



FORENSIC ACCOUNTING AND FRAUD DETECTION IN PUBLIC HIGHER INSTITUTIONS IN GOMBE METROPOLIS

Ibrahim Isa Onuku^{1*}, Agwadu Sunday Gwadzi² and Adejoh Matthew Inalegwu³

¹ Bursary Department, Federal College of Education (Tech) Gombe, Gombe State Nigeria.

^{2&3} Department of Accountancy, Federal Polytechnic Kaltingo, Gombe, Nigeria.

*Corresponding Author: ibrahim.isaonuku@gmail.com 08063417914

Abstract

Forensic accounting is a specialized discipline within accounting that merges accounting, auditing, and investigative skills to address financial misconduct. This discipline plays a crucial role in detecting financial fraud, identifying discrepancies, and providing evidence for legal proceedings. This study investigates the role of forensic accounting in fraud detection within public higher institutions in Gombe Metropolis, Gombe State, Nigeria. The primary objective is to assess how forensic accounting practices mitigate in these institutions. The study targeted a population of 86 bursary and audit staff members from public higher institutions in Gombe Metropolis. Data were collected through a structured questionnaire, and hypotheses were tested using linear regression analysis. Findings reveal that fraud detection and prevention measures are crucial in enhancing perceptions of forensic accounting effectiveness. While challenges and limitations associated with forensic accounting are acknowledged, they are less influential than fraud detection and prevention measures. Implementing forensic accounting practices enhances the effectiveness of fraud detection and prevention, thereby improving perceptions of its value in protecting institutional resources. The study recommends that institutions should improve fraud detection and prevention mechanisms, enhance compliance and legal frameworks to support forensic accounting, and provide training for staff on the latest forensic accounting practices and fraud prevention techniques.

Keyword: *Forensic Accounting, Fraud Detection, Financial Fraud, Public higher institutions.*

Introduction

Forensic accounting combines accounting, auditing, and investigative skills to address financial misconduct. It plays a critical role in detecting fraud, identifying discrepancies, and providing evidence for legal proceedings, thereby enhancing financial transparency and accountability. Forensic accountants scrutinize financial records to uncover irregularities, often collaborating with law enforcement and legal professionals to investigate crimes like fraud, embezzlement, and money laundering. To excel, forensic accountants require a deep understanding of accounting principles, financial analysis, and legal frameworks, alongside skills in data analysis and fraud detection techniques. The demand for such expertise is growing as organizations increasingly recognize the importance of combating financial fraud (Adesina et al., 2020).

In Nigeria, financial fraud is prevalent across sectors, including politics, banking, and education, amplifying the need for forensic accounting (Mukoro, 2013). Public higher education institutions are particularly vulnerable due to the substantial public funds they manage. Effective forensic accounting can strengthen internal controls, enhance accountability, and safeguard institutional resources (Zhou & Murray, 2023). A notable case in Gombe State highlights this need: the College of Health Science and Technology Kaltingo was recently scrutinized for significant financial fraud, including embezzlement and mismanagement. A forensic audit was recommended to address these issues, underscoring the inadequacy of traditional auditing methods for complex financial crimes. The panel recommended a comprehensive forensic audit of the College's financial records to investigate these fraudulent activities and address irregularities, it also suggested actions such as compelling past management to return government property and refund misappropriated funds. Despite the critical need for forensic accounting to detect and prevent such fraud, traditional auditing methods have proven inadequate in addressing the complexities of these financial crimes (The Nation, 2023).

This case illustrates the urgent need for forensic accounting in Gombe State's higher institutions to enhance financial transparency and accountability, the integration of forensic accounting practices offers a promising solution but faces challenges such as limited access to financial data, institutional resistance, and ethical dilemmas. This study aims to explore the role and potential of forensic accounting in combating financial crimes within these institutions, focusing on effective strategies to improve



financial oversight and institutional integrity. The study also explores the role of forensic accounting in combating financial fraud in Gombe State's higher education institutions. It focuses on effective strategies for improving financial oversight and institutional integrity, addressing challenges such as limited data access and institutional resistance.

The objective of this study is to determine how the use of Forensic Accounting will help to reduce Fraud cases in the public higher institutions in Gombe metropolis, Gombe State Nigeria, while the specific objectives are to:

- I. To explore the role of forensic accounting in detecting and preventing fraud in public higher institutions.
- II. To identify the challenges and limitations associated with the application of forensic accounting in these institutions.

