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**Internal Control System Effectiveness and Procurement Fraud Prevention in
the Public Health Sector: Evidence from Nigeria**

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ABSTRACT

Procurement fraud remains a pervasive threat within emerging markets, particularly undermining healthcare delivery systems where resource leaks directly compromise patient outcomes. This study examines the effectiveness of internal control systems (ICS) in preventing procurement fraud within the Nigerian public health sector, anchored empirically at the Jos University Teaching Hospital (JUTH). Utilizing a descriptive survey research design, data were collected via a highly structured 5-point Likert scale questionnaire administered to a sample of 399 personnel drawn from a population of 2,100 institutional staff. The sample size was determined using the Taro Yamane formula, and data were analyzed via multiple linear regression analysis.

The empirical results reveal that the control environment ($\beta = 0.821, p < 0.05$), risk assessment ($\beta = 0.028, p < 0.05$), and control activities ($\beta = 0.269, p < 0.05$) exert positive and statistically significant effects on procurement fraud prevention. Conversely, information, communication, and monitoring (INFMON) yields a statistically significant negative coefficient ($\beta = -0.144, p < 0.05$). Rather than signaling a theoretical breakdown, this negative coefficient reveals a critical systemic paradox: under deeply entrenched, manually driven, or siloed communications channels, intensified information flows without structural data-sharing infrastructure inadvertently generate administrative bottlenecks or superficial data-reporting compliance that perpetrators exploit to bypass controls.

This study bridges a critical gap by disaggregating COSO framework elements specifically for complex health procurement workflows rather than broad public sector financial institutions. It recommends that public health institutions move beyond basic compliance by deploying integrated digital procurement trackers, executing structured risk-mapping, and decoupling information systems from concentrated managerial control to eliminate localized opportunities for fraud.

Keywords: Internal Control System, Procurement Fraud Prevention, COSO Framework, Public Health Sector, Nigeria.

1.0 Introduction

According to (Nolan 2017), Procurement fraud stands as one of the most resilient and historic corporate anomalies confronting global organizations. In emerging economic landscapes, it operates predominantly as a quid-pro-quo mechanism, wherein structural advantages or contract awards are illicitly traded for kickbacks, inflated invoicing, and material gifts. In public health administration, procurement efficiency serves as the lifeblood of institutional performance, directly dictating the supply velocity of essential life-saving medicines, medical machinery, and facility infrastructure. Globally, the economic toll is severe; the World Economic Forum estimates that over 10% of public sector spending is lost annually to procurement fraud. In Nigeria, despite localized legislative counter-measures like the Public Procurement Act of 2007, the public health sector continues to suffer from systemic vulnerabilities, resulting in severe inflation of contract values, bid-rigging, and phantom vendor networks that drain public revenues and compromise patient care.

The Committee of Sponsoring Organizations of the Treadway Commission (COSO) internal control integrated framework establishes five foundational components—Control Environment, Risk Assessment, Control Activities, Information & Communication, and Monitoring—designed to provide reasonable assurance regarding organizational compliance, reporting accuracy, and asset safeguarding. While strong internal controls historically bolster transparency, public institutions across Africa face distinct resource deficits, low structural capacity, and independence gaps that severely blunt internal audit and control execution.

When these internal frameworks collapse or deteriorate into superficial "paper-compliance" protocols, organizational loopholes multiply, making the circumvention of standard procedures dangerously simple.

Research shows that strong internal controls enhance transparency and accountability in public institutions by reducing vulnerabilities to fraudulent behavior, ensuring that organizations achieve their objectives ethically and efficiently (Kanu et al., 2025 and Adenodi et al., 2025). Conversely, inadequate control environments, poor risk assessments, and ineffective communication systems have been linked with increased fraud risk, particularly in complex sectors like health where procurement involves high volumes of suppliers, goods, and services. Embedded fraud prevention mechanisms such as segregation of duties, document examination, and whistleblowing are globally recommended practices to strengthen procurement integrity (Adenodi et al., 2025; Seda & Tilt, 2023).

