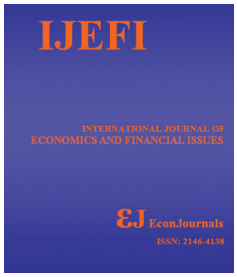

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Effect of Internal Control System on the Prevention of Fraud in the Central Bank of Nigeria

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ABSTRACT

This study examines the effect of internal control systems on fraud prevention in the Central Bank of Nigeria (CBN), with particular focus on the moderating role of emotional intelligence (EI). Using the COSO internal control framework, the research assessed five components—control environment, risk assessment, control activities, information and communication, and monitoring activities—to determine their effectiveness in curbing fraud. A quantitative cross-sectional survey was conducted among 458 purposively selected CBN staff, yielding 401 valid responses. Data were analysed using multiple regression, including interaction terms to evaluate the influence of EI. Findings revealed that monitoring activities and risk assessment had statistically significant positive effects on fraud prevention, while control environment and control activities did not. Notably, emotional intelligence significantly moderated the relationship between risk assessment and fraud prevention, indicating that emotionally intelligent personnel strengthen fraud control outcomes. The study underscores the strategic value of emotional intelligence in enhancing proactive fraud control mechanisms. It recommends embedding EI training into staff development, especially in high-risk operational areas, and calls for reforms in internal control policies to focus on data-driven, risk-sensitive monitoring systems. These insights are crucial for improving fraud risk governance and ensuring financial integrity within public financial institutions like the CBN.

Keywords: Fraud Prevention, Control Environment, Risk Assessment, Information and Communication, Monitoring Activities, Emotional Intelligence
JEL Classifications: M40, M41, M42, M43

1. INTRODUCTION

Fraud remains one of the most pressing challenges confronting public and private institutions globally, with significant consequences for organisational integrity, public trust, and national economies (Koutoupis and Malisiovas, 2023; Yuniarti, 2017). In the context of financial institutions such as the Central Bank of Nigeria (CBN), fraud not only disrupts internal operations but also undermines monetary stability and public confidence. Despite technological advancements and robust governance frameworks, fraudulent activities continue to evolve in complexity and scale (Demirović et al., 2021). The persistence of fraud, despite the existence of regulatory frameworks and control policies, underscores the need for proactive and adaptive fraud prevention mechanisms that go beyond conventional systems (Yasa et al. 2022; Wang et al. 2021). This study explores the role of internal control systems—particularly through the lens of the COSO framework—in preventing fraud within apex institutions like the CBN, with a focus on how emotional intelligence enhances or moderates this relationship.

Fraud prevention requires more than just procedural safeguards; it demands an integrated system of checks and balances embedded within institutional processes and culture. The Fraud Triangle Theory (Cressey, 1953) remains a central theoretical lens, identifying pressure, opportunity, and rationalisation as key

enablers of fraudulent behaviour. Pressure may stem from personal or organisational stressors, opportunity arises from weaknesses in internal control, and rationalisation reflects the cognitive justifications individuals use to legitimise unethical actions. Internal control systems, when well designed, target the "opportunity" leg of the triangle by establishing robust preventive measures such as segregation of duties, access controls, and continuous audits (Almalki, 2022; Ogwiji and Lasisi, 2022). However, fraud can still occur even under strict control environments, suggesting that internal controls must be complemented by behavioural and cultural interventions to be truly effective.

The COSO framework—comprising control environment, risk assessment, control activities, information and communication, and monitoring—offers a structured and widely accepted approach to designing and evaluating internal control systems. When implemented holistically, each of these components can help detect fraud early, minimise its impact, and, more importantly, prevent its occurrence (Atmadja et al., 2024; Aksoy and Mohammed, 2020). However, research suggests that the human factor is often a weak link in fraud prevention. Employees' ethical sensitivity, their ability to resist pressure, and their willingness to report misconduct are influenced by soft skills like empathy, self-regulation, and interpersonal awareness—all of which fall under emotional intelligence (EI) (Dewi et al., 2024; Jaffer et al., 2022). This growing recognition has spurred scholarly interest in understanding how EI may enhance the effectiveness of internal control mechanisms.

Emotional intelligence is particularly relevant in environments where fraud is facilitated through collusion or management override of controls. Employees with high EI are more likely to recognise unethical behaviours, resist peer pressure, and communicate concerns constructively (Saputra et al., 2022; Dasborough, 2019). Recent studies show that organisations that incorporate EI training into their internal control strategies are better equipped to manage fraud risks, especially in contexts involving high autonomy and limited oversight (Musah et al., 2022; Yasa et al., 2022). Within the CBN—an institution with vast operational scope, large staff strength, and critical national responsibilities—the need to blend technical controls with behavioural safeguards becomes even more urgent. The recent fraud allegations involving top management have further emphasised the limitations of structural controls without complementary ethical and emotional accountability.