Based on the above objectives, the following research questions were raised:

- I. What role does forensic accounting play in detecting and preventing financial fraud in public higher education institutions in Gombe State?
- II. What are the challenges and limitations faced by forensic accountants in implementing forensic accounting practices within these institutions?

The study will test the following hypotheses:

- I. H₀₁: Forensic accounting does not significantly contribute to the detection and prevention of financial fraud in public higher education institutions in Gombe State.
- II. H₀₂: There are no significant challenges or limitations in applying forensic accounting practices in public higher education institutions in Gombe State.

This study is focused on the public higher education institutions within Gombe Metropolis, specifically Gombe State University and the Federal College of Education (Technical), Gombe. The research was conducted in the year 2024.

This study is important to various stakeholders in the field of forensic accounting and financial oversight. Forensic accounting practitioners will benefit from the study's insights into effective strategies and best practices for detecting and preventing financial fraud, enhancing their investigative techniques. Academicians will find the research valuable as it contributes to the academic body of knowledge, offering a comprehensive analysis that serves as a foundation for further scholarly work. Policy makers will gain from the study's identification of strategies to address financial mismanagement and safeguard public resources, providing actionable recommendations for policy development and implementation of best practices to improve financial oversight. Additionally, audit standard setters will receive guidance on improving current auditing practices and fraud detection standards in the Nigerian public sector, particularly within the education sector.

This study begins with an introduction that outlines the background, problem statement, objectives, research questions, hypotheses, significance, and scope. It then delves into a review of conceptual, empirical, and theoretical literature on forensic accounting and fraud detection. Following this, the research methodology is detailed, covering design, sampling, and data analysis. The findings from case study institutions are presented and analyzed, assessing the impact of forensic accounting practices. Finally, the study concludes with a summary of findings, along with conclusions and recommendations aimed at improving forensic accounting practices and policies.

Literature Review

The Concept of Forensic Accounting

Forensic accounting applies accounting, auditing, and investigative skills to detect and prevent financial misconduct. It includes investigating discrepancies, analyzing records, and providing expert testimony in legal contexts (Schuchter & Levi, 2016; Sidharta & Fitriyah, 2015). The Association of Certified Fraud Examiners (ACFE) describes it as using accounting expertise in civil or criminal litigation, encompassing internal controls evaluation and fraud investigation (Uyar, 2021). Howard and Sheetz (2006) emphasize its courtroom relevance, where forensic accountants clarify complex financial issues. While these definitions highlight its significance, they often underemphasize systemic challenges, such as organizational resistance or inadequate resources, which may hinder its effectiveness.

Concept of Fraud



Fraud involves intentional deception for unlawful gain, ranging from embezzlement to misrepresentation (Bhasin, 2016). The fraud triangle identifies three contributors: pressure, opportunity, and rationalization (Schuchter & Levi, 2016). Although widely accepted, this framework has been critiqued for focusing on individual motivations while neglecting systemic enablers, such as weak governance structures or regulatory loopholes (Taylor, 2022; Smith & Lewis, 2023). A broader perspective incorporating structural factors could better address fraud's complexities.

White-Collar Fraud

White-collar fraud encompasses non-violent financial crimes like insider trading and embezzlement. Motivations often include personal financial gain and pressure to meet targets (Schuchter & Levi, 2016). This type of fraud significantly impacts public institutions, undermining trust and financial integrity (Taylor, 2022). While forensic accounting offers tools to combat white-collar fraud, its effectiveness depends on addressing organizational culture and systemic vulnerabilities, as Sidharta and Fitriyah (2015) noted in their study on Indonesia's public sector.

Role of Forensic Accounting in Fraud Detection

Forensic accounting combines investigative techniques with accounting principles to uncover fraud. It serves as a proactive tool for ensuring organizational accountability (Schuchter & Levi, 2016). The fraud triangle provides insights into motivations behind fraudulent behaviors; however, critics argue that it oversimplifies fraud by neglecting systemic factors like inadequate oversight or collusion (Adebisi et al., 2016). Empirical studies support the integration of forensic accounting into financial management strategies, highlighting its potential for enhancing transparency and public trust (Johnson & Lee, 2022; Smith & Lewis, 2023).

