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INTERNAL CONTROL SYSTEM AND PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA: THE MODERATING ROLE OF CORPORATE GOVERNANCE

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ABSTRACT

This study examines the effect of internal control systems on the performance of deposit money banks in Nigeria, with corporate governance as a moderating variable. A cross-sectional survey design was adopted, and data were collected from employees of selected deposit money banks. Of the 505 questionnaires distributed, 412 were returned, while 398 valid responses were used for analyses. Data were analyzed using SPSS and Partial Least Squares Structural Equation Modelling (PLS-SEM) to test the study hypotheses. The findings reveal that internal control systems have a strong and significant positive effect on bank performance ($\beta = 0.801$, $p < 0.001$). Corporate governance also exerts a direct significant positive influence on bank performance ($\beta = 0.091$, $p = 0.006$). Furthermore, the moderating impact of corporate governance on the relationship between internal control systems and bank performance has a positive significant effect ($\beta = 0.061$, $p = 0.048$) indicating that internal control systems are more effective in enhancing the organizational performance where there are strong corporate governance practices. Hence, an effective corporate governance practice enhances the performance of banks. The study provides more insights into the impact of internal control and corporate governance on the performance of deposit money banks in Nigeria. Thus, it revealed that effective internal control is one of the important factor that influence bank performance, by enhancing regulatory compliance, operational efficiency, risk management and financial performance.

1.1 Introduction

The economic growth of any nation is largely dependent on the stability of the nation's banking industry, because the industry promotes the savings culture of the public, aids capital funding, implements the monetary policy of a country and promotes the facilitation of international trade (Abisola, 2022). Hence, deposit money banks occupy a central position within the nation's financial system and are essential agents in the development process of the economy, by mobilizing savings, allocating credit, facilitating financial intermediation, and supporting investment activities. As financial institution entrusted with public funds,

banks are expected to operate efficiently, transparently, and in compliance with statutory regulatory frameworks. The achievement of these objectives largely depends on effectiveness of the internal control system established within the banking institutions.

Consequently, internal control systems have become increasingly important in the Nigerian banking industry. Due to persistence challenges such as fraud, operational inefficiencies, corporate governance failure and financial mis-management (Umar & Dikko, 2018). These challenges have prompted regulators, stakeholders, and scholars to emphasize the need for robust internal control mechanism to enhance bank performance and ensure financial stability.

According to the Committee of Sponsoring Organizations of the Treadway Commission (COSO) framework has been adopted worldwide, and consist of five interrelated components: control environment, risk assessment, control activities, information and communication technology and monitoring activities (COSO, 2013; Taraf & Hamad, 2025). Together, these components provide a framework for managing organizational risks, preventing fraud, and promoting accountability (Hamed, 2023). Within the banking industry, effective internal control is particularly important because banks operate in a highly regulated environment characterized by the high transactions volumes, complex financial products, and substantial exposure to operational and financial risk.

The Nigerian banking industry has undergone several reforms aims at strengthening financial stability, improve corporate governance practices, and enhance regulatory compliance. Despite these reforms incidence of fraud, insider abuse, unauthorized transactions, and financial reporting irregularities continue to pose a significance threats to the performance and sustainability of banks (NDIC, 2024). Report from the CIBN 2024 indicated that fraud related activates remain a major challenge within the banking sector, resulting to a considerable financial loss and reputational damage to affected institutions (CBN, 2024).

For instance, NDIC (2024) reported that during the review year, the total amount involved in fraud increase from 38.79 billion in 2023 to 87.91 in 2024. Similarly more worrisome situation in the industry is the increase in actual loss by 308.66 per cent from N12.95 billion in 2023 to N52.92 billion in 2024. However, the reported fraud cases in 2024 declined by 28.27 per cent from 132,057 in 2023 to 94,729 in 2024. These developments have heightened the need for effective internal control system capable of preventing fraudulent activities and minimize operational risk and ensuring compliance with regulatory requirements.

For instance, Nwoko (2019), reported that internal control system exert a significance influence on profitability and liquidity among Nigerian banks. Similarly, Umar and Dikko, (2018), found that control environment, risk asseessment and monitoring activities significantly influence the performance of banking industry positively. Many studies reported positive influence between internal control system and performance (Asiligwa & Rennox, 2017; Ayagre et al., 2014; Hamed, 2023; Mukandoli & Rusibana, 2022; Otoo et al., 2026; Sultana and Haque (2011). Likewise few studies have reported negative or weak results on the relationhip between internal control and performance of organizations.

For instance, (Ndungu, 2013; Tayo Akinleye et al., 2019). And mixed findings (Mojeed, 2022) who reported mixed results with regard to COSO individual framework, the study revealed that monitoring activities and control environment positively influence bank performance, while information and communication had a weak effect whereas risk assessment revealed inconsistent significance across different performance measures. Hence, the study introduce a moderating variable corporate governance. According to Baron and Kenny, 1986; Frazier et al., (2004) moderating variables are introduced when there

is a weak relation or an inconsistent results between independent variable (an antecedent) and dependent variables (an outcome) across studies.

Previous findings about the effect of internal control system dimensions (control environment, risk asseessment and monitoring activities and information and communication) on performance of banking sector have indicated inconsistent results across studies some discovered a positive relationship between internal control and bank performance variables, while some revealed either no relationship, or a slightly negative relationship, between internal control system and bank performance. Hence, this study introduces a moderating variable (Corporate governance)

Vinzi et al., (2010) suggested that before a moderator can emerge, there must be a relationship between a moderator to dependent variable. Finally, corporate governance also selected as a moderating variable based on the previous literature which emphasized that corporate governance enhanced performance (Nurdin & Kasim, 2018). Therefore, based on the existing empirical literature discussed above, is expected to examine the moderating effect of corporate governance on the relationship between internal control system and bank performance in Nigeria.

2.1 Literature Review

2.1.1 Internal Control System

An Internal control system is a process, effected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of effectiveness and efficiency of operations, reliability of financial reporting, compliance with applicable laws and regulations, and safeguarding of assets (Hamed, 2023). Internal control is a process that those in charge of governance, management, and other staff design and implement in order to provide reasonable assurance about an entity's goals in terms of operational efficiency and effectiveness, compliance with applicable laws and regulations, and financial reporting reliability (Ashbaugh-Skaife et al., 2009; COSO, 2013).