Therefore, this study seeks to evaluate the impact of internal control systems on fraud prevention within the Central Bank of Nigeria, while also assessing the moderating role of emotional intelligence. Through a combination of quantitative and qualitative methods, and grounded in theoretical frameworks like the Fraud Triangle, Agency Theory, and Cognitive Evaluation Theory, the research aims to provide a nuanced understanding of how internal controls and human behaviour intersect to shape organisational responses to fraud. By focusing on the CBN—a regulatory institution with far-reaching influence on Nigeria's financial system—the study offers policy-relevant insights for improving fraud risk governance in high-stakes public institutions.

This study contributes significantly to the field of fraud prevention by empirically assessing the effectiveness of internal control systems—using the COSO framework—within the Central Bank of Nigeria, a largely underexplored apex financial institution. By integrating emotional intelligence as a moderating variable, it advances the theoretical understanding of how human behavioural factors interact with structural controls to influence fraud outcomes. The findings offer practical insights for policymakers, auditors, and institutional leaders seeking to enhance fraud risk management strategies and strengthen governance frameworks.

2. LITERATURE REVIEW

Fraud prevention encompasses the proactive strategies and internal mechanisms an organisation employs to deter and mitigate fraudulent activities before they occur. Guided by the COSO internal control framework, effective fraud prevention hinges on five core components: control environment, risk assessment, control activities, information and communication, and monitoring activities. The control environment establishes ethical standards and governance expectations, shaping organisational behaviour (Ogwiji and Lasisi, 2022; Aksoy and Mohammed, 2020). A strong ethical tone at the top fosters transparency and accountability, reducing fraud risks (Dewi et al., 2024; Jaffer et al., 2022). Risk assessment involves the identification and analysis of potential fraud risks, enabling organisations to anticipate vulnerabilities and implement control responses (Musah et al., 2022). Control activities—such as segregation of duties, authorisations, and reconciliations—serve as operational checks that block fraudulent actions, especially in high-risk environments like financial institutions (Atmadja et al., 2024; Fernandhytia and Muslichah, 2020).

Information and communication systems facilitate the flow of critical control-related information across hierarchical levels, enabling timely detection and corrective action (Barros and Ferreira, 2022). Meanwhile, monitoring activities such as audits and performance reviews provide continuous assurance on the effectiveness of controls, allowing real-time adjustments to deter fraud (Hussaini, 2022; Wang et al., 2020). In addition to these technical components, recent studies emphasise the importance of emotional intelligence (EI)—the ability to recognise, understand, and manage emotions in oneself and others—as a critical behavioural asset in fraud prevention. EI influences ethical decision-making, strengthens whistleblowing behaviours, and enhances employee resilience under pressure (Dewi et al., 2024; Tram-Nguyen et al., 2023). By integrating EI into internal control systems, organizations such as the Central Bank of Nigeria can augment the human aspect of fraud control, creating a vigilant and ethically aware workforce. This holistic approach, blending structural and emotional dimensions, is increasingly necessary in dynamic and high-risk operational environments.

The Fraud Triangle Theory, developed by Donald Cressey (1953), is central to understanding the psychological and structural dimensions of fraud, particularly within financial institutions like the Central Bank of Nigeria (CBN). The model identifies pressure, opportunity, and rationalisation as the three drivers of fraudulent

behaviour. Pressure arises from financial or organisational stressors, often fuelled by performance targets or personal needs. Within the CBN, such pressure may stem from stringent regulatory expectations or macroeconomic instability. The Cognitive Evaluation Theory (CET) adds context by explaining that external rewards—such as financial gain or job security—can influence individuals' intrinsic motivation, making them more susceptible to fraudulent decisions when under stress. The Agency Theory complements this view by focusing on misaligned incentives between principals (government/public) and agents (CBN staff), often leading to information asymmetry and opportunistic behaviour. Effective internal controls, such as whistleblower systems and ethical leadership, reduce these tensions by promoting goal congruence and accountability (Rafindadi and Olanrewaju, 2019; Ong'unya and Abbey, 2019; Asiimwe et al., 2021).

Opportunity is the element most influenced by internal control design. Weak governance, lack of audit trails, and insufficient oversight create the perceived ability to commit fraud without consequences. The CBN can curb this through enhanced controls—e.g., segregation of duties, automated monitoring, and internal audits—thus limiting fraud pathways (Yuniarti, 2017; Purnamasari et al., 2024). Rationalisation, meanwhile, involves the psychological justification of unethical acts, often due to perceived unfairness or weak organisational culture. Ethical leadership and consistent enforcement of policies reduce such rationalisations. Embedding these values into training, control policies, and daily operations discourages fraud at its cognitive root (Demirović et al., 2021; Otoo et al., 2023). Together, these theories form a comprehensive framework for the CBN to prevent fraud by targeting its structural and psychological enablers.