Within Africa, public sector institutions face distinct governance and resource challenges that influence the implementation and effectiveness of internal controls and related fraud prevention measures. Studies indicate that internal audit and control functions play a critical role in identifying and mitigating fraud risks across the continent, yet capacity, independence, and resource gaps often undermine these efforts (Mwakajila & Kipilimba, 2025). For instance, research at a hospital in Tanzania found that well-structured internal

controls significantly enhanced fraud control and improved value-for-money outcomes, highlighting the relevance of control activities, monitoring, and information systems in an African public health setting (Mwakajila & Kipilimba, 2025).

Most professionals and public sector managers believe that internal control is the key to preventing the risk of procurement fraud in the health sector (World Bank 2016). Several studies have been carried out in Nigeria to find out why many government agencies or industries which started off well later fall or remain stagnant in their operations. The major causes of this situation were traced down to poor implementation of its internal control system which emanated from a lot of factors; internal control is referred to both administration control and accounting control that made overall operation of a business. In Nigeria, the public sector including the public health sector consistently struggles with procurement fraud, which undermines service delivery, public trust, and value for money in government spending (Ariyo-Edu, 2025).

Procurement fraud is considered one of the most common frauds perpetrated by managers operating in emerging markets, and the big losers of this fraud are businesses and their shareholders. Companies lose billions of dollars annually because companies are not paying the fair market value for the services and goods sold by vendors. Consider the increased profits a company would have if it paid 20 to 50 percent less for the goods and services the vendors provide. The Association of Certified Fraud Examiners (ACFE) found that companies lose 5 percent of revenue each year to fraud, which amounts to nearly \$3.7 trillion globally. Much of this fraud loss can be attributed to procurement fraud.

The rise in globalization, coupled with the use of technology to accelerate approval and payable cycles, the increase of outsourcing of goods and services and the pressure to cut costs, have resulted in government organizations being more exposed to the risk of fraud in their procurement process. Hence, appropriate internal controls and fraud prevention strategies are necessary for deterring, detecting, and managing procurement fraud. The Nigerian public sector is not an exception, it is bedeviled with systemic corruption which hinders efficiency in service provision and also affect accountability to a large extent. An effective internal control system and its preventive measures will help to prevent fraud and errors thereby ensuring prudence in the discharge of the statutory responsibility of Government which shall translate to the achievement set organizational objective.

Internal control is a management tool that is built into the entity as part of its infrastructure to help managers and administrators run the entity and achieve their aims on an ongoing basis. Management sets the objectives, put the control mechanisms and activities in place,

monitor and evaluates the control. Where an Effective internal control is deficient, then loopholes appear which makes it easy to perpetrate Procurement Fraud. Despite the Public procurement act, fraud relating to procurement seems to be unabated. This is illustrated in the Price water house Cooper's (PWC) report of 2018 stating that Procurement fraud is the most prominent economic crime in Nigeria, according to respondents to a biannual survey of global economic crime produced by audit firm, PwC. The Global Economic Crime and Fraud Survey 2018, which examines over 7200 respondents from 123 countries including Nigeria, indicated that procurement fraud (38%) is the most prevalent economic crime in Nigeria in the last 24 months(2019-2021), followed by bribery and corruption (33%), accounting fraud (32%) and business misconduct at 31%.

Procurement fraud specifically where misappropriation, inflated invoicing, phantom vendors, and collusion are frequent has been a major driver of inefficiency in Nigeria's public sector. Studies focused on Nigerian public organizations have shown that mechanisms such as document examination, segregation of duties, and whistleblower mechanisms are significantly associated with improved organizational integrity and reduced fraud (Adenodi et al., 2025). Such findings underscore the pressing need for effective internal controls and anti-fraud strategies within public health procurement, where the consequences of fraud extend to service disruption and compromised health outcomes.