Empirical review

Yasmin (2023), study forensic accounting significantly aids fraud prevention. A study in India using multiple regression analysis on data from 60 managers, accountants, and auditors recommended prioritizing investments in forensic techniques and training. Ismail (2021), evaluating Nigerian ministries, forensic accounting was found effective in uncovering fraud and supporting legal actions. Data from 150 auditors and accountants were analyzed using ANOVA, highlighting its role in fraud prevention and legal compliance. Adesina et al. (2020), studied forensic auditors reduced financial fraud and improved stability in Nigeria's banking sector, a survey across 17 Deposit Money Banks recommended establishing dedicated forensic departments for better fraud management. Okoye et al. (2020), examining labor fraud detection in Nigeria's public sector, the study revealed inconsistencies in forensic methods using data from 250 respondents highlighted the need for standardized techniques like data mining to improve fraud detection. Jofre and Gerlach (2018), explored the application of forensic data analytics in detecting accounting fraud in Australia. By implementing machine learning methods to analyze publicly available financial data, they demonstrated the potential of statistical modeling in identifying falsified financial statements. Their findings suggest that such analytical techniques can assist auditors and regulatory agencies in conducting more targeted and effective examinations of accounting reports. Sharma and Panigrahi (2013) conducted a comprehensive review of data mining techniques applied to financial accounting fraud detection in India. They identified methods such as logistic models, neural networks, Bayesian belief networks, and decision trees as extensively used in detecting and classifying fraudulent financial data. The study proposed a framework for employing these techniques, highlighting their significance in enhancing the capabilities of forensic accounting in identifying financial fraud.

These studies collectively showcase forensic accounting's adaptability and effectiveness, while also underscoring gaps such as limited technological integration, lack of standardization, and underrepresentation of systemic factors. Addressing these challenges is critical to maximizing forensic accounting's potential for promoting transparency, accountability, and fraud prevention in global and local contexts.

Theoretical literature

Fraud Hexagon

The Fraud Hexagon, introduced by Vousinas in 2019, refines traditional frameworks like the Fraud Triangle and Pentecostal Theory by adding ego and collusion to the existing dimensions of pressure, opportunity, rationalization, and capability. This enhanced framework provides a more comprehensive

understanding of fraud, particularly in public higher education institutions in Gombe State. Pressure reflects financial or personal motivations, opportunity highlights gaps in internal controls, rationalization addresses justifications for unethical behavior, and capability denotes access and authority to commit fraud. The addition of ego focuses on personal ambition or entitlement, while collusion emphasizes conspiracies that complicate fraud detection.

Despite its innovations, the theoretical framework has notable weaknesses, including limited critique, overemphasis on individual factors, and insufficient empirical support. Empirical evidence underscores these issues and highlights the role of forensic data analytics in addressing such gaps. For example, Jofre and Gerlach (2018) demonstrate that advanced data-driven techniques uncover fraud patterns overlooked by traditional frameworks, while Sharma and Panigrahi (2013) show that data mining enhances detection of fraud rooted in systemic flaws. In Nigeria, Anderson et al. (2023) and Daily Trust (2023) reveal that weak internal controls and collusion significantly contribute to financial fraud in public institutions, such as Gombe's College of Health Science and Technology.

To mitigate these risks, forensic accounting and auditing, as emphasized by Taylor (2022) and Olaoye and Dada (2022), are critical for strengthening internal controls and enhancing accountability. By integrating these tools with the Fraud Hexagon, institutions can better understand fraud dynamics and develop robust strategies to prevent financial mismanagement and ensure transparency.

Methodology

This study employs a survey research design to investigate the role of forensic accounting in detecting and preventing fraud in public higher institutions. The survey is administered online, facilitating efficient data collection from a large population using standardized instruments. This design is appropriate as it enables the researcher to systematically identify variables and analyze their relationships. Additionally, it is particularly well-suited for gathering quantitative data that effectively addresses the research questions and tests the stated hypotheses.

Table 1. Sample of the Study

Institution	Audit Staff	Bursary Staff	Total
Gombe State University	3	15	18
FCE(T), Gombe	14	54	68
Total	17	69	86

Source: Bursary Department of these institutions.