The Committee of Sponsoring Organizations of the Treadway Commission (COSO)'s 2013 framework, identifies five areas of internal control which are the control environment, risk assessment process, the information and communication system, control activities, and monitoring (KPMG, 2013). The COSO internal control framework provides a widely accepted and comprehensive structure for understanding internal control effectiveness and its influence on organizations performance. Empirical literature suggest that effective implementation of COSO components enhances performance by improving operational efficiency, reducing fraud, strengthening compliance, improving the reliability of financial reporting (COSO, 2013; Umar & Dikko, 2018).

i. Control environment:

The control environment dictates the organizational "tone at the top" establishing ethical boundaries, board oversight, and structural accountability (Das et al., 2025). Previous studies have revealed that strong ethical environment protect bank reputations and aligns manager shareholder goals. (Amudo & Inanga, 2009) argue that without ethical sound foundation, secondary technical control fail. According to Owolabi et al., (2017) control environment represent the foundation of COSO framework and reflects the ethical tone, governance structure, and organizational discipline within a bank. It encompasses integrity, ethical values, board oversight, human resource policies and management philosophy. Literature consistently indicates that a strong control environment is positively associated with bank performance (Ahmad & Norhashim, 2008; Aksoy & Mohammed, 2020; Tetteh et al., 2022).

ii. Risk assessment:

Risk assessment (RA) is the identification and analysis of relevant risks which can impair the achievement of objectives, forming a basis for determining how the risks should be managed. Because economic, industry, regulatory and operating conditions will continue to change, mechanisms are needed to identify and deal with the special risks associated with change (Joseph et al., 2015). Furthermore, RA is the method employ by management to determine and examine risk that pose threat to the attainment of organization's goals. RA dimensions are Specifying goals, risk recognition and classification, change management and risk return (COSO, 2013).

This focuses on the identification, analysis, and management of risk that may hinder the achievement of organizational objectives. Within the banking sector, risk assessment is particularly important due to exposure to credit, liquidity, operational and market risks (Tetteh et al., 2022). Empirical findings generally show that effective risk assessment enhanced bank performance by minimizing financial losses and improves strategic decision making (Chan et al., 2021; Mitra et al., 2011; Shabri et al., 2016).

iii. Control activities:

Control activities are tools both manual and automated that help prevents or reduce the risks that can impede accomplishment of the organization's objectives and mission. Management should establish control activities to effectively and efficiently accomplish the organization's objectives and mission. Has the entity developed control activities, including general control activities over technology, that enable the organization to manage cyber risk within the level of tolerance acceptable to the organization (Galligan & Rau, 2015). Studies suggest that effective authorization procedures, transactions verification, mechanisms of segregation of duties reduce likelihood of fraud, financial misstatement and operational errors (Aksoy & Mohammed, 2020; Alshaiti, 2023; Collins, 2014; Hunziker, 2017; Tunji, 2013).

iv. Information and communication:

This components governs the framework through which relevant financial and operational data are identified, captured, recorded and distributed across the bank (Hanoon et al., 2021).the Information and communication components ensure that accurate and timely information reaches employees and management thereby facilitating effective decision making, improving coordination of operational activities (COSO, 2013). Empirical evidence suggest that effective information and communication system significantly enhance bank performance by improving responsiveness to emerging risks and enabling proactive management decision (Hanoon et al., 2021). Strong internal communication channels allow banks to detect early warning signals such increasing loan default at early stage. This timely flow of information enable management to take correction actions promptly, thereby reducing loan loss provision.

v. Monitoring activities:

Internal audit and business lines should monitor important risks on a regular basis, and the firm should also conduct periodic appraisals. Monitoring is a procedure that evaluates the quality of the performance of the internal control system over time (Adejuwon & Hassan, 2022). Monitoring activities represent the continuous assessment of the effectiveness and functionality of an organizational internal control system over time (Eniola, 2020). Within the COSO framework, monitoring ensure that control deficiencies are identified promptly and corrective actions are implemented to maintained the effectiveness of internal control.

Monitoring efforts can be independent assessments, it can be done by continuous surveillance operations, annual reviews or a mixture of the two in banking industry, undertaken through internal audit functions (COSO, 2004, 2013). Previous studies consistently identify monitoring activities as one of the most significant determinant of organizational effectiveness financial performance (Hanoon et al., 2021). Effective monitoring enables the banks to detect control weaknesses, prevent fraud, minimize operational inefficiencies and ensure compliance with regulatory requirements. Thus, this study hypothesis that:

$H0_1$: There is no significant effect on the relationship between Internal Control and banks performance.

Corporate Governance

Good Corporate Governance is defined as a mechanism that ensures efficient allocation of equity between internal and external investors to protect the interests of shareholders (Kaban et al., 2025). Good Corporate Governance is a way to control internal parties and company management so that the interests of stakeholders remain protected (Rossouw & Styan, 2019). Corporate governance is widely regarded as a critical mechanism the influence the effectiveness of internal control system and their impact on organizational performance. It comprises structures, policies and process through which organizations are directed and monitored, including the board of directors, audit committees, ownership arrangement and executive oversight (Irma & Idrus, 2017).

Corporate governance is widely regarded as an important mechanism that impacts the effectiveness of internal control systems and their impact on the performance of organizations (Bhagat & Bolton, 2019). It comprises the structures, policies, and processes through which organizations are directed and monitored, including the board of directors, audit committees, ownership arrangements, and executive oversight. These governance mechanisms are intended to promote transparency, accountability, ethical conduct, and the protection of stakeholders' interests. In the banking sector, corporate governance is particularly important because banks perform fiduciary functions and play a central role in maintaining financial stability.

Empirical evidences from Nigerian banking industry generally support the positive role of corporate governance. Studies like Ebimobowei (2022); Tarurhor and Olele (2020) indicated board independence, audit committee effectiveness, and sound governance practices improved internal control reliability, risk management and financial performance. Similarly Dada et al., (2023); Eni-Egwu et al., (2022) report that strong corporate governance structure enhance financial reporting quality, profitability and compliance with internal control procedure. Research specifically examining moderating effect provides further support for this relationship.

Cheah et al., 2019; Hwang et al.,(2019) suggested that before a moderator can emerge, there must be a relationship between a moderator to dependent variable. Finally, corporate governance also selected as a moderating variable based on the previous literature which emphasized that corporate governance enhanced performance Nurdin and Kasim, (2018), corporate governance shapes the performance relationship, Kabir and Thai, (2017). Hence these study hypotheses are:

$H2_0$: Corporate governance does not have any significant relationship between Internal Control and banks performance

$H3_0$: Corporate governance does not moderate the relationship between Internal Control and banks performance.

2.1.2 Theoretical Review

Agency Theory

The Agency theory advanced by Jensen and Meckling, (1976) establishes that contracting is used by principals and agents to increase their resources. However, in an attempt to increase their own resources, the agents can face a dilemma of working against the interest of their principals. In order to resolve this agency problem, internal management should be used as a safety net (Asiligwa & Rennox, 2017; Payne & Ramsay, 2005). Previously, several studies employed agency theory to explain how management control systems function and how internal control systems can mitigate information asymmetry and align agents' interests with those of the principal (Agyei-Mensah, 2016; Hanoon et al., 2021; Jassim & Al-Hamdawi, 2026).

Based on agency theory, conflicts of interest may emerge between the principals of a company (e.g., shareholders) and its agents (e.g., managers). To reconcile these conflicting interests and advance the organization's goals, internal controls can be established (Hamed, 2023). The control environment "sets the tone of an organization, influencing the control consciousness of its people", (COSO, 1992). It serves as the foundation for the other elements of internal control, offering discipline and organization.

2.1.3 Research Framework

Based on the literature reviewed and suggestions from several studies, despite the inconsistencies in the reviewed studies above. This study has developed a conceptual research framework as fig. 1 to investigate the moderating effect of corporate governance on the relationship between internal control system and bank performance in Nigeria.