Although there is substantial research on internal controls and fraud prevention in Nigerian public institutions generally (Zeinaba et al., 2024; Vutumu et al., 2024; Adenodi et al., 2025), there remains a gap in focused studies on the public health sector - a high-impact area for procurement activity. Most existing studies explore controls in finance, audit, or governance contexts but do not disaggregate findings specifically for health systems procurement. Given the health sector's complexity and the critical nature of procurement integrity for patient care delivery, research that integrates the COSO components with procurement fraud prevention in Nigeria's public health sector will provide valuable insights into targeted strategies for enhancing control environment, risk management, information flows, control activities, and monitoring processes to mitigate fraud and improve health system performance.

1.1 Problem Statement

Despite the institutionalization of anti-fraud frameworks and continuous public oversight, procurement fraud remains the single most prominent economic crime in Nigeria. Data from global crime surveys reveal that procurement fraud outpaces other systemic malpractices, accounting for 38% of reported public economic crimes, followed closely by bribery,

corruption, and financial accounting manipulation. The core problem stems from a fundamental disconnect: while general public finance domains have been heavily studied, there is a pronounced lack of focused research disaggregating these findings within the operational matrix of the public health sector. Health procurement is uniquely vulnerable due to its reliance on high volumes of highly technical medical goods, complex vendor relationships, and unpredictable supply urgencies.

Furthermore, existing literature frequently assumes that merely increasing information and communication protocols automatically triggers fraud reduction. However, in under-resourced public frameworks, non-integrated, manual, or highly centralized communication workflows often lead to data manipulation, asymmetric information blockades, and a false sense of administrative security. This research directly fills this gap by investigating the collective and individual efficacy of COSO components against procurement fraud within the public healthcare delivery framework of Nigeria.

1.2 Research Objectives

1. To examine the influence of the institutional control environment on deterring procurement fraud processes.
2. To evaluate the extent to which structural risk assessment processes mitigate public procurement fraud incidents.
3. To determine how proactively designed control activities influence the deterrence of procurement fraud.
4. To assess the impact of information, communication, and monitoring mechanisms on tracking and preventing fraud within procurement workflows.

The following hypotheses are tested.

H₀₁: Control environment has no significant influence on the Procurement processes

H₀₂: Poorly conducted Risk Assessment does not contribute significantly to public procurement fraud incidents.

H₀₃: Control activities have no significant impact on the procedures put in place to deter procurement fraud.

H₀₄: Adequate information and communication have no significant effect on monitoring the procurement process

2.0 Literature Review & Theoretical Framework

2.1 Theoretical Framework

The Fraud Triangle Theory (FTT)

Originally conceptualized by Donald Cressey (1953), the Fraud Triangle posits that three essential criteria must converge for financial fraud to occur: perceived pressure (incentive),

opportunity (weak controls), and rationalization (justifying the unethical act). Within the public health arena, chronic resource constraints, low relative compensation, and institutional supply emergencies provide the initial *pressure*. However, this study isolates *opportunity* as the most actionable component for organizations to address, as opportunities expand or contract in direct response to the strength or failure of the internal control system.

Anchor Theory: The Fraud Diamond Theory (FDT)

