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- I. Title page
- II. Abstract (150-250 words)
- III. Keywords (3-5)
- IV. Introduction
- V. Literature Review
- VI. Methodology
- VII. Results and Discussion
- VIII. Conclusion and Recommendations
- IX. References (APA 7th Edition)
- X. Appendices (if necessary)
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# IMPACT OF FORENSIC ACCOUNTING TECHNIQUES ON REDUCING PROCUREMENT FRAUD IN LISTED MANUFACTURING COMPANIES IN NIGERIA

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## ABSTRACT

*This study examines the impact of forensic accounting techniques on reducing procurement fraud in listed manufacturing companies in Nigeria. The specific objectives are to determine the impact of transaction testing, document examination, and fraud risk assessment on reducing procurement fraud in listed manufacturing companies in Nigeria. A survey was conducted among 250 chartered accountants certified in forensic accounting, employed across 68 manufacturing firms listed on the Nigeria Exchange Group. The research employed a structured questionnaire using a five-point Likert scale to gather data on the perceived effectiveness of these techniques. Descriptive statistics and multiple regression analysis were used to analyze the data, revealing significant correlations between the forensic accounting techniques and procurement fraud reduction. While transaction testing did not show statistical significance, document examination and fraud risk assessment emerged as significant predictors of fraud reduction. The findings underscore the importance of tailored forensic accounting strategies in combating procurement fraud within Nigerian manufacturing companies. Recommendations include enhancing the adoption of document examination and fraud risk assessment techniques, alongside continuous monitoring and training initiatives to strengthen internal controls and fraud prevention efforts.*

**Keywords:** forensic accounting, procurement fraud, document examination, fraud risk assessment, Nigeria

## 1.0 INTRODUCTION

Procurement fraud stands as a pervasive global concern, systematically undermining organizational performance, eroding public trust, and destabilizing economic landscapes. In highly developed regions, such as North America and Europe, the inherent complexity and sophistication of financial systems have necessitated the proactive adoption of advanced and multifaceted measures to rigorously combat fraudulent procurement practices. Landmark scandals, including the notable 2018 Carillion collapse in the UK (Baker, 2018) and the high-profile 2021 Wirecard scandal in Germany (Jaschik, 2021), serve as stark reminders of critical

In African continent, an increasing number of nations, including South Africa and Kenya, have initiated efforts to implement forensic practices as a crucial response to fraudulent procurement activities across both public and private sectors. In Nigeria, the

manufacturing sector faces particularly significant exposure to procurement fraud.

This study investigates the impact of forensic accounting techniques on reducing procurement fraud in listed manufacturing companies in Nigeria. Procurement fraud, encompassing activities like false billing and bid-rigging, significantly threatens organizational integrity and financial health (Osunwole, 2020). The research focuses on procurement fraud reduction as the dependent variable, measuring how effectively forensic accounting techniques minimize these illicit activities. The independent variable, forensic accounting techniques, is broken down into three sub-variables: transaction testing, document examination, and fraud risk assessment (Osunwole, 2020). These techniques are crucial for detecting discrepancies, verifying document authenticity, and proactively identifying vulnerabilities to fraud (Anghel & Poenaru, 2024). Their application directly impacts fraud reduction by uncovering and addressing

fraudulent acts and potential risks (Ewa, Adebisi, & Eseneyan, 2020).

Despite the recognized importance of forensic accounting, financial mismanagement, particularly in Nigerian local government councils, often creates environments ripe for procurement fraud due to inadequate internal controls and lack of transparency (Idris & Idris, 2021). The study emphasizes the role of strong internal controls, including segregation of duties, authorization and approval processes, and compliance monitoring, in mitigating fraud within manufacturing companies (Rendon & Rendon, 2015). However, existing research has methodological, population, and empirical gaps regarding the effectiveness of forensic accounting in the Nigerian context. This study aims to address these by using robust methodologies, a diverse sample of listed manufacturing companies, and generating empirical evidence to support the efficacy of these techniques.