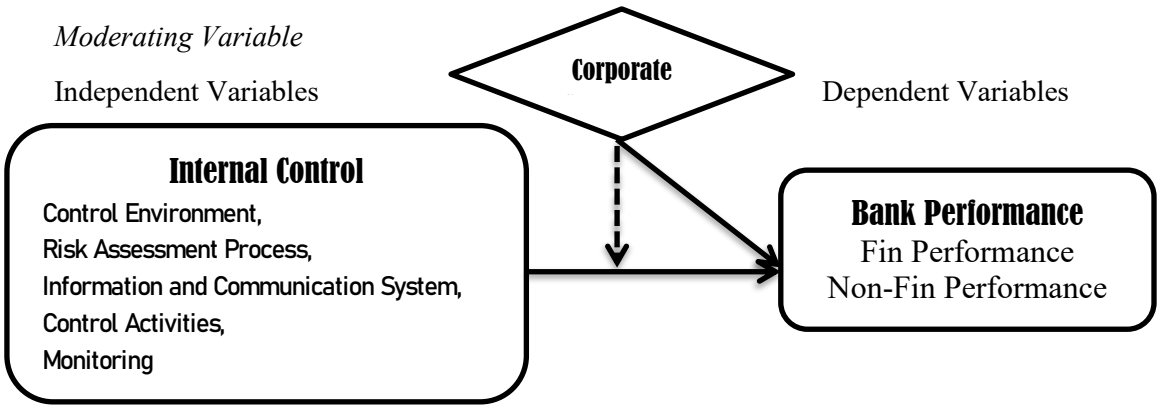


Figure 1
Research Framework

This study will adopt the five dimension of internal control system from COSO's Internal Control framework (Control Environment, Risk Assessment Process, Information and Communication System, Control Activities, and Monitoring as dimensions) in determining its effects on the performance of banks measured with (financial and non-financial performance), then moderating variable (corporate governance). Both the Independent and dependent variables are operationalized as a second-order reflective construct adapted from (Collins, 2014; COSO, 2013; Nura et al., 2012; Siyanbola, 2013).

3.1 Methodology

A survey method was used to capture respondents' perspectives, experiences, and opinions on the subject. This technique is widely applied by organizational researchers seeking to collect information from large populations that cannot be directly observed (Keeter, 2005; Mazzocchi, 2008). Furthermore, it was deemed the most suitable for gathering primary data (Fisher, 2010). Because it enable the researcher to identify the key variables under investigation and explain the resulting outcomes of their interrelationships (Zikmund et al., 2013).

Data for this study was gathered from questionnaires administered to bank staffs (including internal control officers, managers, and risk management officers of the bank because of their good understanding of the internal control system of banks) of all branches of deposit money banks in Nigeria. Following Krejcie and Morgan, (1970) guideline, a minimum sample of size of 357 is recommended for the population exceeding 5,000. For this study the sample size was increase by 40% resulting to 499 which is in line with Salkind, (2012) suggestion of adjusting the sample size by 40-50% to minimize the non-responsiveness bias and sample error. Accordingly, a total of 499 questionnaires were distributed to bank staff across all deposit money banks in Nigeria based on simple random selection from 5,144 branches of deposit money banks in Nigeria as advice by (Krejcie & Morgan, 1970).

Responses received from respondents were based on a five (5) point likert scale, ranging from strongly disagree to strongly agree, on all the questions on internal control components, performance and corporate governance where 1 represented strongly disagree (SD) and 5 represented strongly agree (SA). While likert scale for performance range from not improved to highly improved. The likert scale was used to measure respondent's knowledge and perception of internal controls effectiveness and the banks performance.

The Partial Least Squares Structural Equation Modelling (PLS-SEM) approach was adopted for data analysis. The PLS-SEM technique was applied to test the causal relationships between constructs using SmartPLS version 3.0. This technique was selected because of the exploratory nature of the study (Hair, Ringle, & Sarstedt, 2011). Based on the recommendation of Henseler, Hubona, and Ray (2016) the current study applied a two-step approach for data analysis. The two-step approach aims at establishing the reliability and validity of the measures before assessing the structural relationship of the model. The first step involves the analysis of the measurement model, while the second step tests the structural relationships among the latent constructs. Below are the data analysis and findings of the study

4.1 Data Analysis and Findings

4.1.1 Response Rate

Out of 505 questionnaires distributed 412 were returned and 398 were found to be useful for further analysis because 14 questionnaires were excluded from the analysis due non-suitability of either not duly completed or problems of outliers. The questionnaire was adapted with some modifications from several studies, it was divided in to four main sections representing the demographic section, Internal control components (control environment, risk assessment, information and communication, control activities, and monitoring) of the COSO model adapted from (Collins, 2014), and performance adapted from (Otache & Mahmood, 2015; Owusu, 2017). And corporate governance adapted from (Hussain & Hadi, 2018).

4.1.2 Demographic Profile of respondents

The demographic profile indicates that the respondents were well qualified and professionally positioned to provide reliable information on internal control and bank performance in Nigerian deposit money banks. Male respondents constituted the majority **(**90.7%**),** while females accounted for 9.3%**,** reflecting the predominance of males in managerial and control-related positions within the sampled banks. Most respondents **(**95.7%**)** were between 30 and 49 years, indicating that they were in their active professional years and possessed considerable industry experience.

The respondents also had strong educational backgrounds, with 76.1% holding postgraduate qualifications and 23.9% possessing HND/BSc degrees. This suggests that they have the knowledge and competence required to understand and evaluate issues relating to internal control systems, corporate governance, and bank performance.

Regarding job roles, Internal Control Officers represented the largest proportion **(**51.6%**),** followed by Risk Management Officers (31.0%) and Branch Managers (17.4%)**.** These positions are directly involved in implementing and monitoring internal control systems, making their responses particularly relevant to the study. Furthermore, the majority of respondents **(**87.4%**)** had more than 10 years of banking experience, while only 0.5% had less than five years of experience. This high level of professional experience enhances the credibility of the data, as respondents were familiar with banking operations, governance practices, and internal control processes. Overall, the respondents possessed the educational qualifications, professional responsibilities, and industry experience necessary to provide credible and reliable responses for the study.

Table 4.1

Demographics

	Frequency	Percentage
Gender		
Male	360	90.7
Female	37	9.3
Age		
20-29 Years	12	3
30-39 Years	172	43.3
40-49 Years	208	52.4
50-59 Years	5	1.3
Highest Education Qualification		
HND/BSC	95	23.9
Post-Graduate	302	76.1
Position		
Branch Manager	69	17.4
Risk Management Officer	123	31
Inteernal Control Officer	205	51.6
Experience		
Below 5 Years	2	0.5
5-10 Years	48	12.1
Above 10 Years	347	87.4

4.1.3 Measurement Model

The analysis was conducted using SmartPLS 3.0 (Hair et al., 2014; Hair et al., 2010). To determine the significance of the paths, bootstrapping was applied with 398 cases and 500 re-samples. The data analysis followed a two-stage procedure. In the first stage, the measurement model was evaluated by examining: internal consistency reliability, convergent validity and discriminant validity of the measures associated with individual constructs (Fornell & Larcker, 1981; Hair et al., 2014; Mackenzie et al., 2011), followed by an assessment of the structural model. Figure 1 below revealed the measurement model of the study.

