

Board Characteristics, Non-Performing Loans and Financial Performance of Deposit Money Banks in Nigeria

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ABSTRACT

This study examined the relationship between board characteristics, non-performing loans (NPLs), and financial performance of deposit money banks in Nigeria, with special focus on the mediating role of NPLs. The broad objective was to investigate how board governance attributes influenced bank profitability through the credit risk channel. Specifically, the study examined the effect of board characteristics on financial performance, assessed the impact of NPLs on financial performance, and evaluated the joint effect of board characteristics and NPLs on financial performance.

The study was anchored on agency theory and resource dependency theory. A longitudinal, ex post facto research design was adopted, employing a balanced panel data structure. Data were collected from audited annual reports and financial statements of ten deposit money banks over a ten-year period (2015–2025), yielding 100 bank-year observations. Panel data regression with Fixed Effects estimation and Driscoll-Kraay standard errors was employed, and mediation was tested using bootstrapping procedures with 5,000 resamples.

Board independence ($\beta = 0.019$, $p = 0.016$) and board gender diversity ($\beta = 0.023$, $p = 0.036$) had significant positive effects on Return on Assets, while board size and board meeting frequency did not. NPLs exhibited a strong negative impact on financial performance ($\beta = -0.141$, $p = 0.000$). Mediation analysis revealed that NPLs partially mediated the relationship between board independence and performance (indirect effect = 0.010, 53% of total effect), and fully mediated the relationship between board gender diversity and performance (indirect effect = 0.012, 52% of total effect). No significant moderation effects were found.

The Central Bank of Nigeria should enhance independence verification processes, transition gender diversity from aspiration to mandatory requirement, mandate that a minimum of 50% of credit/risk committee members be independent non-executive directors, and shift supervisory focus from meeting quantity to meeting quality. Bank boards should sustain and deepen board independence, accelerate gender diversity as a strategic priority, strengthen credit risk oversight, and review meeting effectiveness annually. The study concluded that board governance significantly influenced bank financial performance, but the mechanism through which this influence operated was substantially indirect, working through the quality of the loan portfolio. Strengthening board independence and gender diversity were identified as evidence-based imperatives for building resilient and profitable banks in Nigeria.

Keywords: Board Independence, Gender Diversity, Non-Performing Loans, Credit Risk, Financial Performance

INTRODUCTION

The banking sector constitutes the backbone of any economy, playing an indispensable role in financial intermediation by mobilizing surplus funds from savers and allocating them to borrowers for productive investment (Oyadeyi, 2026). In Nigeria, where the capital market remains underdeveloped, deposit money banks

(DMBs) constitute more than 90% of total financial system assets, making their stability and profitability matters of national economic security (Central Bank of Nigeria, 2022).

Despite extensive corporate governance reforms—including the CBN's Code of Corporate Governance for Banks (2014), the 2004/2005 consolidation exercise, and the post-2009 crisis interventions—the Nigerian banking sector continues to experience persistent challenges with non-performing loans (NPLs) and earnings volatility. Aggregate industry NPLs rose to about 14% during the 2016 oil price-led recession, forcing banks to make massive loan loss provisions that wiped out profitability and depleted capital buffers (Central Bank of Nigeria, 2017; Nigeria Deposit Insurance Corporation, 2022).

The Central Bank of Nigeria has repeatedly acknowledged the centrality of corporate governance to bank soundness. The CBN Code of Corporate Governance for Banks and Discount Houses (2014, as updated) prescribes detailed standards for board composition, independence, committee structures, meeting frequency, and separation of Chairman and CEO positions. The premise is that a properly constituted and functioning board will provide better oversight of management, better risk taking, and ultimately better financial outcomes (Basel Committee on Banking Supervision, 2015).

However, the proposition that these mandated characteristics have concrete and predictable effects on credit risk and financial performance in Nigeria has not been subjected to rigorous empirical verification. Most existing studies have adopted a reduced-form approach, regressing performance directly on board characteristics, thereby neglecting the operational mechanism through which governance influences outcomes (Ogundele et al., 2018; Uwuigbe et al., 2017). This represents a critical gap in understanding how boards add value in banking.

The central problem is that, notwithstanding comprehensive corporate governance codes, it remains empirically unclear which board attributes significantly affect bank financial performance and through what mechanism. The study addresses four critical board features—board size, board independence, board gender diversity, and board meeting frequency—and tests a mediation model in which these features impact financial performance directly and indirectly through the NPL ratio.