The primary objective of this research is to determine the impact of forensic accounting techniques on procurement fraud reduction in listed Nigerian manufacturing companies. Specifically, it seeks to ascertain the impact of transaction testing, document examination, and fraud risk assessment on reducing procurement fraud. Correspondingly, the study poses three research questions concerning the impact of each of these techniques. The study also puts forth null hypotheses stating that transaction testing, document examination, and fraud risk assessment have no significant effect on reducing procurement fraud in listed manufacturing companies in Nigeria.

The significance of this study is multifaceted. It provides valuable insights for policymakers to develop more stringent regulations and standards for procurement, informing resource allocation towards robust internal controls. For managers and practitioners in the manufacturing sector, it offers actionable recommendations on integrating forensic accounting techniques into their existing systems to enhance fraud detection and prevention, potentially leading to significant cost savings. Academically, the study contributes empirical evidence to the existing body of knowledge in forensic accounting and procurement fraud, addressing identified research gaps and enriching theoretical frameworks. Methodologically, it sets a precedent for future research by employing advanced analytical tools and a robust research design, ensuring the validity and reliability of its findings.

The scope of the study is defined by its focus on the impact of transaction testing, document examination, and fraud risk assessment on procurement fraud reduction in listed manufacturing companies in Nigeria. This population was chosen due to their rigorous regulatory standards and complex

procurement activities, making them highly susceptible to fraud. The time frame for the study is 2024, to provide a relevant and recent analysis. The domain scope is confined to list manufacturing firms in Nigeria, recognizing the country's unique regulatory and economic environment and its significant challenges with procurement fraud. Key terms like Forensic Accounting Techniques, Transaction Testing, Document Examination, Fraud Risk Assessment, Procurement Fraud, Procurement Fraud Reduction, Internal Controls, Segregation of Duties (SoD), Authorization and Approval Processes, and Compliance Monitoring are operationally defined to ensure clarity and consistency within the study.

## 2.0 LITERATURE REVIEW

### 2.1 Conceptual Review

#### 2.1.1 Forensic Accounting Techniques

Forensic accounting techniques are vital for detecting and preventing financial fraud, especially in the banking sector. Transaction testing, document examination, and fraud risk assessment are foundational practices. Albrecht and Albrecht (2020) define transaction testing as the scrutiny of individual transactions to verify authenticity and accuracy, crucial for identifying discrepancies and establishing an audit trail. Wells (2021) highlights document examination as the meticulous review of financial documents, contracts, and invoices to detect alterations, forgery, or manipulation, providing concrete evidence for investigations. Treadway et al. (2019) emphasize fraud risk assessment as a proactive approach to evaluate the likelihood and impact of fraud, enabling organizations to identify vulnerabilities and implement preventive measures. These techniques are often interconnected. Transaction testing might uncover discrepancies leading to further document examination to verify supporting evidence (Singleton & Singleton, 2020). This integrated approach enhances the effectiveness of forensic audits, providing a comprehensive view of financial transactions and operational processes. Technological advancements further support these techniques, with forensic accountants leveraging data analytics and computer forensic tools to analyze large volumes of financial data, detect patterns, and enhance the accuracy of investigations (Bologna & Lindquist, 2018).

In essence, forensic accounting techniques like transaction testing, document examination and fraud risk assessment are integral to financial transparency and combating fraud in deposit money banks. Their coordinated application helps uncover fraudulent activities, safeguard financial assets, and uphold organizational integrity. The evolving landscape of forensic accounting, supported by technology, continues to refine these practices, enhancing their effectiveness in identifying and mitigating financial misconduct (Albrecht & Albrecht, 2020; Wells, 2021;

Treadway et al., 2019; Singleton & Singleton, 2020; Bologna & Lindquist, 2018).

### 2.1.2 Procurement Fraud

Procurement fraud poses a significant threat to Nigerian manufacturing companies, impacting financial stability and operational efficiency. Adeniji and Oludayo (2016) explain that procurement fraud includes schemes like bid rigging, inflated pricing, and kickbacks, which undermine fair competition and inflate costs. Akindele (2018) points out that Weak Internal Controls exacerbate vulnerabilities, allowing insiders to manipulate procurement processes. Oyewo, Arogundade, and Akindele (2019) add that the complexity of supply chains in manufacturing increases the risk of collusion and misconduct.

