert that training programs incorporating investigative techniques, risk assessment, and ethical principles foster a high level of professionalism, enabling auditors to identify not only overt errors but also subtle signs of fraud hidden within financial records. Ilori et al. (2024) add that training must integrate advanced analytical tools

to prepare auditors for the data-driven nature of contemporary audits, ensuring they can navigate complex risk dynamics in the digital era.

From a theoretical standpoint, training serves as a critical mechanism for developing a multifaceted skill set. Technical skills, such as proficiency in accounting standards and audit methodologies, are foundational for conducting thorough audits. However, professional attributes like skepticism, independence, and ethical judgment are equally vital, as they enable auditors to maintain objectivity and vigilance in detecting irregularities (Christ et al., 2021). Theoretical frameworks also suggest that training must be adaptive, addressing emerging trends such as digitalization, globalization, and evolving regulatory landscapes. For instance, training that covers compliance with international standards like the General Data Protection Regulation (GDPR) or anti-money laundering regulations equips auditors to identify violations with significant organizational impact.

Empirical research provides robust evidence of the positive correlation between training quality and anomaly detection. Nonnenmacher et al. (2021) demonstrate that targeted training programs significantly enhance auditors' knowledge frameworks, improving their ability to detect discrepancies in financial statements. Their study emphasizes that training focused on analytical skills, such as risk assessment and data interpretation, enables auditors to identify anomalies that might otherwise go unnoticed. Similarly, DeSimone & Rich (2020) found that technology-based training, particularly in big data analytics and artificial intelligence, markedly improves the efficiency and scope of risk analysis. By leveraging these tools, auditors can analyze vast datasets to uncover patterns indicative of fraud, such

as irregular transactions or unauthorized account activities. Ibrani (2020) further supports these findings, noting that practical training experiences, such as case studies and simulations, play a crucial role in enhancing auditors' ability to recognize risks and errors, thereby improving overall audit quality.

The design and delivery of training programs are critical to their success. To remain relevant, training curricula must reflect the latest developments in accounting standards, such as updates to International Financial Reporting Standards (IFRS), and address industry-specific fraud trends. For example, training should include real-world scenarios, such as manipulation in procurement processes or misreporting in financial statements, to prepare auditors for practical challenges. Practical approaches, such as fraud case simulations and hands-on exercises with audit software, are essential for bridging the gap between theoretical knowledge and field application. These methods allow auditors to practice identifying complex patterns of irregularities in realistic settings, enhancing their detection capabilities (Siahaan et al., 2024). Moreover, training must be conducted regularly to ensure auditors remain updated on emerging technologies, regulatory changes, and fraud tactics.

The integration of technology into training programs is transformative, enabling auditors to keep pace with the demands of the digital era. Tools like big data analytics, robotic process automation, and artificial intelligence allow auditors to efficiently process and analyze large datasets, identifying anomalies such as unusual payment patterns or transactions occurring outside standard operating hours. For example, training in data analytics equips auditors to detect duplicate transactions or unregistered account transfers, which are often indicative of

fraudulent activity (DeSimone & Rich, 2020). Forensic accounting training further enhances auditors' ability to conduct in-depth investigations, uncovering hidden anomalies that routine audits might overlook (Bonrath & Eulerich, 2024). By mastering these technologies, auditors can expand the scope and accuracy of their audits, ensuring they can detect irregularities in increasingly complex data environments.

Despite the clear benefits of high-quality training, several challenges must be addressed to maximize its impact. Resource constraints, particularly in small and medium-sized organizations, pose a significant barrier. Advanced training programs often require substantial investments in software, hardware, and qualified instructors, which may be prohibitive for organizations with limited budgets (Bonrath & Eulerich, 2024). This can lead to disparities in training quality, leaving some auditors less equipped to handle complex audit tasks. Additionally, resistance to change among auditors, particularly those accustomed to traditional methods, can hinder the adoption of new techniques and technologies. Some auditors may prefer familiar approaches, which may be less effective in detecting sophisticated fraud in today's dynamic environment (Islam et al., 2023). To address this, organizations must foster a culture of continuous learning, encouraging auditors to embrace innovation and adapt to new tools and methodologies.