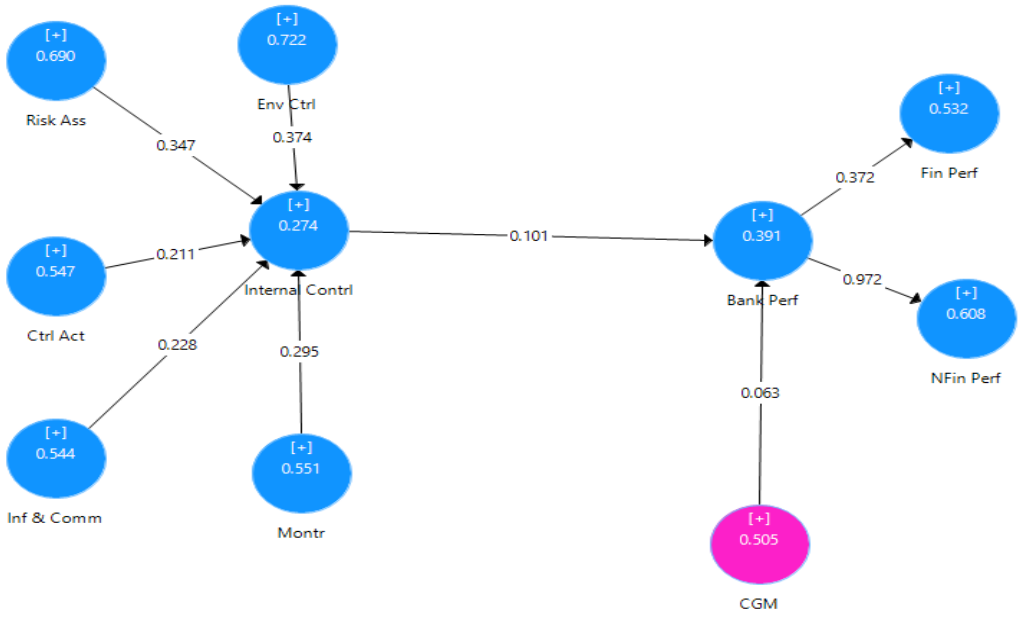


Figure 2

Measurement Model

Source: Author 2026

Construct Reliability and Validity Analysis

Table 4.1 evaluates individual items' reliability based on their respective outer loadings and a threshold value > 0.40 (Avkiran & Ringle, 2018; Hair Jr et al., 2014; Hulland, 1999). As shown in table 4.1, Cronbach's alpha ranged from 0.721 to 0.904, and composite reliability ranged from 0.814 to 0.935 for all five constructs respectively. The results exceed the minimum requirement of 0.7, thus confirming the internal consistency and reliability of all constructs (Dijkstra & Henseler, 2015; Nunnally & Bernstein, 1994). The AVE for all constructs also exceeded 0.51, which is larger than the minimum threshold of 0.50, thus demonstrating convergent validity for all the constructs and AVE value of 0.50 and above indicated that the constructs account for 50% of the variance in its indicators, which is considered adequate (Hair et al., 2014; Hair et al., 2012). In other words, the latent construct explains half of the variance of its indicators and indicates adequate convergent validity (Hair *et al.*, 2014). The values are presented in table 4.1 below:

Table 4.1

Outer Loadings, Construct Reliability

Variables	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
CGM	0.830	0.861	0.859	0.505
Control Act	0.801	0.844	0.856	0.547

Table 4.1

Outer Loadings, Construct Reliability

Environmental Ctrl	0.904	0.939	0.935	0.722
Financial Perf	0.721	0.829	0.814	0.532
Information & Comm	0.781	0.812	0.853	0.544
Monitoring	0.834	0.841	0.879	0.551
Non-Financial Perf	0.882	0.920	0.910	0.608
Risk Assessment	0.901	0.913	0.928	0.690

Discriminant validity

Discriminant validity, an essential component of construct validity, assesses whether a measure truly captures a unique concept and doesn't overlap with other, related concepts. In other words, it ensures that constructs which are supposed to be distinct are indeed empirically different from one another. This is a critical step in structural equation model (SEM) to ensure reliability and meaningfulness of study's findings (Fornell & Larcker, 1981). Higher AVE values indicate that the construct indicators are strongly representative of the construct itself.

Discriminant validity is established when the value of the square root of AVE of each construct is higher than the construct's highest correlation with any other latent construct (Henseler, 2017). Hence, discriminant validity was evaluated in this study by using fornell-lacker criterion which is widely method used to evaluate discriminant validity in SEM. Also the study compared the square root of the AVE for each construct with the highest correlation of the latent construct in the matrix. Therefore, discriminant validity results showed that the required level had been achieved (Hair et al., 2013; Henseler et al., 2009). Table 4.2 below depicts the values of discriminant validity for the study:

Table 4.2

Results of Discriminant Validity Based on Fornell-Larcker Criterion.

	1	2	3	4	5	6	7	8
CGM	**0.710**							
Control Act	0.156	**0.739**						
Environmental Ctrl	0.266	0.308	**0.850**					
Financial Perf	0.131	0.250	0.049	**0.730**				
Information & Comm	0.050	0.408	0.481	0.155	**0.737**			
Monitoring	0.224	0.248	0.264	0.188	0.374	**0.742**		
Non-Financial Perf	0.061	0.065	0.065	0.144	0.043	0.072	**0.780**	
Risk Assessment	0.152	0.231	0.217	0.103	0.247	0.561	0.026	**0.831**

***Note**: Entries shown in boldface represent the square root of the AVE (Measurement Model).*

4.1.4 Structural Model

After ascertaining the reliability and validity of the model, the next step was to assess the structural model. This involved evaluating the relationships between the constructs. The fundamental criteria for evaluating a structural model in PLS-SEM are the significance of the path coefficients (Hair *et al.,* 2014). A systematic model analysis of the structural model was carried out to provide a detailed understanding of the results and test the Hypotheses *H1* to *H3*. This study used a repeated indicator approach as this approach is the most frequently used method for estimating higher-order constructs in PLS (Wilson & Henseler, 2007).