A growing body of empirical literature underscores the crucial role of internal control systems in mitigating fraud across sectors and geographies. Almalki (2022), in a study of the UK retail industry, established that among the fraud triangle elements, opportunity had the most significant influence on fraud detection and prevention, while pressure and rationalisation were less impactful. This finding affirms the importance of robust internal controls—such as access restrictions and separation of duties—in closing the window for fraudulent acts. Similarly, Saputra et al. (2022) emphasised that the human dimension of fraud prevention—when supported by internal control systems—was central to countering the evolving nature of fraudulent practices. Their findings revealed that empowering employees with competencies and ethical standards amplified the efficacy of fraud controls, particularly in high-risk sectors.

Several studies in the public sector affirm the effectiveness of internal controls in reducing fraud. Atmadja et al. (2024) found that control mechanisms—like segregation of duties and periodic audits—significantly decreased fraud in Indonesian government financial agencies. Likewise, Ogwiji and Lasisi (2022), in a Nigerian context, confirmed the COSO framework's effectiveness in banking and insurance sectors. Their results showed significant fraud prevention outcomes associated with control environment and monitoring, though not all components had uniform effects. In another context, Fernandhytia and Muslichah (2020) confirmed that internal control systems were inversely related to fraud in Indonesian startups, stressing that even resource-constrained entities could mitigate fraud through ethical practices and basic controls. These insights suggest a consensus: structured control mechanisms are instrumental in safeguarding public and private assets.

Technological integration and leadership ethics have also emerged as enhancers of internal control effectiveness. Dewi et al. (2024) found that tone at the top—driven by ethical leadership—was more influential in fraud prevention than technical competencies like big data proficiency. Similarly, Aksoy and Mohammed (2020) confirmed the dominance of monitoring activities and control environment in Ghanaian banks but highlighted weaknesses in risk assessment, indicating the need for balance between leadership direction and technical systems. Moreover, Jaffer et al. (2022) showed that ethical leadership in South African financial institutions reduced misreporting, reinforcing the idea that internal control frameworks must be guided by principled leadership. These findings suggest that leadership plays a vital role in embedding control culture and setting expectations for ethical conduct within organisations.

Finally, studies have demonstrated that internal control systems enhance organisational performance alongside fraud prevention. Baird et al. (2019) revealed that management control systems improved decision-making and efficiency, while Barros and Ferreira (2022) found that control activities fostered both compliance and innovation. The dual function of controls—maintaining order while enabling creativity—was also echoed by Fana and Villani (2023), who emphasised digital innovation's role in refining control processes. Musah et al. (2022) added that effective internal controls, when coupled with good corporate governance, significantly boosted SME financial performance in Ghana. Taken together, the empirical evidence shows that internal control systems are not only tools of fraud mitigation but also foundational to broader organisational effectiveness, transparency, and long-term sustainability.

Despite the breadth of existing research on internal control systems and fraud prevention, several critical gaps remain unaddressed. First, much of the literature focuses on commercial banks, leaving apex institutions like the Central Bank of Nigeria (CBN) under-researched despite their unique regulatory functions (Ogwiji and Lasisi, 2022; Aksoy and Mohammed, 2020). Secondly, many studies rely on descriptive or correlational methods, failing to use advanced statistical models that can unravel the complex interplay among internal control components (Wang et al., 2020; Musah et al., 2022). Additionally, the role of emotional intelligence—a key factor in ethical decision-making, fraud perception, and whistleblowing behaviour—remains underexplored in internal control frameworks (Dewi et al., 2024; Jaffer et al., 2022). This leaves a significant gap in understanding how cognitive and emotional competencies influence fraud prevention within high-risk institutions like the CBN.

Moreover, digital transformation and its integration into internal controls are insufficiently studied. While fraud risks evolve with

increasing digitisation, current literature still emphasises traditional control mechanisms, overlooking emerging technologies such as machine learning, blockchain, and cybersecurity systems (Fana and Villani, 2023; Barros and Ferreira, 2022). Lastly, although the Fraud Triangle Theory (Cressey, 1953) is a foundational framework in fraud literature, its application within central banks is limited. Most studies address external fraud and compliance (Almalki, 2022) rather than how internal vulnerabilities—such as unchecked opportunities or rationalisations—manifest within apex financial institutions. Addressing these gaps with integrated, multidisciplinary approaches will enhance fraud detection, reinforce institutional accountability, and improve financial governance in central banks like the CBN.

3. METHODOLOGY

A quantitative, cross-sectional survey design collects numerical data at a single point in time to examine relationships among variables. This study used a 5-point Likert scale questionnaire to measure perceptions of internal control systems, emotional intelligence, and fraud prevention. The scale enabled the transformation of subjective responses into quantifiable data, allowing for objective statistical analysis of patterns within the Central Bank of Nigeria's operational environment.