The study is guided by the following research questions

- i. How do board characteristics influence the financial performance of deposit money banks in Nigeria?
- ii. To what extent do non-performing loans affect the financial performance of deposit money banks in Nigeria?
- iii. What is the joint effect of board characteristics and non-performing loans on the financial performance of deposit money banks in Nigeria?

In line with these research questions, the study tests the following null hypotheses:

H₀₁: Board characteristics have no significant effect on the financial performance of deposit money banks in Nigeria.

H₀₂: Non-performing loans have no significant impact on the financial performance of deposit money banks in Nigeria.

H₀₃: There is no significant joint effect of board characteristics and non-performing loans on the financial performance of deposit money banks in Nigeria.

LITERATURE REVIEW

Conceptual Review

Corporate Governance

Corporate governance is "the system by which companies are directed and controlled" (Cadbury, 1992, p. 1). The OECD (2015) defines it as "a set of relationships between a company's management, its board, its shareholders and other stakeholders." In banking, governance assumes unique importance given banks' role as fiduciaries of depositors' money and the systemic implications of failure (Basel Committee on Banking Supervision, 2015).

Board Characteristics

Board Size: The total number of directors on the board. Theoretical arguments are divided: agency theory supports smaller boards for cohesion and accountability (Jensen, 1993; Lipton & Lorsch, 1992), while resource dependency theory supports larger boards for expertise and stakeholder linkages (Adams & Mehran, 2012; Pfeffer & Salancik, 1978).

Board Independence: The proportion of independent non-executive directors. Agency theory strongly predicts positive effects, as independent directors are less beholden to management and more likely to exercise effective oversight (Fama & Jensen, 1983).

Board Gender Diversity: The representation of women on the board. Heterogeneous groups are less prone to groupthink, and evidence suggests female directors are associated with more rigorous monitoring and greater sensitivity to risk (Adams & Ferreira, 2009; Chen et al., 2020).

Board Meeting Frequency: The total number of formal board meetings. While agency theory interprets frequent meetings as diligent monitoring (Vafeas, 1999), an alternative interpretation is reactive response to distress.

Non-Performing Loans

NPLs are loans where principal or interest is overdue for 90 days or more (Central Bank of Nigeria Prudential Guidelines). The NPL ratio (total NPLs divided by gross loans) is the standard measure of credit risk. NPLs are classified into three categories: substandard (90-180 days), doubtful (180-360 days), and lost (>360 days). High NPLs reduce profitability through loan loss provisions, lost interest income, increased costs, and reputational damage (Berger & DeYoung, 1997; Ghosh, 2020).

Financial Performance

Return on Assets (ROA)—profit after tax divided by average total assets—is the most common accounting-based measure of bank performance, reflecting management efficiency in utilizing the asset base to generate profit (Ogundele et al., 2018).

Mediation

Mediation is a statistical construct representing a causal process where an independent variable (X) influences a dependent variable (Y) via an intermediate variable (M) (Baron & Kenny, 1986; Preacher & Hayes, 2008). The mediation framework decomposes total effects into direct (c') and indirect ($a \times b$) effects.

Theoretical Framework

The study is anchored on Agency Theory (Jensen & Meckling, 1976) and Resource Dependency Theory (Pfeffer & Salancik, 1978).

Agency Theory: Views the firm as a set of contracts between principals (shareholders) and agents (managers), creating conflicts of interest. The board is the main internal governance mechanism to solve the agency problem through monitoring. Predictions: independent directors and gender diversity enhance monitoring; board size has ambivalent effects.

Resource Dependency Theory: Considers the board as a means to manage external dependence. Boards provide advice, legitimacy, communication channels, and resource access. Predictions: larger boards bring more resources; diverse boards enhance stakeholder connections.

Empirical Review

Evidence on board characteristics and bank performance is mixed. Board independence consistently emerges as positively associated with performance in Nigeria (Akpan et al., 2020; Adebayo et al., 2023; Onuorah & Nnamdi, 2024) and internationally (Al-Fayoumi et al., 2021; Osei, 2021). Board gender diversity shows positive associations in US banks (Chen et al., 2020), the Middle East and Africa (Elamer et al., 2020), and Nigeria (Okonkwo & Ezech, 2021; Okafor & Ibadin, 2024). Board size findings are mixed: positive (Bawaneh, 2021; Osei, 2021), negative (Muriuki et al., 2023), or non-significant (Adebayo et al., 2023; Onuorah & Nnamdi, 2024). Board meeting frequency generally shows non-significant effects (Al-Matari et al., 2021; Okafor et al., 2022).