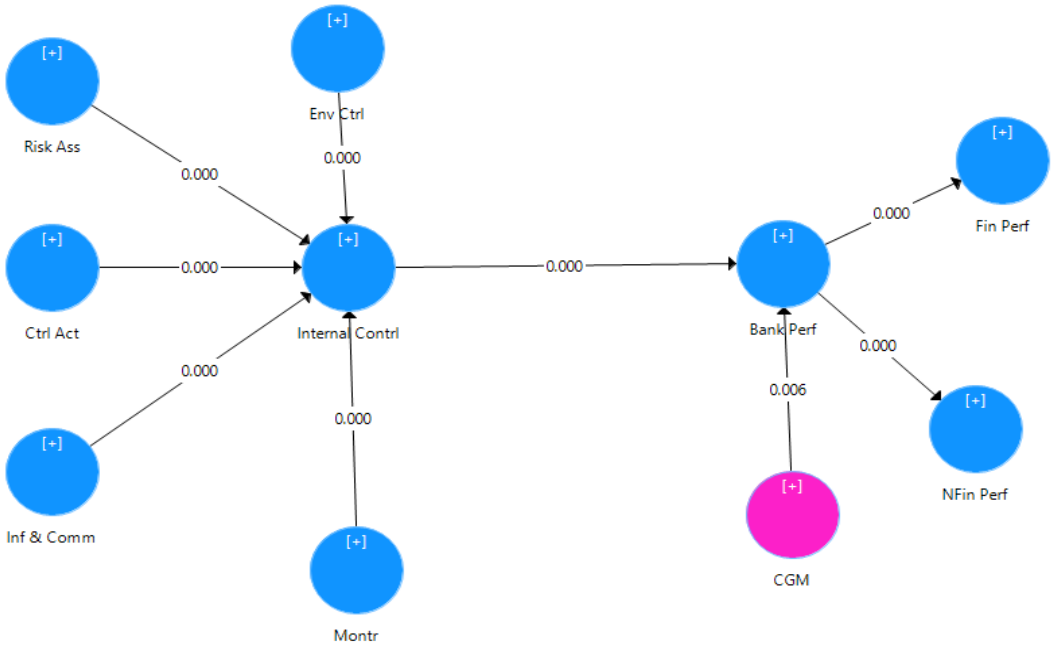


Figure 3

Path Coefficients (Direct Relationship)

Source: Author 2026

The figure 3 shows that Internal Control is something that is measured in a lot of different ways. It has five parts: Control Environment, Risk Assessment, Control Activities, Information and Communication and Monitoring. All these parts together show how well Internal Control works in deposit money banks.

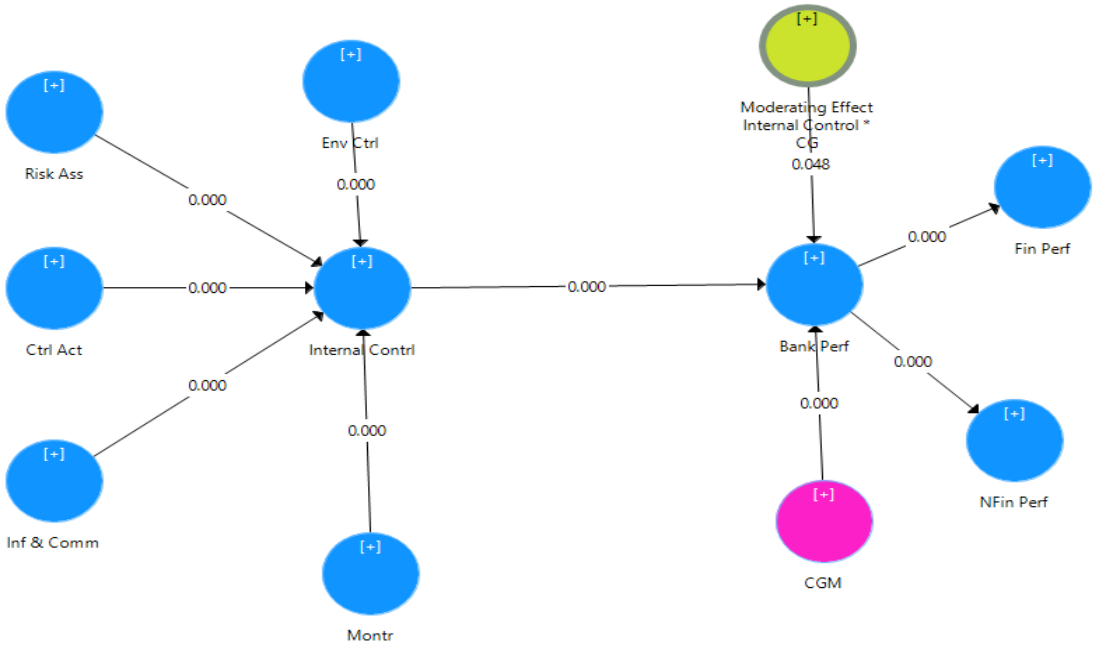


Figure 4

Path Coefficients (Moderating Effect)

Source: Author 2026

The figure 4 above shows that Internal Control is measured by five dimensions, these dimensions collectively explain the effectiveness of internal control in deposit money banks. The model also shows that the internal control has a significant positive effect on Bank Performance. Moreover, the relationship between internal control and overall bank performance is significantly moderated by Corporate Governance Mechanisms (CGM) (p = 0.048), suggesting that good governance practices strengthen the positive impact of internal control on overall bank performance.

Table 4.3

Path Coefficients

Hypotheses		β	Stnd Dev	T Values	P Values	Decision
Internal Control → Performance	**Bank**	**0.801**	**0.029**	**27.306**	**0.000**	**Not Supported**
CGM → Performance	**Bank**	**0.091**	**0.033**	**2.776**	**0.006**	**Not Supported**
Moderating Effect → Performance	**Bank**	**0.061**	**0.031**	**1.984**	**0.048**	**Not Supported**

4.1.4 Discussion and Implications

After analyzing the measurement model and verifying its validity and reliability, the structural model was examined in figure 4 and Table 4.3 above. In order to assess the structural model, the path coefficients,

including an assessment of variables significance, the coefficient of determination R^2, and the Stone-Geisser Q^2 were examined (Chin, 1998; Geisser, 1974; Hair, Sarstedt, Ringle, & Mena, 2012; Stone, 1974). Results show that Internal Control is positively related to bank performance ($\beta = 0.801$, $p < 0.000$), rejecting **$H0_1$** that internal control does not significantly affect the bank performance, the study revealed that effective internal control are more likely to positively affect bank performance. The result is in line with COSO (2013) internal control integrated framework which revealed that effective internal control influence organizational effectiveness. The result is also in line with (Ahmad & Norhashim, 2008; Aksoy & Mohammed, 2020; Ayagre et al., 2014) which revealed that good internal control improve operational efficiency, accountability and bank performance.

The results also revealed that corporate governance has a significant direct impact on bank performance ($\beta = 0.091$, $p < 0.006$) rejecting hypothesis two **$H0_2$** that corporate governance does not significantly affect the bank performance, the study highlight the importance of good corporate governance in improving the performance of an organization, good corporate governance include board oversight. Transparency, strong audit committee and accountability. The current study support the Agency theory Brown and Caylor (2006); Jensen and Meckling (1976) they all revealed that companies with better corporate governance tent to have better and financial operational results. This shows the relevancy of corporate governance on bank performance. Hence it supports the idea that corporate governance improves the performance of an organization.

The third hypothesis **$H0_3$** proposes that there is no moderation effect of cooperate governance on the relationship between internal control and bank performance. However, the moderation results revealed a positive and significant moderation effect between internal control and bank performance ($\beta = 0.061$, $p < 0.048$). Hence, the study does not support the hypothesis indicating that benefit effective internal control are higher in banks with robust corporate governance. This finding also aligns with COSO 2013 framework and findings of (Ashbaugh-Skaife et al., (2009); and Doyle et al., (2007) that effective governance lead to better internal control and improved performance. Hence banks with effective internal control complements with strong governance tend to perform better. Revealing that these two governance mechanisms complement each other in making sustainable organizational values.