3.1. Sample Size and Sampling Technique

The organisation understudy has a staff strength of approximately 3540 permanent workers. The sample size is the part of the population selected for the study. Taro Yamane (1967) statistical formula is stated:

$$n = \frac{N}{\left(1 + N(e)^2\right)} \quad (1)$$

where n-sample size, N-population, 1-statistical constant and e-the margin error of 0.05. Note: $400 \leq N \leq 10{,}000$

$$n = \frac{3{,}540}{\left(1 + 8{,}671(0.05)^2\right)} = \frac{3{,}540}{(1 + 8{,}671(0.0025)} = \frac{3{,}540}{(1 + 21.6775)} = \frac{3{,}540}{(22.6775)} = 352\, approx$$

To increase the response rate, 30% of the respondents were included in making the total samples size to be 458. The designated organisations were represented using the proportionality formula. Incorporating a simple random sampling technique enhances the study's validity by giving all CBN employees an equal chance of selection, reducing bias and increasing representativeness. This method ensures diverse insights from departments like audit, risk, and finance, enabling a reliable analysis of how internal control components and emotional intelligence affect fraud prevention and detection across the institution.

3.2. Model Specification

To determine the effect of internal control system on service delivery, Asiimwe et al. (2021) included internal control system (such as control environment, risk assessment, monitoring activities, and information and communication) as the independent variables and service delivery in the health sector as a dependent variable. The model is as follows:

$$SDD_i = \beta_0 + \beta_1 CE_i + \beta_2 RA_i + \beta_3 MA_i + \beta_4 IC_i + \mu_i \quad (2)$$

Where, SD_i represent service delivery as a measure of organisational performance. CE_i is the control environment, RA_i represents risk assessment, MA_i is monitoring activities, IC_i stands for Information and communication, Beta, β_1 to β_4 are the parameters to be estimated. β_0 is the constant and μ_i is the white noise.

In the context of this study on fraud prevention within the Central Bank of Nigeria, the inclusion of control activities as a key internal control component is crucial for understanding how internal systems function to deter fraud. Control activities—such as segregation of duties, approvals, and reconciliations—translate risk assessments into actionable safeguards that strengthen fraud resistance. These activities operationalise the internal control system by ensuring policies are effectively implemented, thus forming a practical link between identifying potential fraud risks and the monitoring processes that track compliance and effectiveness. Excluding control activities would undermine the model's comprehensiveness and weaken its alignment with the COSO framework, which positions them as essential for achieving institutional integrity. Empirical studies (e.g., Atmadja et al., 2024; Ogwiji and Lasisi, 2022; Saputra et al., 2022) affirm that control activities enhance fraud prevention outcomes by embedding routine checks and balances into daily operations. Therefore, including this variable not only increases the model's robustness but also reflects the practical mechanisms through which internal controls mitigate fraud in high-risk, regulated institutions like the CBN. Thus, the new model is as follows:

$$FP_i = \beta_0 + \beta_1 CE_i + \beta_2 RA_i + \beta_3 MA_i + \beta_4 CA_i + \beta_5 IC_i + \mu_i \quad (3)$$

FP_i Means Fraud prevention while CA_i are control activities and all other variables remain as previously described.

Including emotional intelligence as a control variable is vital for assessing how internal control systems affect fraud prevention. It captures the human factors—like empathy, self-awareness, and emotional regulation—that influence decision-making and response to fraud risks. This inclusion helps isolate its moderating role and strengthens the validity and practical relevance of the study's findings.

$$FP_i = \beta_0 + \beta_1 CE_i + \beta_2 RA_i + \beta_3 MA_i + \beta_4 CA_i + \beta_5 IC_i + \beta_6 EI_i + \mu i \quad (4)$$

EI_i stand for Emotional Intelligence. All other variables remain as previously described.

Applying Emotional Intelligence as a moderating factor, the model will be as follows:

$$FDP_i = \beta_0 + \beta_1 CE_i + \beta_2 RA_i + \beta_3 MA_i + \beta_4 CA_i + \beta_5 IC_i + \beta_6 EI_i + \beta_7 (CE \times EI)_i + \beta_8 (RA \times EI)_i + \beta_9 (MA \times EI)_i + \beta_{10} (CA \times EI)_i + \beta_{11} (IC \times EI)_i \quad (5)$$

3.3. Validity and Reliability of Research Instrument

The study ensured the validity and reliability of its research instrument through expert reviews, a pilot study, and statistical testing. Face and content validity were established by financial and auditing experts who evaluated the questionnaire's clarity, alignment, and relevance to fraud prevention and internal control components. A pilot study was conducted with bank staff, leading to refinements for clarity and consistency. Reliability was assessed using Cronbach's Alpha, with all variables exceeding the acceptable threshold of 0.7 as reported in Table 1. Control Environment recorded the highest reliability score (0.893), followed by Control Activities (0.887) and Risk Assessment (0.881), confirming the instrument's robustness and internal consistency for the main study.