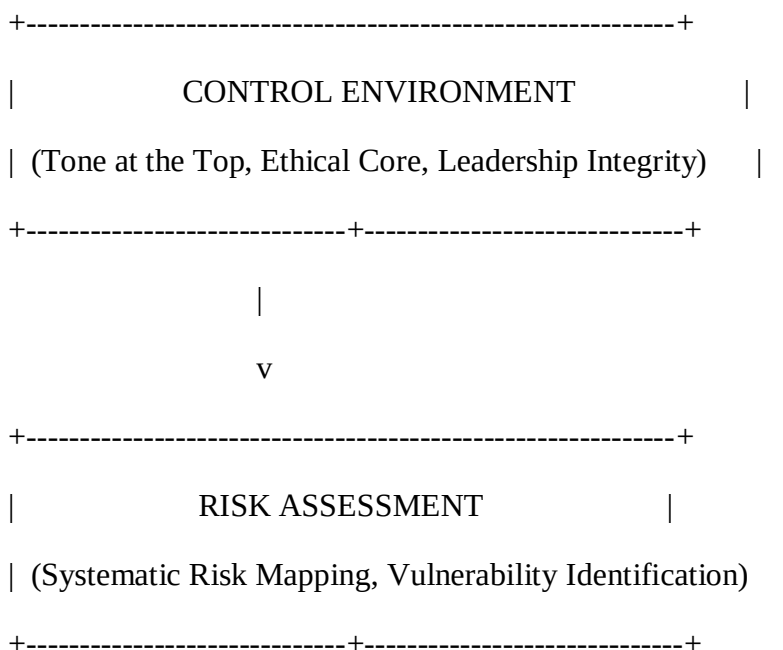
To address the operational complexities of public sector institutional fraud, this study adopts the Fraud Diamond Theory, introduced by Wolfe and Hermanson (2004), as its primary analytical framework. The Fraud Diamond expands the original triangle by adding a fourth element: *capability*—the personal trait, technical skill, and position of authority required to exploit an existing control loophole.

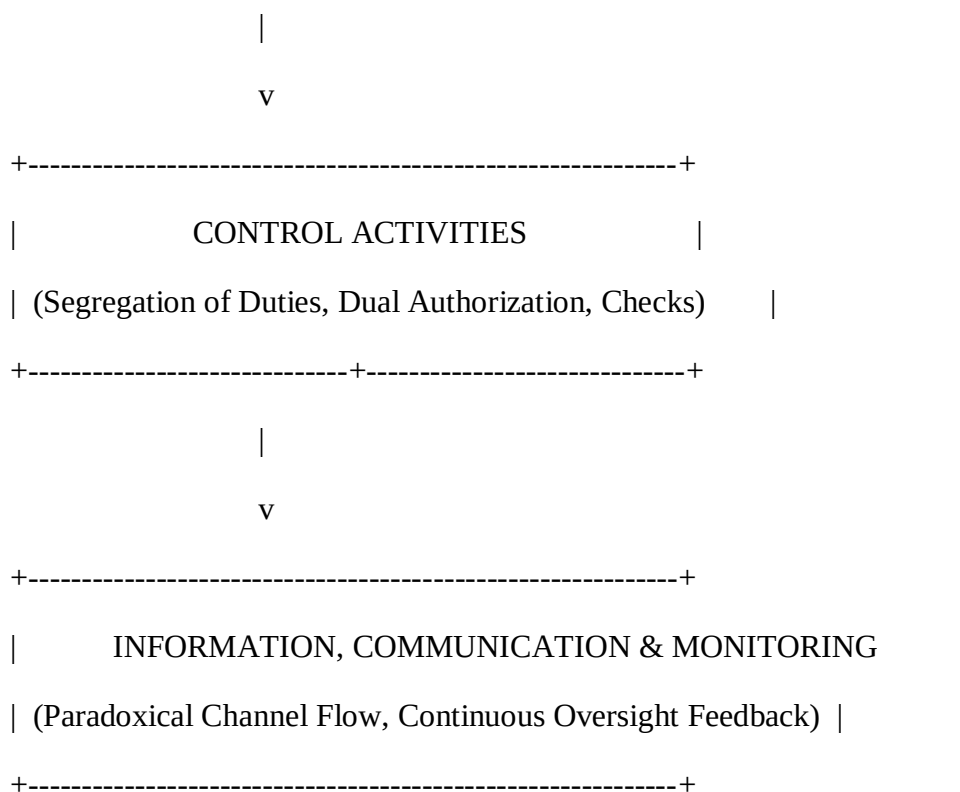
The Fraud Diamond serves as an ideal anchor for this study because it acknowledges that in complex public health setups, procurement managers possess the specific technical capability, access, and administrative status needed to bypass internal controls. Therefore, fraud prevention must focus on building comprehensive, multi-layered defenses that minimize opportunity, expose capability limits, and strictly enforce compliance across all processing levels.