The regulatory environment also plays a crucial role. Adebayo and Afolabi (2020) stress the importance of stringent regulatory frameworks and effective enforcement, though challenges in implementation persist due to institutional weaknesses. Mitigating procurement fraud requires a multifaceted approach. Adeyemi and Owolabi (2017) advocate for technology-driven solutions like electronic procurement systems and data analytics to enhance transparency and accountability.

In summary, procurement fraud in Nigerian manufacturing companies is a multifaceted issue driven by weak internal controls, complex supply chains, and inadequate regulatory oversight. Addressing these challenges demands a holistic approach involving enhanced regulatory frameworks, technology adoption, and a culture of transparency and ethical conduct.

### 2.1.3 Forensic Accounting Techniques and Procurement Fraud

Forensic accounting techniques are crucial for detecting and preventing procurement fraud in Nigeria. Adebisi and Izedonmi (2017) highlight transaction testing's effectiveness in uncovering fraudulent patterns through systematic scrutiny of records. Oyedokun and Oladipo (2019). Note that document examination complements this by scrutinizing supporting documentation for authenticity and consistency, verifying procurement legitimacy. Fraud risk assessment proactively identifies vulnerabilities and mitigates risks, with Okoye and Atanda (2020) arguing for its role in identifying weak controls and susceptible areas within procurement systems.

The literature underscores the interconnectedness of these techniques. Akinyomi et al. (2018) discuss their combined application as a comprehensive approach to investigating fraud and establishing preventive measures, asserting that integrating transaction testing with document examination and fraud risk

assessment enhances fraud detection and ensures compliance. In practice, Nigerian forensic accountants use these techniques to investigate schemes like bid rigging and fictitious invoicing (Ogunbenle & Ajadi, 2016).

The effectiveness of these techniques relies on the skills and expertise of forensic accountants. Adeyemi and Oluwadare (2021) argue that continuous professional development is essential for them to stay updated on evolving fraud schemes and technological advancements. However, challenges persist in Nigeria, including inadequate infrastructure, limited institutional support, and a lack of awareness among stakeholders (Adegbie & Fagbemi, 2018). These hinder the adoption and effectiveness of forensic practices.

In conclusion, while forensic accounting techniques like transaction testing, document examination, and fraud risk assessment are essential tools in combating procurement fraud in Nigeria, their efficacy depends on addressing systemic challenges and enhancing professional competencies. Continued research and practical application are crucial for refining these techniques and adapting them to the evolving landscape of fraud risks.

## 2.2 Theoretical Review

### 2.2.1 Control Theory

**Control Theory**, founded by William Glasser in 1985, posits that behavior is driven by individuals' needs for fulfillment and belonging, with deviations occurring when these needs are unmet. Individuals seek to maintain control over their environments to achieve these needs, influencing their actions and choices (Glasser, 1985). Supporters argue it provides a comprehensive framework for understanding human behavior, emphasizing personal responsibility and self-regulation (Wubbolding, 2015). Critics, such as Burgess (2017), contend that it oversimplifies human motivation by neglecting external influences and systemic factors.

In the context of reducing procurement fraud in Nigerian manufacturing companies, Control Theory justifies examining forensic accounting techniques. By applying transaction testing, document examination, and fraud risk assessment, organizations aim to exert greater control over their financial processes. These techniques align with Control Theory's premise that structured monitoring and accountability mechanisms can mitigate deviant behaviors driven by unmet organizational goals and individual incentives. Thus, Control Theory provides a theoretical lens to evaluate the effectiveness of forensic accounting techniques in curbing procurement fraud, emphasizing the role of internal controls in fostering ethical business practices and reducing financial misconduct.

### 2.2.2 Fraud Triangle Theory

The Fraud Triangle Theory, founded by Donald Cressey in 1953, explains that three key elements must be present for fraud to occur: pressure, opportunity, and rationalization. Pressure is the motivation (e.g., financial difficulties); opportunity is the ability to commit fraud without getting caught, often due to weak internal controls; and rationalization is the mindset to justify fraudulent actions (Cressey, 1953).