3.4. Technique for Data Analysis

This quantitative study utilised multiple regression analysis and correlation to examine how internal control system components influence fraud prevention within the Central Bank of Nigeria (CBN), drawing on the COSO framework and guided by prior studies such as Shamaki et al. (2022) and Yusuf et al. (2023). The analysis focused on key internal control elements—Control Environment, Risk Assessment, Control Activities, Information and Communication, and Monitoring Activities—to determine their individual and collective impact on preventing fraudulent activities. Multiple regression was adopted for its capacity to model complex relationships and assess the strength of each variable's predictive power in relation to fraud prevention. The inclusion of emotional intelligence as a moderating variable further enriched the model, enabling a deeper understanding of how cognitive and behavioural competencies interact with structural controls to reduce fraud risk. The coefficient of determination (R^2) measured how much variance in fraud prevention was explained by the internal control components, while significance levels highlighted the most influential factors. This approach allowed for evidence-based conclusions on the most effective control measures, offering valuable insights into how the CBN can strengthen its internal systems to mitigate the risk of fraud.

4. RESULTS AND DISCUSSIONS

The demographic analysis in Table 2 reveals a high response rate, with 401 out of 458 questionnaires returned, representing approximately 88% participation. In terms of educational background, a slightly higher number of respondents (224) hold professional qualifications compared to 177 with university degrees or their equivalents, indicating a workforce with specialised expertise. Age distribution shows that the majority of participants (202) fall within the 41–49 age group, followed by 129 aged 20–40, and 70 aged 50 and above, suggesting that mid-career professionals dominate the sample. Regarding experience, responses are nearly evenly split between those with 1–10 years (169) and 11–20 years (173) at the bank, while 59 respondents have over 21 years of service. This spread reflects a balanced mix of early, mid, and senior-level employees, enhancing the representativeness and reliability of insights gathered from diverse operational perspectives within the Central Bank of Nigeria.

4.1. Data Analysis

4.1.1. Descriptive Statistics and Correlation

The descriptive statistics in Table 3 reveal generally high mean scores across all variables, indicating strong perceptions of internal control components and fraud prevention among respondents. Control Activities (CA) had the highest mean (4.569) and lowest

Table 1: Reliability statistics

Variables	Cronbach's alpha	Cronbach's alpha based on standardised items	N of Items
Control environment	0.893	0.897	10
Control activities	0.887	0.896	10
Risk assessment	0.881	0.890	10
Monitoring	0.834	0.882	10
Information and Communication	0.820	0.891	10
Emotional Intelligence	0.821	0.841	10
Fraud Prevention	0.855	0.871	10

Sources: Author's Computation, 2025

Table 2: Demographic analysis of the questionnaire

1	Distribution	
	Distributed	458
	Received	401
2	Education	
	University Degree/Equivalent	177
	Professional Qualification	224
3	Participant's Age	
	20-40	129
	41-49	202
	50 and above	70
4	Years of Experience with the Bank	
	1-10	169
	11-20	173
	21 and above	59

Source: Author's Compilation

Table 3: Descriptive statistics

Statistics	CE	RA	CA	IC	MA	EI	FP
N	401	401	401	401	401	401	401
Mean	4.130	4.232	4.569	4.190	4.495	4.128	4.326
Median	4.200	4.250	4.667	4.000	4.500	4.000	4.250
Mode	4.0	4.00	5.000	4.000	5.0	4.00	4.00
Standard deviation	0.572	0.552	0.476	1.399	0.525	0.5211	0.487
Variance	0.328	0.305	0.227	1.958	0.275	0.272	0.238
Skewness	−1.012	−0.304	−0.785	7.718	−0.471	−0.079	−0.108
Kurtosis	1.848	−0.258	−0.275	73.32	−1.176	−0.665	−0.703
Range	3.0	2.50	2.000	15.333	1.5	2.00	2.00
Minimum	2.0	2.50	3.000	2.000	3.5	3.00	3.00
Maximum	5.0	5.00	5.000	17.333	5.0	5.00	5.00
Sum	450.2	461.25	498.0	456.67	490.0	450.00	471.50

CE: Control environment, RA: Risk assessment, CA: Control activities, IC: Information and communication, MA: Monitoring activities, EI: Emotional intelligence, FP: Fraud prevention. Sources: Author's Computation

variability (SD = 0.476), suggesting consistent agreement on its effectiveness. Monitoring Activities (MA) also scored highly (mean = 4.495), reinforcing its perceived significance in fraud control. Information and Communication (IC) showed the greatest dispersion (SD = 1.399, skewness = 7.718, kurtosis = 73.32), indicating highly varied responses and potential outliers. All variables are negatively skewed (except IC), reflecting a tendency toward higher ratings. The moderate-to-low standard deviations for most variables suggest relatively consistent responses, with median and mode values closely aligned to the means. Overall, the data suggests a generally favourable assessment of internal control components and emotional intelligence in relation to fraud prevention within the Central Bank of Nigeria.