The inverse NPL-performance relationship is one of the most robust findings in banking literature. Studies consistently confirm strong negative effects in the US (Ghosh, 2020), Indonesia (Rachman et al., 2021), Europe (Alandejani & Al-Shaer, 2022), Kenya (Ondieki & Njeru, 2021), Ghana (Adusei, 2022), and Nigeria (Afolabi & Olufemi, 2022; Adeleye et al., 2023; Onuorah & Nnamdi, 2024).

Emerging evidence suggests NPLs mediate the governance-performance relationship. Studies in Indonesia (Siahaan et al., 2021), Jordan (Mansour & Al-Taani, 2025), and Ghana (Asante-Darko et al., 2020) confirm mediation. Okafor and Ibadin (2024) provided initial Nigerian evidence, finding partial mediation for board independence and gender diversity. The present study extends this work with a longer ten-year balanced panel and comprehensive controls.

CONCEPTUAL FRAMEWORK

The framework hypothesizes that board characteristics affect financial performance through two paths: direct (c') and indirect through NPLs ($a \times b$). The empirical analysis follows Baron and Kenny's (1986) three-step mediation procedure.

METHODOLOGY

The study adopts a longitudinal, ex post facto research design employing a balanced panel data structure covering 2015–2025.

The population comprises all DMBs licensed by the CBN. The final sample consists of 10 DMBs (7 international authorization, 3 national authorization) observed over 10 years, yielding 100 bank-year observations.

Data are from audited annual reports and financial statements, CBN publications, NDIC reports, and World Bank databases.

Variable Measurement

Variable	Measurement
ROA	Profit after tax / Average total assets $\times 100$
NPLR	Total NPLs / Gross loans $\times 100$
BSIZE	Total number of directors

BIND	Independent directors / Total board × 100
BGEND	Female directors / Total board × 100
BMEET	Number of board meetings per year
SIZE	Natural logarithm of total assets
CAR	Capital adequacy ratio
LTDR	Loan-to-deposit ratio
AGE	Years since incorporation
GDPGR	GDP growth rate
INFR	Inflation rate

Model Specification

Model 1 (Total Effect):

$$ROA_{it} = \alpha_0 + \beta_1 BSIZE_{it} + \beta_2 BIND_{it} + \beta_3 BGEND_{it} + \beta_4 BMEET_{it} + \beta_5 SIZE_{it} + \beta_6 CAR_{it} + \beta_7 LTDR_{it} + \beta_8 AGE_{it} + \beta_9 GDPGR_{it} + \beta_{10} INFR_{it} + \mu_i + \varepsilon_{it}$$

Model 2 (a path):

$$NPLR_{it} = \alpha_0 + \beta_1 BSIZE_{it} + \beta_2 BIND_{it} + \beta_3 BGEND_{it} + \beta_4 BMEET_{it} + \beta_5 SIZE_{it} + \beta_6 CAR_{it} + \beta_7 LTDR_{it} + \beta_8 AGE_{it} + \beta_9 GDPGR_{it} + \beta_{10} INFR_{it} + \mu_i + \varepsilon_{it}$$

Model 3 (b and c' paths):

$$ROA_{it} = \alpha_0 + \beta_1 BSIZE_{it} + \beta_2 BIND_{it} + \beta_3 BGEND_{it} + \beta_4 BMEET_{it} + \beta_5 NPLR_{it} + \beta_6 SIZE_{it} + \beta_7 CAR_{it} + \beta_8 LTDR_{it} + \beta_9 AGE_{it} + \beta_{10} GDPGR_{it} + \beta_{11} INFR_{it} + \mu_i + \varepsilon_{it}$$

Data Analysis Techniques

1. Descriptive statistics
2. Correlation analysis
3. Diagnostic tests (Breusch-Pagan LM, Hausman, VIF, heteroskedasticity, serial correlation, cross-sectional dependence)
4. Panel data regression with Fixed Effects estimation
5. Driscoll-Kraay standard errors (robust to heteroskedasticity, autocorrelation, and cross-sectional dependence)
6. Bootstrapped mediation analysis with 5,000 resamples (Preacher & Hayes, 2008)