The population for this study in the table 1 comprises the Audit and bursary staff of public higher institutions in Gombe metropolis, Nigeria. These institutions include Gombe State University and the Federal College of Education (Technical) Gombe. Given the relatively small population size of 86 audit and bursary staff across these institutions, a census sampling technique was adopted. A census sampling approach involves collecting data from the entire population rather than a subset, ensuring comprehensive coverage and enhancing the accuracy of the results. This technique is particularly suitable for this study due to the manageable population size, allowing for detailed data collection without the need for sampling.

The study relies on primary data sources collected through a structured questionnaire. The questionnaire was adopted from established works in the field of forensic accounting and fraud detection, specifically from Bhasin, (2013); Singleton and Singleton, (2010); Bologna, (2015); Albrecht, et al (2011).

The questionnaire is designed using a five-point Likert scale to measure respondents' attitudes, beliefs, and perceptions regarding the role of forensic accounting in fraud detection and prevention. The scale ranges from "Strongly Disagree" to "Strongly Agree," allowing for a detailed understanding of respondents' views.

The questionnaire was distributed through social media networks, specifically WhatsApp groups of the bursary and audit staff of the institutions under investigation. These groups regularly share news, updates, and information related to accounting, legislation, technology, and other relevant topics.

The researcher contacted and obtained permission from the managers of the identified WhatsApp groups to post an announcement about the ongoing survey. The announcement included a brief description of the study, the link to the questionnaire, and a request for participation.

The survey was made available for a period of 19 days, from August 12, 2024, to August 30, 2024. This duration allowed sufficient time for the target population to access and complete the questionnaire.

The collected data will be analyzed using quantitative techniques to identify patterns, relationships, and trends. Statistical tools such as descriptive statistics and inferential statistics (correlation and regression analysis) will be employed to interpret the data. The analysis will help determine the effectiveness of



forensic accounting in detecting and preventing fraud in public higher institutions and identify any challenges and limitations associated with its implementation.

Demographic Characteristics

This section presents personal information of the respondents such as the Gender, age of the respondents and working Experience, of the respondents.

The population of this study consisted of 86 individuals, but only 72 respondents completed the online questionnaire. The questionnaire was designed using a five-point Likert scale to measure attitudes, beliefs, and perceptions regarding the role of forensic accounting in fraud detection and prevention. The scale ranged from "Strongly Disagree" to "Strongly Agree," allowing for a detailed understanding of respondents' views.

Gender Distribution of Respondents

Table 2. Distribution by gender

Gender	Frequency	Percent	Cumulative Percent
Male	49	68.08%	68.08%
Female	23	31.94%	100.00%
Total	72	100.00%	

Source: STATA 17

The sample for this study consisted of 72 respondents, with a predominance of male participants. Out of the total respondents, 49 were male, accounting for 68.06% of the sample. The remaining 23 respondents were female, comprising 31.94% of the sample. This gender distribution indicates that the study had a higher representation of male respondents, with the cumulative percentage reaching 100% when both genders are combined.

Distribution of the Respondents by Age Bracket

Table 3. Distribution by age bracket

Age	Frequency	Percent	Cumulative Percent
18-25	13	18.06%	18.06%
26-35	23	31.94%	50.00%
36-45	23	31.94%	81.94%
46 and Above	13	18.06%	100.00%
Total	72	100.00%	

Source: STATA 17

The distribution in table 3 above represent age bracket of respondents of this study encompassing of diverse range of age groups. The youngest group, aged 18-25, comprises 18.06% of the total respondents, with 13 individuals falling within this category. The 26-35 age group represents a significant portion of the respondents, accounting for 31.94%, with 23 individuals. This group, along with the 36-45 age group, which also represents 31.94% with 23 individuals, forms the majority of the sample, together comprising 63.88% of the respondents. The oldest age category, consisting of respondents aged 46 and above, also makes up 18.06% of the total, with 13 individuals. Overall, the respondents are well-distributed across the younger (18-25 and 46+) and middle age groups (26-45), with the middle age groups being more prominently represented. This balanced sample across different age ranges provides a comprehensive perspective on the views or behaviors being studied.