The Pearson correlation analysis in Table 4 shows significant positive relationships among most internal control components, emotional intelligence, and fraud prevention (FP), indicating that stronger internal control mechanisms are associated with higher levels of fraud prevention. Risk assessment (RA) has the highest correlation with fraud prevention ($r = 0.471$, $p < 0.01$), followed closely by monitoring activities (MA) at $r = 0.476$ and emotional intelligence (EI) at $r = 0.433$, suggesting these factors play critical roles in fraud mitigation. Control activities (CA) and control environment (CE) also demonstrate moderate positive correlations with FP ($r = 0.431$ and $r = 0.342$, respectively), while information and communication (IC) shows the weakest and only marginally significant relationship with fraud prevention ($r = 0.179$, $P > 0.05$). Additionally, there are strong interrelationships among the internal control variables, especially between CE and RA ($r = 0.587$), and CA and MA ($r = 0.492$), implying a cohesive control framework. Overall, the data supports the conceptual argument that robust internal controls and emotional intelligence collectively enhance fraud prevention within the Central Bank of Nigeria.

The correlation analysis shows significant positive associations among key variables, supporting their interconnected role in fraud prevention. All correlation coefficients fall below the 0.8 multicollinearity threshold, aligning with Azu et al. (2025) and Yusuf et al. (2024). This confirms that multicollinearity is not present, allowing for reliable simultaneous estimation of all independent variables—control environment, risk assessment, control activities, information and communication, monitoring activities, and emotional intelligence—in a multiple regression model.

4.1.2. Test of hypotheses

Table 5 presents the regression on the Impact of the Internal Control System on Fraud Prevention. The R-squared value of 0.356 indicates that approximately 35.6% of the variability in fraud prevention within the Central Bank of Nigeria is explained by the combined influence of the independent variables—control environment, risk assessment, control activities, information and communication, monitoring activities, and emotional intelligence. The adjusted R-square of 0.318, slightly lower than the R-square, adjusts for the number of predictors and sample size, providing a more precise estimation that 31.8% of variance is explained when considering model complexity. Additionally, the Durbin-Watson statistic of 2.090, close to the ideal value of 2.0, suggests negligible autocorrelation among residuals, confirming the reliability of the regression results in meeting assumptions of independence of observations. Importantly, all Variance Inflation Factors (VIFs) are below 2, confirming no multicollinearity issues. Overall, the results highlight monitoring and risk assessment—supported by emotional intelligence—as the most influential components in enhancing fraud prevention efforts.

The regression analysis in Table 5 evaluates the impact of internal control system components and emotional intelligence (EI) on fraud prevention (FP). Among the predictors, monitoring activities (MA) has the strongest and statistically significant effect ($\beta = 0.254$, $P = 0.010$), confirming its pivotal role in preventing fraud through consistent oversight and feedback mechanisms. Risk assessment (RA) ($\beta = 0.204$, $P = 0.066$) and emotional intelligence (EI) ($\beta = 0.175$, $P = 0.070$) show positive, though marginally significant effects, suggesting that identifying fraud risk areas and fostering emotionally intelligent behaviours may contribute meaningfully to prevention strategies. Control activities (CA) also presents a positive coefficient ($\beta = 0.154$), though not statistically significant ($P = 0.136$), indicating that while procedural safeguards may influence fraud control, their standalone impact is limited in this model.

Conversely, control environment (CE) displays a negative and non-significant coefficient ($\beta = -0.043$, $P = 0.684$), implying it has little direct effect on fraud prevention within this context, possibly due to uniform ethical standards already being institutionalised at the CBN. Information and communication (IC), despite its theoretical importance, shows no significant predictive power ($\beta = 0.065$, $P = 0.432$), suggesting that communication systems alone may not strongly influence fraud deterrence unless reinforced by other mechanisms. These results point toward the relative strength of

Table 4: Pearson correlation

Variables	CE	RA	CA	IC	MA	EI	FP
CE	1	0.587**	0.518**	0.183	0.424**	0.376**	0.342**
RA	0.587**	1	0.483**	0.223*	0.447**	0.513**	0.471**
CA	0.518**	0.483**	1	0.068	0.492**	0.405**	0.431**
IC	0.183	0.223*	0.068	1	0.127	0.191*	0.179
MA	0.424**	0.447**	0.492**	0.127	1	0.370**	0.476**
EI	0.376**	0.513**	0.405**	0.191*	0.370**	1	0.433**
FP	0.342**	0.471**	0.431**	0.179	0.476**	00.433**	1

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed). CE: Control environment, RA: Risk Assessment, CA: Control activities, IC: Information and communication, MA: Monitoring activities, EI: Emotional Intelligence, FP: Fraud Prevention, FD: Fraud detection. Sources: Author's Computation

monitoring, risk-based assessments, and emotional competence in shaping effective anti-fraud controls.