Overall satisfaction of the model is revealed in the coefficient of determination R^2 of the endogenous latent variables, a common indicator in multiple regression analysis. The result of the model shows an $R^2 = 0.203$ for bank performance. An additional technique for predictive relevance is the Stone-Geisser's Q^2 predictive sample re-uses technique. According to Henseler et al. (2009) this measure assesses a research model's capability to predict. A blindfolding procedure (omission distance = 7) to evaluate Stone-Geisser criterion revealed Q^2 =0.263 and 0.278 values greater than 0 for internal control and bank performance respectively, thus providing support for the model's predictive relevance (J. F. Hair et al., 2013b).

5.1 Conclusion and Recommendation

The study provides more insights into the impact of internal control and corporate governance on the performance of deposit money banks in Nigeria. The study revealed` that effective internal control is one of the important factor that influence bank performance, by enhancing regulatory compliance, operational efficiency, risk management and financial performance. The study also revealed that corporate governance directly have positive and significant role on the performance of banks through its role in improving transparency, accountability and strategic oversight. The study further revealed that corporate governance

positively and significantly moderate the relationship between internal control and bank performance, this suggest that effective internal control is enhanced by sound corporate governance. .

The results uphold the COSO Internal Control - Integrated Framework and Agency Theory, which indicated that internal control and corporate governance have direct positive impact on bank performance. Hence banks need to have a strong internal control system and effective corporate governance to ensure sustainable performance, improve long term organizational resilience and build stake holders trust.

The study recommends that there is need for the banks to improve their internal control system by strengthening the risk assessment; control environment, control activities, information technology and monitoring as well strengthen their corporate governance through board oversight, accountability, transparency and establishing independent audit committees. Future studies should investigate this relationship with other potentials moderating or mediating variables, including risk management, organizational culture and regulatory equity.

References

Abisola, A. (2022). The nexus between bank size and financial performance : Does internal control adequacy matter ? *Journal of Accounting and Taxation*, *14*(March), 13–20. https://doi.org/10.5897/JAT2021.0501

Adejuwon, J. A., & Hassan, I. K. (2022). Internal Control Process and Organizational Performance of Selected Deposit Money Banks in Nigeria. *Journal of Economics, Finance and Management Studies*, *5*(11), 3378–3390. https://doi.org/10.47191/jefms/v5-i11-23

Agyei-Mensah, B. K. (2016). Internal control information disclosure and corporate governance: evidence from an emerging market. *Corporate Governance (Bingley)*, *16*(1), 79–95. https://doi.org/10.1108/CG-10-2015-0136

Ahmad, Z., & Norhashim, M. (2008). The Control Environment, Employee Fraud and Counterproductive Workplace Behaviour: An Empirical Analysis. *Journal of Social Sciences and Humanities*, *14*(3), 513–530.

Aksoy, T., & Mohammed, A. (2020). Assessing bank ' s internal control effectiveness : The case of Ghanaian listed banks. *International Journal of Research in Business and Social Science*, *9*(4), 196–206.

Alshaiti, H. (2023). Influences of Internal Control on Enterprise Performance : Does an Information System Make a Difference ? *Risk and Financial Management*, *Turnbull 1999*.

Amudo, A., & Inanga, E. L. (2009). Evaluation of Internal Control Systems: A Case Study from Uganda. *International Research Journal of Finance and Economics*, *1*(27), 124–144.

Ashbaugh-Skaife, H., Collins, D. W., Kinney, W. R., & Lafond, R. (2009). The effect of SOX internal control deficiencies on firm risk and cost of equity. *Journal of Accounting Research*, *47*(1), 1–43. https://doi.org/10.1111/j.1475-679X.2008.00315.x

Asiligwa, M., & Rennox, G. (2017). The Effect of Internal Controls on the Financial Performance of Commercial Banks in Kenya. *IOSR Journal of Economics and Finance*, *08*(03), 92–105. https://doi.org/10.9790/5933-08030492105

Avkiran, N. K., & Ringle, C. M. (2018). *Partial Least Squares Structural Equation Modeling: Recent*

Advances in Banking and Finance. Springer International Publishing AG. https://doi.org/10.1007/978-3-319-71691-6

Ayagre, P., Appiah-Gyamerah, I., & Nartey, J. (2014). The Effectiveness of Internal Control Systems of Banks. The Case of Ghanaian Banks. *International Journal of Accounting and Financial Reporting*, *4*(2), 377. https://doi.org/10.5296/ijafr.v4i2.6432

Baron, R. M., & Kenny, D. a. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182. https://doi.org/10.1037/0022-3514.51.6.1173

Bhagat, S., & Bolton, B. (2019). Corporate governance and firm performance: The sequel. *Journal of Corporate Finance*, *58*, 142–168. https://doi.org/10.1016/j.jcorpfin.2019.04.006

Breitborde, N. J. K., Srihari, V. H., Pollard, J. M., Addington, D. N., & Woods, S. W. (2010). Mediators and moderators in early intervention research. *Early Intervention in Psychiatry*, *4*(2), 143–152. https://doi.org/10.1111/j.1751-7893.2010.00177.x

Brown, L. D., & Caylor, M. L. (2006). Corporate governance and firm valuation. *Journal of Accounting and Public Policy*, *25*(4), 409–434. https://doi.org/10.1016/j.jaccpubpol.2006.05.005

CBN, C. B. of N. (2024). *CBN Year 2024 Summary Financial Statements CBN*.

Chan, K. C., Chen, Y., & Liu, B. (2021). The Linear and Non-Linear Effects of Internal Control and Its Five Components on Corporate Innovation: Evidence from Chinese Firms Using the COSO Framework. *European Accounting Review*, *30*(4), 733–765. https://doi.org/10.1080/09638180.2020.1776626

Cheah, J. H., Ting, H., Ramayah, T., Memon, M. A., Cham, T. H., & Ciavolino, E. (2019). A comparison of five reflective–formative estimation approaches: reconsideration and recommendations for tourism research. In *Quality and Quantity* (Vol. 53, Issue 3). Springer Netherlands. https://doi.org/10.1007/s11135-018-0821-7

Collins, O. O. (2014). Effect of internal control on financial performance of micro-finance institutions in Kisumu central constituency , Kenya. *Journal of Scientific Research and Essay*, *3*(December), 139–155.

COSO. (1992). *Internal Control - Integrated Framework (executive summary)* (Issue September 1992). www.coso.org/documents/Internal Control-Integrated Framework.pdf

COSO. (2004). *Enterprise Risk Management — Integrated Framework: Executive Summary* (990015 may; Issue September). https://doi.org/10.1504/IJISM.2007.013372

COSO. (2013). *Internal Control- Integrated Framework*. https://doi.org/978-1-93735-239-4

Dada, S. A., Igbekoy, O. E., & Dagunduro, M. E. (2023). Effects of Forensic Accounting Techniques and Corporate Governance on Financial Performance of Listed Deposit Money Banks in Nigeria. *International Journal of Professional Business Review*, *8*(10), e03547. https://doi.org/10.26668/businessreview/2023.v8i10.3547

Das, B., Sahoo, P. C., & Dash, M. C. (2025). Impact of Corporate Governance on Financial Performance of banking companies : A Study on Selected Public Sector Banks in India. *Journal of Information*

Systems Engineering and Management, *10*(33s), 124–130.