Another challenge is the varying levels of digital literacy among auditors. Not all auditors possess the foundational skills needed to leverage advanced technologies, which can limit the effectiveness of technology-based training. To overcome this, training programs should include introductory modules on digital skills, ensuring all

auditors can utilize tools like data analytics software. Tailoring training to the specific needs and experience levels of participants is also critical. For instance, novice auditors may require foundational training in audit principles, while experienced auditors might benefit from advanced modules on emerging fraud trends or specialized audit technologies (Islam et al., 2023). By addressing these disparities, organizations can ensure that training is accessible and effective for all auditors.

The practical implications of effective training are profound. Organizations that prioritize high-quality training can significantly enhance their internal auditors' ability to detect anomalies, thereby protecting assets and maintaining reputational integrity. Viewing training as a strategic investment rather than a routine expense is essential for maximizing its impact. Collaboration with professional organizations, such as the Institute of Public Accountants of Indonesia, or external training providers can help organizations develop curricula that are aligned with industry standards and address current challenges. Such partnerships ensure that training content remains relevant, covering topics like regulatory updates, technological advancements, and industry-specific fraud patterns (Christ et al., 2021).

Training must also reinforce auditors' independence and ethical conduct. External pressures from management or other stakeholders can undermine auditors' objectivity, potentially leading to overlooked irregularities. By emphasizing ethical principles and professional skepticism, training programs help auditors maintain integrity in their work, ensuring they can effectively identify and report anomalies (Christ et al., 2021). Furthermore, training should address global challenges, such as compliance with international regulations like GDPR or anti-money laundering

standards. These topics are increasingly relevant in a globalized business environment where cross-border transactions and technology-driven fraud are prevalent (Ilori et al., 2024).

In the context of increasing business complexity, driven by globalization and digitalization, the importance of auditor training cannot be overstated. As organizations face new risks, such as cyber fraud and regulatory violations, auditors must be equipped to adapt to these challenges. Training programs that address these issues enable auditors to remain relevant and effective, ensuring they can detect irregularities with significant organizational impact. For example, training on anti-money laundering techniques can help auditors identify suspicious financial transactions, while instruction on GDPR compliance ensures adherence to data protection standards (Siahaan et al., 2024).

In conclusion, the quality of internal auditor training has a profound impact on anomaly detection capabilities. Comprehensive, practical, and technology-driven training enhances auditors' technical skills, analytical abilities, and professional attributes, enabling them to identify irregularities with greater precision. Despite challenges like resource limitations and resistance to change, organizations can overcome these barriers by investing in tailored training programs, fostering a culture of continuous learning, and leveraging partnerships with professional bodies. By prioritizing training, organizations strengthen their internal controls, improve financial reporting accuracy, and safeguard their operational and reputational integrity, ensuring long-term sustainability in an increasingly complex business landscape.

4. Conclusion

The quality of internal auditor training significantly enhances the ability to detect irregularities, equipping auditors with the technical expertise, analytical skills, and professional skepticism needed to identify anomalies, material errors, and potential fraud. Comprehensive, technology-driven training, incorporating tools like big data analytics, forensic auditing, and practical simulations, improves audit accuracy and efficiency, particularly in navigating the complexities of the digital era. Empirical evidence supports that such training strengthens auditors' capacity to address dynamic fraud trends and regulatory challenges, ensuring robust internal controls and reliable financial reporting.

However, challenges such as resource constraints, resistance to new methodologies, and varying digital literacy levels among auditors can hinder training effectiveness. Organizations must view training as a strategic investment, supported by modern infrastructure, tailored curricula, and a culture of continuous learning. Collaborations with professional bodies like the Institute of Public Accountants of Indonesia can ensure training remains relevant and impactful. By prioritizing high-quality training, organizations can enhance anomaly detection, safeguard assets, and protect reputational integrity, fostering long-term operational sustainability.

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