4.2. The Mediation Effect of Emotional Intelligence on the Impact of Internal Control Systems on Fraud Prevention

Table 6 presents the regression results on the mediating Effect of Emotional Intelligence on the Impact of the Internal Control System on Fraud Prevention. The R-square value of 0.384 from the moderated regression indicates that approximately 38.4% of the variability in fraud prevention within the Central Bank of Nigeria is explained by the combined influences of emotional intelligence as a moderator interacting with various internal control components—control environment, risk assessment, control activities, information and communication, and monitoring activities. However, the adjusted R-square value, at 0.348, provides a slightly lower yet more precise estimation, accounting for the number of predictors and the sample size, thereby suggesting that about 34.8% of the variation in fraud prevention is realistically attributable to these moderated relationships. Furthermore, the Durbin-Watson statistic of 2.155 is very close to the ideal value of 2.0, indicating minimal autocorrelation of residuals. This confirms that the regression analysis meets assumptions regarding the independence of errors, ensuring reliability and robustness of the statistical inference derived from the model.

The regression results in Table 6 assess the moderating effect of emotional intelligence (EI) on the relationship between internal control components and fraud prevention (FP). Notably, the interaction terms RAEI (EI × Risk Assessment) and MAEI (EI × Monitoring Activities) demonstrate significant and positive effects (β = 0.430, P = 0.022; β = 0.426, P = 0.011 respectively), indicating that emotional intelligence enhances the effectiveness of these control elements in reducing fraud risk. This suggests that employees with higher EI are more capable of interpreting risk signals and acting on monitoring feedback to prevent fraud effectively. Meanwhile, CAEI (EI × Control Activities) shows a positive but marginally non-significant result (β = 0.325, P = 0.090), indicating a potential but limited moderating role.

In contrast, CEEI (EI × Control Environment) and ICEI (EI × Information and Communication) did not exhibit statistically significant effects, implying that emotional intelligence does not significantly moderate these relationships. Interestingly, the standalone EI variable is significantly negative (β = -0.558, P = 0.006), suggesting a complex interaction in the model—possibly indicating that EI alone, without alignment with specific control mechanisms, may not directly enhance fraud prevention and could act through other pathways or in interaction with organisational factors.

4.3. Discussion of Findings

The regression results confirm that monitoring activities play a pivotal role in fraud prevention at the Central Bank of Nigeria, consistent with findings by Aksoy and Mohammed (2020), Ogwiji and Lasisi (2022), and Atmadja et al. (2024), who argue that internal audit processes, surveillance mechanisms, and regular evaluations are crucial in deterring fraudulent behaviours. These mechanisms provide timely oversight and create a sense of accountability among employees. Likewise, risk assessment also emerged as a critical element, affirming the findings of Barros and Ferreira (2022) and Fernandhytia and Muslichah (2020) that early identification of vulnerable processes and risk-prone areas allows institutions to design preventive measures

Table 5: Regression on the impact of internal control system on fraud prevention

Variables	Unstandardised coefficients		Standardised coefficients	t	Sig.	Collinearity statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.160	0.438		2.646	0.009		
CE	-0.037	0.090	-0.043	-0.408	0.684	0.571	1.752
RA	0.180	0.097	0.204	1.856	0.066	0.521	1.921
CA	0.157	0.105	0.154	1.501	0.136	0.602	1.661
IC	0.023	0.029	0.065	0.788	0.432	0.931	1.074
MA	0.236	0.089	0.254	2.641	0.010	0.681	1.469
EI	0.164	0.090	0.175	1.829	0.070	0.687	1.455
R-Square	0.356	Adjusted R-Square		0.318	Durbin Watson		2.090

[a]Dependent Variable: FP: Fraud Prevention. [b]Independent Variable: CE: Control environment, RA: Risk assessment, CA: Control activities, IC: Information and communication, MA: Monitoring activities, EI: Emotional intelligence

Table 6: Mediating effect of emotional intelligence on the impact of internal control system on fraud prevention

Model	Unstandardised coefficients		Standardised coefficients	t	Sig.	Collinearity statistics	
	B	Std. error	Beta			Tolerance	VIF
Constant	3.740	0.364		10.288	0.000		
CEEI	−0.010	0.022	−0.077	−0.465	0.643	0.221	4.525
RAEI	0.054	0.023	0.430	2.332	0.022	0.177	5.643
CAEI	0.044	0.026	0.325	1.712	0.090	0.168	5.955
ICEI	0.006	0.007	0.074	0.810	0.420	0.717	1.395
MAEI	0.056	0.021	0.426	2.603	0.011	0.225	4.442
EI	−0.523	0.185	−0.558	−2.828	0.006	0.155	6.457
R-Square	0.384	Adjusted R-Square		0.348	Durbin Watson		2.155

[a]Dependent Variable: FP. [b]CEEI = (Emotional Intelligence*Control environment); RAEI = (Emotional Intelligence*Risk Assessment); CAEI = (Emotional Intelligence*Control activities); ICEI = (Emotional Intelligence*Information and communication); MAEI = (Emotional Intelligence*Monitoring activities); EI: Emotional Intelligence

proactively. Notably, emotional intelligence emerged as a behavioural complement to technical controls. Studies such as Dewi et al. (2024) and Saputra et al. (2022) have emphasised that emotionally intelligent employees are more responsive to ethical concerns, more likely to report irregularities, and better equipped to interpret risk cues—thereby contributing to an anti-fraud culture.