Dijkstra, T. K., & Henseler, J. (2015). Consistent and asymptotically normal PLS estimators for linear structural equations. *Computational Statistics and Data Analysis*, *81*, 10–23. https://doi.org/10.1016/j.csda.2014.07.008

Doyle, J., Ge, W., & McVay, S. (2007). Determinants of weaknesses in internal control over financial reporting. *Journal of Accounting and Economics*, *44*(1–2), 193–223. https://doi.org/https://doi.org/10.1016/j.jacceco.2006.10.003

Ebimobowei, A. (2022). Corporate Governance Characteristics and Firm Value of Deposit Money Banks in Nigeria. *British Journal of Management and Marketing Studies*, *5*(2), 109–129. https://doi.org/10.52589/bjmms-rbdlyevj

Eni-Egwu, C. O., Chimezie James, M., & Beatrice, E. C. (2022). Impact of Selected Corporate Governance Variables on the Financial Performance of Selected Quoted Deposit Money Banks in Nigeria. *ARRUS Journal of Social Sciences and Humanities*, *2*(1), 32–46. https://doi.org/10.35877/soshum733

Eniola, A. A. (2020). Internal control procedures and firm's performance. *International Journal of Scientific and Technology Research*, *9*(2), 6407–6415.

F. Hair Jr, J., Sarstedt, M., Hopkins, L., & G. Kuppelwieser, V. (2014). Partial least squares structural equation modeling (PLS-SEM). In *European Business Review* (Vol. 26, Issue 2). https://doi.org/10.1108/EBR-10-2013-0128

Fairchild, A. J., & MacKinnon, D. P. (2009). A general model for testing mediation and moderation effects. *Prevention Science*, *10*(2), 87–99. https://doi.org/10.1007/s11121-008-0109-6

Fisher, C. (2010). Researching and writing a dissertation. In *Pearson Education Limited* (Third). Pearson education limited.

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, *18*(1), 39. https://doi.org/10.2307/3151312

Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). "Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology*, *51*(2), 157–157. https://doi.org/10.1037/0022-0167.51.2.157

Galligan, M. E., & Rau, K. (2015). COSO In The Cyber Age. *Committee of Sponsoring Organizations of the Treadway Commission*, *January*, 1–28. http://www.coso.org/documents/COSO in the Cyber Age_FULL_r11.pdf

Hair, F. J., Sarstedt, J. M., Hopkins, L. and, & G. Kuppelwieser, V. (2014). A Primer on partial least squares structural equation modeling (PLS-SEM). In *European Business Review* (Vol. 26, Issue 2). SAGE Publications, Inc. All.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, *19*(2), 139–152. https://doi.org/10.2753/MTP1069-6679190202

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013a). Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance. *Long Range Planning*, *46*(1–2), 1–12. https://doi.org/10.1016/j.lrp.2013.01.001

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013b). Partial Least Squares Structural Equation Modeling: Rigorous Applications, Better Results and Higher Acceptance. *Long Range Planning*, *46*(1–2), 1–12. https://doi.org/10.1016/j.lrp.2013.01.001

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science*, *40*(3), 414–433. https://doi.org/10.1007/s11747-011-0261-6

Hair Jr, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis* (Seventh). Pearson prentice hall. https://doi.org/10.1016/j.ijpharm.2011.02.019

Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. SAGE Publications.

Hamed, R. (2023). The Role of Internal Control Systems in Ensuring Financial Performance Sustainability. *Sustainability*, *15*.

Hanoon, R. N., Khalid, A. A., Hanani, N. O. R., Rapani, A., Aljajawy, T. M., & Al-, A. J. (2021). The Impact of Internal Control Components on the Financial Performance, in the Iraqi Banking Sector. *Journal of Contemporary Issues in Business and Government*, *27*(3). https://doi.org/10.47750/cibg.2021.27.03.303

Henseler, J. (2017). Partial Least Squares Path Modeling. In *Advanced Methods for Modeling Markets* (Leeflang e, p. 361). Springer International Publishing AG. https://doi.org/10.1007/978-3-319-53469-5

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: updated guidelines. *Industrial Management & Data Systems*, *116*(1), 2–20. https://doi.org/10.1108/IMDS-09-2015-0382

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. *New Challenges to International Marketing Advances in International Marketing*, *20*, 277–319.

Hulland, J. (1999). Use of Partial Least Squares (PLS) in Strategic Management Research: A Review of Four Recent Studies. *Strategic Management Journal, 20*(2), 195–204. https://doi.org/10.1002/smj.176

Hunziker, S. (2017). Efficiency of internal control: evidence from Swiss non-financial companies. *Journal of Management and Governance*, *21*(2), 399–433. https://doi.org/10.1007/s10997-016-9349-1

Hussain, M. A., & Hadi, A. R. A. (2018). Corporate Governance, Small Medium Enterprises (SMEs) and Firm's Performance: Evidence from Construction Business, Construction Industry Development Board (CIDB) Malaysia. *International Journal of Business and Management*, *13*(2), 14. https://doi.org/10.5539/ijbm.v13n2p14

Hwang, H., Sarstedt, M., Cheah, J. H., & Ringle, C. M. (2019). A concept analysis of methodological research on composite-based structural equation modeling: bridging PLSPM and GSCA. *Behaviormetrika*, *0123456789*. https://doi.org/10.1007/s41237-019-00085-5

Irma, N. A., & Idrus, O. (2017). The effect of corporate governance's application on banks' performance: empirical study of banks listed on the Indonesian Stock Exchange. *International Journal of Monetary Economics and Finance*, *10*(3/4), 270. https://doi.org/10.1504/ijmef.2017.087477

Jassim, M., & Al-Hamdawi, M. K. (2026). The Role of Internal Auditing in Improving Financial Performance of Iraqi Public and Private Institutions. *European Journal of Management, Economics and Business*, *3*(1), 171+184. https://doi.org/10.59324/ejmeb.2026.3(1).14

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305–360.

Joseph, O. N., Albert, O., & Byaruhanga, J. (2015). Effect of internal control on fraud detection and prevention in district treasuries of Kakamega County. *International Journal of Business and Management Invention*, *4*(1), 47–57.

Kaban, E. S., Saifi, M., Atmanto, D., & Imamah, N. (2025). Analysis of the influence of corporate governance and enterprise risk management COSO on firm performance with the mediation role of operational efficiency. *The International Journal of Accounting and Business Society*, *33*(3), 1–14.

Kabir, R., & Thai, H. M. (2017). Does corporate governance shape the relationship between corporate social responsibility and financial performance? *Pacific Accounting Review*, *29*(2), 227–258. https://doi.org/http://dx.doi.org/10.1108/VINE-10-2013-0063

Keeter, S. (2005). *Survey Research. In D. Druckman (Ed.), Doing research: Methods of Inquiry for conflict analysis 123-162. Thousand Oaks, CA: Sage Publications, Inc.*

KPMG. (2013). *COSO - Internal Control / Integrated Framework Executive Summary*. www.coso.org

Krejcie, R. V, & Morgan, D. W. (1970). Determining sample size for reasearch activities. *Educational and Psychological Measurement*, *30*, 607–610.