Supporters argue it provides a comprehensive framework for understanding and preventing fraud by addressing these three elements (Dorminey et al., 2010; Wells, 2011). Critics, however, argue it oversimplifies fraud's complex nature, failing to account for organizational culture and social dynamics (Free & Murphy, 2015), and may have limited applicability in different cultural contexts (Lokanan, 2015).

The Fraud Triangle Theory is pertinent to this study, which examines the impact of forensic accounting techniques on reducing procurement fraud. The focus on transaction testing, document examination, and fraud risk assessment aligns with the theory's emphasis on mitigating opportunities for fraud by strengthening internal controls. Understanding pressures and rationalizations can enhance the effectiveness of these techniques by addressing the root causes of fraudulent behavior, providing a valuable framework for the study's objectives.

### 2.2.3 Theory of Planned Behavior

The Theory of Planned Behavior (TPB), founded by Icek Ajzen in 1985, posits that individual behavior is determined by behavioral intentions, influenced by three constructs: attitudes towards the behavior, subjective norms, and perceived behavioral control. Attitudes reflect evaluations of performing a behavior, subjective norms represent perceived social pressures, and perceived behavioral control refers to the perceived ease or difficulty of performing the behavior (Ajzen, 1985).

Supporters argue TPB provides a comprehensive framework for understanding and predicting human behavior, distinguishing itself from earlier models by incorporating perceived behavioral control (Ajzen & Fishbein, 1980; Taylor & Todd, 1995). Critics argue its emphasis on rational decision-making oversimplifies human behavior, neglecting emotions, habits, and external constraints (Vredenburg et al., 2002; Montano & Kasprzyk, 2008).

In the context of the current study on forensic accounting techniques and procurement fraud, the TPB justifies its relevance by providing a structured approach to understanding the behavioral intentions behind fraud reduction efforts. Transaction testing,

document examination, and fraud risk assessment can be seen as behaviors influenced by attitudes (perceived effectiveness), subjective norms (organizational expectations), and perceived behavioral control (resource availability). By examining these components, the study aims to elucidate how these intentions translate into effective fraud prevention strategies within the Nigerian manufacturing sector.

### 2.3 Empirical Review

Agbaje and Ganiyu (2017) examined the impact of forensic accounting services on fraud reduction in the Nigerian banking industry using a quantitative methodology. They found a significant correlation between implementing forensic accounting services and a decrease in fraudulent activities, attributing this to enhanced detection mechanisms and proactive prevention strategies. The study concluded that integrating these practices strengthens internal controls and safeguards financial integrity, recommending wider adoption to mitigate fraud risks. Abubaker, Barzinji, and Wan (2022) explored forensic accounting's impact on fraud prevention, with internal control effectiveness as a moderator, in Iraqi companies listed on the Iraqi Stock Exchange. Their inductive quantitative study of 230 employees across 110 companies revealed that forensic accounting practices, including competence and proactive auditing, significantly enhance fraud prevention. However, internal control challenges negatively moderated this relationship. The study concluded that effective internal control practices strengthen the link between forensic accounting and fraud prevention, recommending enhanced integration.

Aduwo (2016) investigated the role of forensic accounting in mitigating corporate failure at Ekiti State University, Nigeria. Employing a qualitative approach through literature review and expert interviews, the study underscored the critical role of forensic accounting in enhancing transparency, accountability, and financial reporting integrity, thereby reducing the likelihood of corporate failures. The study advocated for integrating robust forensic accounting mechanisms into corporate governance frameworks.

Aremu and Moses (2023) studied the effect of forensic accounting techniques on procurement practices in Nigerian Federal Government parastatals, focusing on the Nigeria Port Authority and the Nigeria Civil Aviation Authority. Using a survey design and multiple regression analysis on data from 126 accountants, they found that forensic accounting techniques significantly impacted value-for-money practices (adjusted R-squared = 0.299,  $F(6, 125) = 14.352$ ,  $p < 0.05$ ) and positively influenced procurement practices (adjusted R-squared = 0.270,  $F(6, 125) = 12.562$ ,  $p < 0.05$ ). The study concluded



that applying these techniques enhances value-for-money and recommended broader adoption to improve procurement efficiency.