On the contrary, the control environment and information and communication were not significant predictors of fraud prevention. This aligns with Almalki (2022), who noted that in institutions with already embedded ethical standards, the control environment may exert minimal additional influence. Similarly, Jaffer et al. (2022) and Musah et al. (2022) point out that while communication structures are essential for internal transparency, their real impact depends on how effectively the information is used—highlighting the need for communication systems to be tied to actionable and enforceable procedures. The limited impact of control activities further supports Aksoy and Mohammed's (2020) argument that procedural mechanisms alone—without integration with broader organisational strategies—are not always sufficient to deter fraud. Hence, while structural controls are important, they must be adaptive and supported by human-centred factors to function optimally.

The analysis in Table 6 reinforces the view that emotional intelligence serves as a strategic enhancer of specific internal control mechanisms, particularly risk assessment and monitoring activities. The results echo the findings of Dewi et al. (2024), Jaffer et al. (2022), Saputra et al. (2022), and Fana and Villani (2023), who emphasise the importance of behavioural competencies in interpreting and responding to organisational risks. Employees with high emotional intelligence are not only better at recognising unethical patterns but also more likely to engage in whistleblowing or preventive interventions. While control activities showed a moderate enhancement under the influence of emotional intelligence, control environment and information and communication did not benefit from this behavioural trait, suggesting that not all internal control dimensions are equally sensitive to individual emotional capacity. The negative effect of emotional intelligence as a standalone factor indicates a suppressor dynamic, implying that EI must be embedded within structured systems to be effective. This is in line with Barros and Ferreira (2022) and Almalki (2022), who contend that the effectiveness of fraud prevention lies in the intersection of well-designed systems and human factors.

The findings from the regression analysis align closely with the Fraud Triangle Theory by confirming that opportunity, influenced by internal controls like monitoring and risk assessment, plays the most decisive role in fraud prevention within the CBN. The significance of monitoring activities supports the idea that enhanced oversight reduces perceived chances of undetected fraud, addressing the opportunity leg of the triangle (Yuniarti, 2017; Purnamasari et al., 2024). The marginal significance of risk assessment aligns with pressure-related concerns, where identifying high-risk zones can alleviate operational stressors, in line with Cognitive Evaluation Theory's focus on external motivations. The moderating role of emotional intelligence further supports this psychological dimension—employees with high emotional intelligence are less likely to rationalise unethical behaviour, resonating with the rationalisation leg of the Fraud Triangle and supported by Demirović et al. (2021) and Otoo et al. (2023). Additionally, the lack of impact from the control environment and communication may reflect a ceiling effect, where these systems already function adequately, reducing their measurable influence. Agency Theory also explains how goal misalignment and asymmetric information can create vulnerabilities, which emotionally intelligent staff and strong monitoring help address (Rafindadi and Olanrewaju, 2019; Asiimwe et al., 2021). Thus, the results substantiate these theories by illustrating how both structural safeguards and human factors jointly prevent fraud in high-risk financial environments like the CBN.

5. CONCLUSION

This study investigated the impact of internal control system components on fraud prevention within the Central Bank of Nigeria, with a specific focus on the moderating role of emotional intelligence. Guided by the COSO framework, it examined five key internal control elements—control environment, risk assessment, control activities, information and communication, and monitoring activities. The findings revealed that monitoring activities and risk assessment significantly influence fraud prevention efforts, while emotional intelligence enhances the effectiveness of these controls. Conversely, control environment and information systems showed limited direct impact, suggesting that their influence may depend on how well they are operationalised. The study highlights that fraud prevention is not solely a structural issue but also a behavioural one, where emotionally intelligent employees play a critical role in detecting and deterring fraud.

Based on the findings, it is recommended that the Central Bank of Nigeria strengthen its monitoring and risk assessment mechanisms through more robust audit systems, automated oversight tools, and continuous staff training. Emotional intelligence should be integrated into staff development programs, particularly in high-risk units, to enhance ethical judgment and fraud sensitivity. Additionally, while maintaining strong control environments and communication channels, CBN should ensure these structures are reinforced with actionable policies and real-time feedback systems. Future reforms should also incorporate behavioural assessments into fraud risk frameworks, recognising the complex interplay between internal controls and human factors in fraud mitigation.

6. CONFLICT OF INTEREST DECLARATION

The leading author is a staff member of the Central Bank of Nigeria (CBN). However, the research was conducted independently, with no influence from the author's affiliation. The study adhered to ethical research practices, ensuring objectivity, transparency, and unbiased findings, with full disclosure of this potential conflict of interest.

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