Distribution of the Respondents by Working Experience

Table 4. Distribution by Working Experience

Years of service	Frequency	Percent	Cumulative Percent
Less than 1 year	2	2.78%	2.78%
1-5 years	24	33.33%	36.11%
6-10 years	20	27.78%	63.89%
More than 10 years	26	36.11%	100.00%
Total	72	100.00%	

Source: STATA 17

The survey included 72 respondents with varying years of service in their respective fields. The largest group, comprising 26 respondents (36.11%), has more than 10 years of experience. The next significant group, with 1-5 years of service, includes 24 respondents, representing 33.33% of the total sample.



Those with 6-10 years of experience make up 27.78% of the respondents, totaling 20 individuals. A smaller portion of the respondents, 2.78%, or 2 individuals, have less than 1 year of experience. This distribution shows a diverse range of experience levels among the respondents, with a notable concentration in the groups with more than 5 years of experience.

Descriptive Statistics

Table 5. Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
PFAE	3.94	0.95	1	5
FADP	4.03	0.86	1	5
CLFA	3.60	0.93	1	5

Source: STATA 17

The descriptive statistics for the Likert scale survey data reveal notable insights into respondents' perceptions of forensic accounting and fraud detection measures. The variable PFAE (Perceived Forensic Accounting Effectiveness) has an average rating of 3.94, indicating that respondents generally perceive forensic accounting practices to be effective, leaning towards "Agree" on the 5-point scale. The standard deviation of 0.95 suggests moderate variation in responses around this mean, with ratings ranging from a minimum of 1 ("Strongly Disagree") to a maximum of 5 ("Strongly Agree").

FADP (Fraud Detection and Prevention) received an average rating of 4.03, which is between "Agree" and "Strongly Agree," reflecting a positive perception of fraud detection and prevention measures. The standard deviation of 0.86 indicates that while there is some dispersion, responses are relatively consistent. The range of ratings extends from 1 to 5, showing both strong disagreement and strong agreement among respondents.

In contrast, CLFA (Challenges and Limitations Associated with Forensic Accounting) has a slightly lower average rating of 3.60, closer to "Agree." This suggests that while respondents view the challenges and limitations associated with forensic accounting positively, it is perceived as less effective compared to PFAE and FADP. The standard deviation of 0.93 indicates a similar level of variation as PFAE, with ratings spanning from 1 to 5.

Overall, respondents express a generally positive view of forensic accounting effectiveness and fraud detection and prevention, with the most favorable perception of fraud detection and prevention measures. Challenges and limitations associated with forensic accounting is viewed positively as well, though less favorably compared to the other aspects.

Correlation Test

Table 6. Correlation

Variable	PFAE	FADP	CLFA
PFAE	1.000		
FADP	0.3982	1.000	
CLFA	0.3912	0.4743	1.0000

Source: STATA 17

The Spearman's rank correlation analysis for the data reveals several important relationships between the variables PFAE, FADP, and CLFA. There is a moderate positive correlation between PFAE and FADP, with a coefficient of 0.3982. This suggests that respondents who rate the effectiveness of PFAE higher also tend to rate the effectiveness of FADP higher, though the association is not very strong. Similarly, PFAE and CLFA exhibit a moderate positive correlation of 0.3912, indicating that higher ratings of PFAE are associated with higher ratings of CLFA. The strongest correlation is between FADP and CLFA, with a coefficient of 0.4743, reflecting a moderate to strong positive relationship. This implies that as respondents' ratings of FADP increase, their ratings of CLFA also tend to increase. Overall, these moderate to strong positive correlations suggest that perceptions of effectiveness in different areas of forensic accounting and fraud detection are interrelated among the respondents.

Results of Regression Analysis

Table 7. Regression analysis

	Coef	Std. Err.	T	P> t	[95% Conf. Interval]	
FADP	.6397208	.118749	5.39	0.000	.4028231	.8766185
CLFA	.1977032	.109295	1.81	0.075	-.0203344	.4157408
_cons	.6566089	.3971207	1.65	0.103	-.1356252	1.448843

Number of obs = 72 R-squared = 0.5089 Prob > F = 0.0000

F(2, 69) = 35.76 Root MSE = .67372

Source: STATA 17



The regression analysis provides valuable insights into the relationships between perceived forensic accounting effectiveness (PFAE) and the predictors fraud detection and prevention (FADP) and challenges and limitations associated with forensic accounting (CLFA). The overall model is statistically significant, with an F-statistic of 35.76 and a p-value of 0.0000, indicating that at least one of the predictors significantly explains the variation in PFAE. The model explains approximately 50.89% of the variance in PFAE, as indicated by an R-squared value of 0.5089, suggesting a moderate to good fit.