Similarly, Aremu and Olayinka (2023) conducted a study with the same scope, methodology, and findings as Aremu and Moses (2023). Their results also showed that forensic accounting techniques significantly impacted value-for-money practices (adjusted R-squared = 0.299,  $F(6, 125) = 14.352, p < 0.05$ ) and positively influenced procurement practices (adjusted R-squared = 0.270,  $F(6, 125) = 12.562, p < 0.05$ ). This study concluded that the application of forensic accounting techniques enhances value-for-money practices and recommended mandating their use through policy formulation to avoid leakages and achieve value for money in government operations.

**3.0 METHODOLOGY**

This research employed a survey research design to gather quantitative data from a diverse group of participants. The study focused on a population of 250 chartered accountants holding forensic accounting certification and working in the 68 quoted manufacturing firms on the Nigeria Stock Exchange. A sample size of approximately 151 participants was determined using the Taro Yamane formula, based on a 95% confidence level.

**4.0 Results and Discussion**

**4.1 Descriptive Analysis**

**Table 4.1: Mean, Standard Deviation, Correlation, and Cronbach’s Alpha**

	Mean	SD	TT	DE	FRA	PRF	.
TT	4.21	0.78	1				0.878
DE	4.05	0.83	.72*	1			0.779
FRA	3.89	0.95	.65*	.68*	1		0.81
PRF	3.74	0.88	.69*	.66*	.70*	1	0.876

Source: (Authors Computation, 2024)

Table 4.1 presents descriptive statistics and reliability measures for variables related to forensic accounting techniques and their impact on reducing procurement fraud. The table shows means (Mean), standard deviations (SD), correlations (TT, DE, FRA), and Cronbach's alpha ( $\alpha$ ). Transaction Testing (TT), Document Examination (DE), Fraud Risk Assessment (FRA), and Procurement Fraud (PRF) are the variables of interest. Mean scores indicate that Transaction Testing has the highest average

Data collection was conducted using a structured online questionnaire. This questionnaire utilized a five-point Likert scale to gauge responses on how transaction testing, document examination, and fraud risk assessment influence the reduction of procurement fraud. For data analysis, descriptive statistics will summarize the collected information. Multiple regression models will be used to investigate the relationships between the forensic accounting techniques and the reduction of procurement fraud.

The model specification for the regression analysis is expressed as:  $PRF_i = \beta_0 + \beta_1 TT_i + \beta_2 DE_i + \beta_3 FRA_i + \mu_i$ . In this model, PRF represents Procurement Fraud Reduction, TT signifies Transaction Testing, DE denotes Document Examination, FRA stands for Fraud Risk Assessment, and  $\mu_i$  is the error term. The decision rule for hypothesis testing will involve comparing calculated p-values against a 0.05 significance level to assess the statistical significance of the relationships. This approach aims to provide insights into the effectiveness of forensic accounting techniques in mitigating procurement fraud within Nigerian listed manufacturing companies.

effectiveness (4.21), followed by Document Examination (4.05), Fraud Risk Assessment (3.89), and Procurement Fraud (3.74). Standard deviations are relatively consistent across variables, suggesting moderate variation in responses. Correlations between the techniques range from 0.65 to 0.78, indicating moderate to strong positive relationships. Cronbach's alpha coefficients are high (0.779 to 0.878), indicating good internal consistency among the variables. These findings suggest that while



Transaction Testing shows the highest perceived impact, all three techniques are positively correlated and internally reliable measures for reducing

procurement fraud in listed manufacturing companies in Nigeria.

**Correlation Analysis**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				Durbin-Watson
					R Square Change	F Change	df1	Sig. F Change	
1	.727a	0.529	0.486	0.36085	0.529	12.137	5	0	1.121

Source: (Authors Computation, 2024)

**Analysis Of Variance**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	7.902	5	1.58	12.137	.000a
	Residual	7.032	54	0.13		
	Total	14.933	59			

Source: (Authors Computation, 2024)

**Model Specification**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
		1	(Constant)	1.413		
	TT	0.124	0.129	0.141	0.959	0.342
	DE	0.317	0.143	0.35	2.217	0.031

Dependent Variable: Procurement Fraud Reduction (PFR)

Source: (Authors Computation, 2024)

The correlation coefficient ( $r$ ) of 0.727 indicates a strong positive relationship between the independent variables (transaction testing, document examination, and fraud risk assessment) and the dependent variable (procurement fraud reduction). This suggests that as the scores on the forensic accounting techniques increase, there is a corresponding increase in the reduction of procurement fraud. The adjusted R-squared value of 0.486 indicates that approximately 48.6% of the variance in procurement fraud reduction can be explained by the independent variables in the model. This finding supports the notion that these forensic accounting techniques collectively contribute significantly to reducing procurement fraud in listed manufacturing companies in Nigeria.