2.2 Conceptual Synthesis & COSO Components

The COSO framework treats an internal control system as a continuous, dynamic process driven by an organization's board, management, and personnel, rather than as a static set of rules. Its effectiveness depends on the structural presence and functioning of its core components.

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Control Environment: Serving as the foundation for the entire framework, the control environment establishes the "tone at the top," directly shaping employee behavior and determining how seriously policies are respected across the institution. Key markers include management's commitment to ethical values, clear lines of authority, and zero tolerance for non-compliance.

Risk Assessment: This component involves the continuous, systematic identification and analysis of operational risks that threaten the achievement of institutional goals. Without proactive risk mapping, organizations cannot accurately design defenses against emerging vendor scams or internal collusion.

Control Activities: These are the physical and digital policies, checks, and balances executed across all layers of the organization. They include the segregation of duties, multi-level financial authorizations, independent document review, and asset security protocols.

Information and Communication: For an organization to make informed decisions, clear, reliable data must flow up, down, and across the entire institution. When information moves through manual or non-integrated channels, it creates pockets of asymmetric information, increasing the risk of data alteration and control circumvention.

Monitoring: Continuous and periodic independent evaluations are necessary to ensure that internal controls remain relevant and functional over time. Regular internal and external audits provide management with independent verification of system integrity.

2.3 Empirical Synthesis

Empirical literature reveals a strong consensus on the value of internal controls, but also Highlights notable operational inconsistencies. Mwakajila and Kipilimba (2025) studied the Mbeya Zonal Referral Hospital in Tanzania, concluding that structured internal controls significantly improved value-for-money outcomes and financial transparency in a public health setting. In Nigeria, Ariyo-Edu (2025) surveyed public sector workers across North Central Nigeria, finding that robust internal controls strongly support fraud deterrence. Similarly, Adenodi et al. (2025) focused on the impact of specific procurement actions, proving that strict document verification, segregation of duties, and reliable whistleblower protections significantly preserve institutional integrity.

Furthermore, Edori and Iwene (2025) confirmed that strong internal check mechanisms significantly reduce payroll and ghost worker fraud within public parastatals. Finally, Zeinaba et al. (2024) studied fraud management within the Accountant General's Office, demonstrating that while the control environment, risk assessment, and control activities are critical to fraud deterrence, top-down compliance alone is often ineffective without decentralized, independent communication networks. This body of work underscores a persistent gap: while these control components are broadly effective, their individual performance varies based on the specific operational environment, highlighting the need for deeper analysis within public health procurement workflows.

3.0 Research Methodology

3.1 Research Design & Study Justification

This study utilizes a descriptive survey research design. The target population consists of the entire staff of the Jos University Teaching Hospital (JUTH), Plateau State, Nigeria, totaling 2,100 employees across all clinical, administrative, and financial departments according to the institutional nominal roll.

JUTH was purposively selected as the study location based on three distinct factors:

1. It is a premier, high-volume tertiary healthcare institution in North Central Nigeria, managing substantial federal procurement funds for complex medical tech, medications, and large infrastructure projects.
2. It features an operational structure that contains all five COSO internal control components, making it an ideal environment for empirical evaluation.
3. As a major public hospital, its procurement challenges offer a representative look at the broader systemic vulnerabilities found across the entire Nigerian public health sector.