Mackenzie, S. B., Podsakoff, P. M., & Podsakoff, N. P. (2011). Construct measurement and validation procedures in MIS and behavioral research: Integrating new and existing techniques. *MIS Quarterly*, *35*(2), 293–334. https://doi.org/10.2307/23044045

Mazzocchi, M. (2008). Sampling Probability and Inference. *Statistics for Marketing and Consumer Research*, 103–129.

Mitra, J., Abubakar, Y. A., & Sagagi, M. (2011). Knowledge creation and human capital for development: the role of graduate entrepreneurship. *Education + Training*, *53*(5), 462–479. https://doi.org/10.1108/00400911111147758

Mojeed, O. A. (2022). *Internal Control System and Financial Performance of Listed Deposit Money Banks in Nigeria*. Lead City University, Ibadan, Nigeria In.

Mukandoli, M. A., & Rusibana, D. C. (2022). Internal Control System and Performance of Financial Institutions in Rwanda : A Case of Bank of Kigali in Nyarugenge District. *Journal of Finance and Accounting*, *6*(1), 90–107.

NDIC. (2024). *2024 Annual Report & Statement of Accounts*.

Ndungu, H. (2013). *The Effect of Internal Controls on Revenue Generation: a Case Study of the University of Nairobi Enterprise and Services Limited*. University of Nairobi.

Nunnally, J. C., & Bernstein, I. H. (1994). Psychometric Theory. In *McGraw-Hill, New York* (3rd ed.). McGraw-Hill Companies, Inc. http://scholar.google.com.vn/scholar?q=Psychometric+Theory+3rd&btnG=&hl=vi&as_sdt=0,5#0

Nura, A. A., Hasni, O. N., & Nura, A. A. (2012). A toolkit on effective decision making measurement in organizations. *International Journal of Humanities and Social Science*, *2*(4), 296–303.

Nurdin, D., & Kasim, M. Y. (2018). Moderator effect of corporate governance on the relationship of financial performance and dividend policy, and its impact on firm value in Indonesia stock exchange. *International Journal of Economics & Management Sciences*, *7*(1), 1–7. https://doi.org/10.4172/2162-6359.1000499

Nwoko, G. A. (2019). *Effect of Internal Control System on Bank Performance in Nigeria (2007–2016).* Michael Okpara University of Agriculture Repository.

Otache, I., & Mahmood, R. (2015). Entrepreneurial orientation and performance of Nigerian banks: The mediating effect of teamwork. *Mediterranean Journal of Social Sciences*, *6*(3), 406–414. https://doi.org/10.5901/mjss.2015.v6n3p406

Otoo, F. N. K., Adjei, G. N., Eduah, G. A., & Otoo, E. A. (2026). Measuring the impact of internal control systems on performance of Ghanaian banks: the mediating role of good corporate governance. *African Journal of Economic and Management Studies,*.

Owolabi, A. O., Oloyede, F. A., Iriyemi, A. B., & Akinola, A. T. (2017). The Impact of Risk Management on the Profitability of Insurance Companies in Nigeria. *International Journal of Marketing and Technology*, *7*(6), 1–26.

Owusu, A. (2017). Business intelligence systems and bank performance in Ghana: The balanced scorecard approach. *Cogent Business & Management*, *4*(1), 1–22. https://doi.org/10.1080/23311975.2017.1364056

Payne, E. a., & Ramsay, R. J. (2005). Fraud risk assessments and auditors' professional skepticism. *Managerial Auditing Journal*, *20*(3), 321–330. https://doi.org/10.1108/02686900510585636

Rossouw, J., & Styan, J. (2019). Steinhoff collapse: a failure of corporate governance. *International Review of Applied Economics*, *33*(1), 163–170. https://doi.org/10.1080/02692171.2019.1524043

Salkind, N. J. (2012). *Exploring Research* (Eighth). Pearson education, inc.

Shabri, S. M., Al, R., Saad, J., & Bakar, A. A. (2016). The Effects of Internal Control Systems on Cooperative ' s Profitability : A Case of Koperasi ABC Berhad. *International Review of Management and Marketing*, *6*(December 2016), 240–245.

Siyanbola, T. T. (2013). Effective Internal Controls System as Antidote for Distress in The Banking Industry in Nigeria. *Journal of Economics and International Business Research (JEIBR)*, *1*(5), 106–121.

Taraf, Z., & Hamad, S. (2025). The Relationship Between the Quality of the Internal Control System in Iraqi Commercial Banks and the Level of Operational Efficiency and the Achievement of Sustainable Financial Performance : An Analytical Field Study for the Period 2017 – 2024. *International Journal on Economics, Finance and Sustainable Development (IJEFSD)*, *7*(December), 311–324.

Tarurhor, E. M., & Olele, E. H. (2020). Corporate governance and performance of non-financial firms in Nigeria. *Scientific Papers of the University of Pardubice, Series D: Faculty of Economics and Administration*, *28*(3), 46–53. https://doi.org/10.46585/SP28031112

Tayo Akinleye, G., Magret Olarewaju, O., & Samson Fajuyagbe, B. (2019). Corporate governance and financial performance: an empirical analysis of selected multinational firms in Nigeria. *Problems and Perspectives in Management*, *17*(1), 11–18. https://doi.org/10.21511/ppm.17(1).2019.02

Tetteh, L. A., Kwarteng, A., Aveh, F. K., Dadzie, S. A., & Asante-Darko, D. (2022). The Impact of Internal Control Systems on Corporate Performance among Listed Firms in Ghana: The Moderating Role of Information Technology. *Journal of African Business*, *23*(1), 104–125. https://doi.org/10.1080/15228916.2020.1826851

Tunji, S. T. (2013). Effective internal control system as antidote for distress in the banking industry in Nigeria . *Journal of Economics and International Business Research*, *1*(December), 1–15.

Umar, H., & Dikko, M. U. (2018). Effect of internal control on performance of commercial banks in Nigeria: A proposed framework. *Sahel Analyst: Journal of Management Sciences*, *16*(3), 86–105.

Vinzi, V. E., Chin, W. W., Henseler, J., & Wang, H. (2010). *Handbook of Partial Least Squares: Concepts, Methods and Applications*. Springer Heidelberg Dordrecht. https://doi.org/10.1007/978-3-642-16345-6

Wilson, B., & Henseler, J. (2007). *Modeling Reflective Higher-Order Constructs using Three Approaches with PLS Path Modeling: A Monte Carlo Comparison.*

Xie, X., Wang, L., & Zeng, S. (2018). Inter-organizational knowledge acquisition and firms' radical innovation: A moderated mediation analysis. *Journal of Business Research*, *90*(May 2017), 295–306. https://doi.org/10.1016/j.jbusres.2018.04.038

Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2013). *Business Research Methods* (Eighth). Cengage Learning.