Moving to the analysis of variance (ANOVA) table, the significant F-statistic ( $F = 12.137, p < 0.001$ ) indicates that the regression model as a whole is statistically significant. This means that at least one of the independent variables (transaction testing, document examination, and fraud risk assessment) significantly predicts procurement fraud reduction. The null hypothesis ( $H_0: \beta_1 = \beta_2 = \beta_3 = 0$ ) is rejected in favor of the alternative hypothesis, suggesting that at least one of the independent variables has a significant effect on the dependent variable.

Examining the model specification table, the standardized coefficients (Beta) provide insights into the relative importance of each independent variable. Specifically, document examination ( $\beta = 0.350, p = 0.031$ ) and fraud risk assessment ( $\beta = 0.324, p = 0.009$ ) are statistically significant predictors of procurement fraud reduction, whereas transaction testing ( $\beta = 0.141, p = 0.342$ ) does not reach statistical significance at the conventional 0.05 level. Therefore, we reject  $H_{02}$  and  $H_{03}$  in favor of the alternative hypotheses for document examination and fraud risk assessment, indicating that these two variables have significant effects on reducing procurement fraud.

The findings from the research align with several past studies on the impact of forensic accounting techniques in various contexts, including banking, federal government parastatals, and corporate environments in Nigeria and Iraq. Agbaje and Ganiyu (2017) found that implementing forensic accounting services significantly reduces fraudulent activities in Nigerian banks, emphasizing enhanced detection mechanisms and proactive fraud prevention strategies. Similarly, Aremu and Olayinka (2023) highlighted the positive effects of forensic accounting techniques on operational efficiency and financial management in federal government parastatals, emphasizing transparency and accountability. Abubaker et al. (2022) observed in Iraqi companies that forensic accounting practices enhance fraud prevention, moderated by internal control effectiveness. These studies collectively support the

idea that integrating forensic accounting practices strengthens internal controls, safeguards financial integrity, and mitigates fraud risks across different sectors. However, the current research adds a nuanced perspective by specifically focusing on listed manufacturing companies in Nigeria, demonstrating significant positive relationships between transaction testing, document examination, fraud risk assessment, and the reduction of procurement fraud. While transaction testing did not show statistical significance in this study, document examination and fraud risk assessment emerged as significant predictors, reinforcing the importance of tailored forensic accounting strategies to address specific types of fraud within different organizational settings.

## 5.0 Conclusion and Recommendation

This study investigated the effectiveness of forensic accounting techniques—transaction testing, document examination, and fraud risk assessment—in reducing procurement fraud within listed manufacturing companies in Nigeria. The findings reveal that while transaction testing demonstrated the highest perceived impact among the techniques studied, all three methods showed positive correlations and strong internal consistency. Correlation analysis indicated significant relationships between these techniques and procurement fraud reduction, with document examination and fraud risk assessment emerging as statistically significant predictors. The regression analysis further supported these findings, demonstrating that these techniques collectively explain a substantial portion of the variance in procurement fraud reduction.

### Recommendations

Based on the study's findings, it is recommended that listed manufacturing companies in Nigeria enhance their adoption and integration of forensic accounting techniques, particularly document examination and fraud risk assessment. These techniques not only contribute significantly to reducing procurement fraud but also strengthen internal controls and operational integrity. Companies should consider investing in specialized training for their audit and finance teams to improve proficiency in these techniques. Moreover, continuous monitoring and periodic reassessment of fraud prevention strategies are advised to adapt to evolving fraud schemes and regulatory changes. By implementing these recommendations, companies can bolster their resilience against procurement fraud while fostering a culture of transparency and accountability in their financial operations.

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