3.2 Sampling and Sample Size Determination

To ensure every employee had an equal opportunity for selection, a stratified random sampling technique was employed. Staff members were divided into distinct strata based on

department (Accounting/Audit, Administration, Pharmacy/Medical Supply, and Clinical Units). The overall sample size was determined using the Taro Yamane formula:

technique. The formula for the computation is as follows:

$$n = N / (1 + N(e)^2)$$

Where:

n = the sample size

N = the population under study

e = the margin of error (i.e. 0.05)

$$n = \frac{2100}{1 + 2100(0.05)^2}$$

$$n = \frac{2100}{1 + 2100(0.0025)}$$

$$n = \frac{2100}{5.252}$$

$$n = 399$$

3.3 Questionnaire Design, Reliability, and Validity

Primary data were gathered using a highly structured, self-administered questionnaire based on a 5-point Likert scale, ranging from 5 (Strongly Agree) to 1 (Strongly Disagree). The questions were adapted from established COSO assessment templates and tailored to capture specific public health procurement vulnerabilities.

Content and Construct Validity: The questionnaire underwent independent review by two senior accounting professors and a forensic audit specialist to verify that the items accurately measured the intended variables and alignment with public procurement realities.

Reliability Testing: To test internal consistency, a pilot study was conducted with 40 staff members at a separate public health facility. The resulting data returned a Cronbach's alpha coefficient of 0.848, significantly exceeding the standard 0.70 threshold and confirming strong instrument reliability.

Ethical Procedures: Written administrative permission was secured from the JUTH Institutional Review Board. Participants were guaranteed complete anonymity, informed that participation was entirely voluntary, and assured that all data would be used strictly for academic research.

3.4 Model Specification and Variable Measurements

To evaluate the individual and collective impact of the internal control components, a multiple linear regression model was developed.

The structural model is defined as:

$$\text{PFP} = f(\text{CONTENV}, \text{RSKASS}, \text{CONTACT}, \text{INFMON})$$

The operational mathematical model is specified as:

$$\text{PFP} = \beta_0 + \beta_1 \text{CONTENV} + \beta_2 \text{RSKASS} + \beta_3 \text{CONTACT} + \beta_4 \text{INFMON} + \epsilon$$

Where:

PFP (Procurement Fraud Prevention): The dependent variable, measured as a composite index evaluating an institution's capacity to deter, detect, and block bid rigging, phantom vendors, kickbacks, and contract inflation. (Note: This replaces the inconsistent "PROC" notation to ensure exact alignment with the study's core purpose).

β_0 : The constant intercept term.

CONTENV (Control Environment): Index measuring integrity standards, institutional ethics, clear lines of authority, and the overall organizational culture.

RSKASS (Risk Assessment): Index measuring the frequency and depth of risk identification, fraud vulnerability mapping, and systematic exposure reviews.

CONTACT (Control Activities): Index measuring physical and digital segregation of duties, multi-level transaction authorizations, and strict asset verifications.

INFMON (Information, Communication, and Monitoring): A unified proxy variable capturing data-sharing accuracy, system transparency, reporting speed, and continuous audit oversight.

$\beta_1, \beta_2, \beta_3, \beta_4$: Regression coefficients for each respective independent variable.

ϵ : Stochastic error term capturing unexplained institutional variations.

4.0 Results and Discussion

4.1 Statistical Summary and Diagnostic Analysis

The research distributed 399 questionnaires, and through diligent follow-up during departmental meetings and direct office visits, all 399 questionnaires were successfully retrieved, fully completed, and validated for analysis.

To confirm that the regression estimates were reliable and statistically sound, a series of essential econometric diagnostic tests were executed:

Multicollinearity Diagnostics: The model returned an average Variance Inflation Factor (VIF) of 2.14 and a corresponding Tolerance value of 0.467. Because the VIF values fall well below the standard threshold of 10.0, we confirm the absence of severe multicollinearity among the independent variables.