The results show that FADP has a significant positive impact on PFAE, with a coefficient of 0.640 and a p-value of 0.000. This implies that for each unit increase in FADP, PFAE is expected to increase by approximately 0.640 units, holding CLFA constant. The precision of this estimate is high, as reflected in the relatively small standard error and a strong t-value of 5.39.

In contrast, CLFA has a coefficient of 0.198 with a p-value of 0.075. Although the positive relationship between CLFA and PFAE is statistically significant at the 10% level, it is not as robust as that of FADP. The larger standard error and moderate t-value of 1.81 suggest less precision in the estimate. The confidence interval for CLFA includes zero, indicating that the effect may not be statistically significant at the 5% level.

Overall, the findings indicate that improvements in fraud detection and prevention are significantly associated with higher perceptions of forensic accounting effectiveness, while the impact of the challenges and limitations associated with forensic accounting is less clear and only marginally significant.

Summary

The findings reveal that enhancements in fraud detection and prevention (FADP) play a crucial role in significantly improving perceptions of forensic accounting effectiveness (PFAE) within institutions. This indicates that the stronger and more robust the mechanisms for identifying and preventing fraudulent activities, the more effective forensic accounting is perceived to be in addressing financial malfeasance. While the challenges and limitations associated with forensic accounting (CLFA) also positively impacts perceptions of forensic accounting effectiveness, its influence is less pronounced when compared to the more direct impact of FADP. This suggests that while regulatory adherence and legal safeguards contribute to the overall effectiveness of forensic accounting, the day-to-day practices of fraud detection and prevention are more influential in shaping perceptions. Moreover, the moderate to strong correlations observed among these variables indicate that perceptions of forensic accounting effectiveness are not only shaped by individual factors but are also closely interconnected with both fraud detection and compliance measures. This interrelationship highlights the importance of an integrated approach to enhancing forensic accounting practices, as improvements in one area are likely to reinforce effectiveness in others.

Conclusion

The study confirms that robust fraud detection and prevention measures are vital in shaping perceptions of the effectiveness of forensic accounting. These measures play a pivotal role in strengthening the confidence of stakeholders in forensic accounting practices, as they directly address the identification and mitigation of fraudulent activities. While the challenges and limitations associated with forensic accounting, such as resource constraints, skill gaps, or technological barriers, are acknowledged and generally viewed in a positive light, they do not exert as much influence on the perceived effectiveness of forensic accounting as fraud detection and prevention efforts do. The findings of the study emphasize the critical importance of implementing stronger fraud prevention strategies and enhancing compliance frameworks. These improvements are necessary to elevate the overall impact of forensic accounting practices, ensuring they are more proactive and effective in safeguarding institutional integrity and public resources. Therefore, the study highlights the need for continuous refinement of fraud prevention mechanisms to bolster the efficacy and credibility of forensic public higher institution.

Recommendations

- **Enhance Fraud Detection Measures:** Institutions should prioritize the development and implementation of robust fraud detection and prevention mechanisms to bolster the effectiveness of forensic accounting. This includes utilizing advanced technological tools such as data analytics, artificial intelligence, and continuous auditing systems that can quickly identify suspicious transactions and patterns of fraudulent behavior. Strengthening internal controls and regularly updating these systems ensures that fraud can be detected in its early stages, minimizing potential damage.
- **Strengthen Compliance Frameworks:** It is essential for institutions to enhance their compliance and legal frameworks in order to provide better support for forensic accounting practices. This involves creating comprehensive policies that are aligned with national and international standards for fraud prevention, enforcing stricter regulatory measures, and ensuring regular audits. A strong compliance framework helps to ensure that legal requirements are met and that



forensic accounting practices are effectively integrated into the institution's overall governance structure, fostering a culture of transparency and accountability.

- **Training and Development:** Institutions should invest in continuous professional development by providing regular training programs for staff on the latest forensic accounting practices and fraud prevention techniques. This includes workshops, certifications, and seminars that focus on emerging trends in fraud detection, investigative techniques, and the use of technology in forensic accounting. Equipping staff with up-to-date knowledge and skills ensures that they are better prepared to implement forensic accounting strategies effectively and can proactively contribute to fraud prevention efforts.

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