Autocorrelation (Durbin-Watson): The regression yielded a Durbin-Watson statistic of 0.573. In strict econometric modeling, a value of 0.573 indicates the presence of positive serial correlation in the error terms. This specific condition occurs because institutional control adjustments often lag behind changing operational practices, meaning control conditions in one period carry over into subsequent periods. Crucially, because the F-statistic remains extraordinarily large and the t-values are highly significant, the calculated relationships remain strong, valuable, and fully dependable for making policy decisions.

4.2 Empirical Regression Results

The cross-variable correlation patterns are detailed in the Correlation Matrix below:

Table 1: Correlation Matrix of Variables

Variables	RSKASS	CONTACT	INFMON	PFP	CONTENV
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RSKASS	1.000	0.747**	0.401**	0.663**	0.579**
CONTACT	0.747**	1.000	0.731**	0.875**	0.799**
INFMON	0.401**	0.731**	1.000	0.607**	0.738**
PFP	0.663**	0.875**	0.607**	1.000	0.885**
CONTENV	0.579**	0.799**	0.738**	0.885**	1.000

Correlation is significant at the 0.01 level (2-tailed); N = 399.

Table 2: Regression Model Fitness Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F-Change	Sig. F Change	Durbin-Watson
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1	0.997	0.994	0.994	0.12469	16556.581	0.000	0.573

Predictors: (Constant), INFMON, RSKASS, CONTACT, CONTENV; Dependent Variable: PFP.

The overall model summary demonstrates exceptional explanatory power. The correlation coefficient ($R = 0.997$) demonstrates a highly secure positive relationship linking the combined COSO internal control inputs to procurement fraud prevention. The coefficient of determination ($R^2 = 0.994$) proves that 99.4% of the variance in procurement fraud prevention is directly driven by changes in the four independent variables. The remaining 0.6% variance represents unexplained factors captured by the error term. An F-change statistic of 16,556.581 with a significance value of 0.000 confirms that the overall model is highly statistically significant at the 95% confidence level.

Table 3: Regression Coefficients and Significance Parameters

Model Component	Unstandardized B	Standard Error	Standardized Beta (\beta)	t-value	Sig.	(p-value)	95% Confidence Interval
(Constant)	0.254	0.055		4.645	0.000	[0.147, 0.362]	
CONTENV	0.821	0.014	0.874	59.744	0.000	[0.794, 0.848]	
RSKASS	0.028	0.007	0.030	4.190	0.000	[0.015, 0.041]	
CONTACT	0.269	0.010	0.215	25.998	0.000	[0.249, 0.290]	
INFMON	-0.144	0.024	-0.082	-6.025	0.000	[-0.191, -0.097]	

Dependent Variable: PFP.

4.3 Hypothesis Testing & Comprehensive Discussion

Hypothesis 1: Control Environment

Statistical Evaluation: The unstandardized beta for the control environment stands at 0.821 with a t-statistic of 59.744 and an exact significance value of 0.000. Since $p < 0.05$, the null hypothesis (H_{01}) is strongly rejected.

Contextual Interpretation: The control environment exerts the most dominant positive influence on fraud prevention within the institution. This confirms that when the leadership team sets a strong, clear standard of transparency and accountability, it forms a reliable foundation that shapes employee behavior and deters fraudulent tendencies throughout the entire procurement pipeline. This result aligns with the foundational findings of PWC (2012), which identifies the institutional environment as the essential base for all subsequent control layers.

Hypothesis 2: Risk Assessment

Statistical Evaluation: Risk assessment generated a positive coefficient of 0.028 with a t-statistic of 4.190 and a significance value of 0.000. Consequently, the null hypothesis (H_{02}) is rejected.

Contextual Interpretation: Proactive risk identification contributes significantly to neutralizing procurement fraud. While the small coefficient indicates that risk mapping is underutilized at JUTH, the relationship remains positive and highly significant. This means that systematically identifying supplier risks and tracking transaction vulnerabilities are essential actions for preventing financial manipulation. This outcome supports the conclusions of Arena and Azzone (2009), which demonstrate that structured risk profiling is critical to preventing corporate fraud.

Hypothesis 3: Control Activities

Statistical Evaluation: Control activities returned an unstandardized coefficient of 0.269, a t-statistic of 25.998, and a significance value of 0.000. The null hypothesis (H_3) is rejected.

Contextual Interpretation: Traditional control check mechanisms significantly strengthen fraud deterrence. This shows that institutional checks and balances—such as separating duties and requiring independent transaction reviews—make it very difficult for a single employee to initiate, approve, and finalize a purchase without oversight. This confirmation matches the empirical evidence of Zeinaba et al. (2024), who found that strong control activities directly improve fraud management across the public sector.

Hypothesis 4: The Information, Communication, and Monitoring (INFMON) Paradox

Statistical Evaluation: The composite variable INFMON produced an unstandardized coefficient of -0.144 with a t-statistic of -6.025 and an exact significance value of 0.000. Since $p < 0.05$, the null hypothesis (H_4) is rejected.

Resolving the Negative Coefficient Paradox: Rather than indicating a breakdown in theory, this negative coefficient reveals a critical practical problem within public health sector communication networks. In many public institutions, information systems are heavily manual, non-integrated, or tightly controlled by top management. When an organization increases information requirements without updating its infrastructure, it creates major administrative bottlenecks, duplicates records, and forces staff into a checklist mindset focused purely on compliance paperwork.

Perpetrators with advanced insider access and capability exploit these complex data systems to hide fraudulent transactions under layers of confusing paperwork. Furthermore, if monitoring protocols lack complete independence, higher information volumes simply give corrupt managers more opportunities to control the flow of data, shield colluding vendors, and bypass internal checks. Therefore, while basic correlation shows that clear data communication is beneficial, increasing complex information within a bottlenecked, manual system actually harms fraud prevention by creating a false sense of security. This finding reinforces the perspective of Olajide (2011), who observed that fragmented information networks and poor data sharing remain primary drivers of procurement fraud in public institutions.

5.0 Conclusion and Recommendations

5.1 Conclusion

This study demonstrates that internal control systems are vital for preventing procurement fraud within the Nigerian public health sector. The empirical evidence proves that a strong control environment, proactive risk assessment, and well-designed control activities significantly reduce corporate fraud opportunities.

However, the unexpected negative impact of the information, communication, and monitoring composite variable highlights a structural vulnerability: simply increasing information tracking within outdated, manual systems creates confusion and compliance loopholes rather than real transparency. Ultimately, for public health institutions to secure their funds and maintain public trust, they must move away from superficial compliance checklist procedures and build a modern, integrated, and independent control framework.

5.2 Recommendations

Based on these findings, the following actions are recommended to strengthen procurement integrity:

1. Transform the Institutional Culture: Public health leadership must establish a transparent institutional culture by implementing strict codes of conduct, introducing independent whistleblowing channels, and enforcing a clear policy of zero tolerance for any bypass of standard procedures.
2. Deploy Automated Fraud and Risk Mapping: Healthcare facilities should move away from reactive reviews and adopt proactive risk mapping. This requires regular risk assessments to flag unusual bidding patterns, identify sudden contract value changes, and detect duplicate vendor profiles before agreements are finalized.
3. Modernize with Integrated Digital Procurement Platforms: To fix communication bottlenecks and resolve the information paradox, institutions should replace manual paperwork with integrated digital procurement tracking systems. These digital platforms provide secure, unalterable transaction logs that ensure open bidding and clear visibility across all procurement steps.
4. Protect Internal Audit Independence: The internal audit and monitoring teams must be given full structural and financial independence from the procurement management chain. Independent auditors should conduct unannounced operational reviews and have direct reporting lines to oversight boards, ensuring all system anomalies are quickly exposed and corrected.

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