RESULTS AND DISCUSSION

Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
ROA (%)	2.31	1.14	-1.62	5.18
BSIZE	12.64	3.08	7	19
BIND (%)	50.12	13.42	22.22	85.71
BGEND (%)	19.85	9.87	0	42.86
BMEET	6.08	1.76	4	13
NPLR (%)	6.42	4.08	0.95	21.8

Diagnostic Tests

- **Breusch-Pagan LM Test:** Panel effects present ($p < 0.01$)
- **Hausman Test:** Fixed Effects preferred ($p < 0.01$)
- **VIF:** All < 10 (mean VIF = 1.68) $\rightarrow$ No multicollinearity
- **Heteroskedasticity:** Present $\rightarrow$ Driscoll-Kraay standard errors applied
- **Serial Correlation:** Present $\rightarrow$ Driscoll-Kraay standard errors applied
- **Cross-sectional Dependence:** Present $\rightarrow$ Driscoll-Kraay standard errors applied

Hypothesis One: Board Characteristics and Financial Performance

Variable	Coefficient	p-value
BSIZE	0.041	0.108
BIND	0.019	0.016
BGEND	0.023	0.036
BMEET	-0.028	0.424

Decision: H_{01} rejected for board independence and gender diversity; not rejected for board size and meeting frequency.

Hypothesis Two: NPLs and Financial Performance

Variable	Coefficient	p-value
NPLR	-0.141	0.000

Decision: H_{02} rejected. +1% NPL increase $\rightarrow$ -0.14% ROA decrease.

Hypothesis Three: Joint Effect (Mediation Analysis)

Board Characteristic	Total Effect	Direct Effect	Indirect Effect	Mediation Type
BIND	0.019**	0.010 (ns)	0.01	Partial
BGEND	0.023**	0.013 (ns)	0.012	Full
BSIZE	0.041 (ns)	0.028 (ns)	-0.025	No
BMEET	-0.028 (ns)	-0.017 (ns)	-0.014	No

Bootstrapped Confidence Intervals (5,000 Resamples):

Path	Indirect Effect	95% CI
BIND $\rightarrow$ NPLR $\rightarrow$ ROA	0.01	[0.003, 0.021]
BGEND $\rightarrow$ NPLR $\rightarrow$ ROA	0.012	[0.003, 0.024]

Decision: H_{03} rejected for mediation (BIND and BGEND); no moderation effects found.

DISCUSSION OF FINDINGS

Board Characteristics and Performance

The finding that board independence positively affects performance ($\beta = 0.019$, $p = 0.016$) supports agency theory's monitoring logic and aligns with previous Nigerian studies (Akpan et al., 2020; Adebayo et al., 2023; Onuorah & Nnamdi, 2024). Independent directors exercise effective oversight, challenge management decisions, and enforce lending discipline.

The positive effect of board gender diversity ($\beta = 0.023$, $p = 0.036$) supports the resource dependency and agency theory arguments that diverse boards improve decision quality and monitoring (Chen et al., 2020; Elamer et al., 2020). The finding provides empirical support for the CBN's 2023 policy encouraging 30% female board representation.

The non-significant findings for board size and meeting frequency align with previous Nigerian studies (Adebayo et al., 2023; Okafor et al., 2022; Onuorah & Nnamdi, 2024), suggesting that quality and composition matter more than quantity.

NPLs and Performance

The strong negative NPL-performance relationship ($\beta = -0.141$, $p = 0.000$) confirms NPLs as the most potent determinant of bank profitability. The economic significance is substantial: a bank with NPL ratio of 10% would have ROA approximately 0.71 percentage points lower than a bank at the 5% threshold. This finding aligns with international (Ghosh, 2020) and Nigerian evidence (Afolabi & Olufemi, 2022; Adeleye et al., 2023).

Mediation Analysis

The mediation findings represent the study's central contribution. Board independence partially mediates performance through NPLs (indirect effect = 0.010, 53% of total effect). Board gender diversity fully mediates performance through NPLs (indirect effect = 0.012, 52% of total effect). These findings demonstrate that governance influences profitability substantially through the credit risk channel. Boards shape credit culture, risk appetite, and underwriting standards, which determine loan quality, which in turn determines profitability.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Three conclusions emerge with particular force:

First, board independence and gender diversity have significant positive effects on financial performance. Board size and meeting frequency do not. Second, NPLs remain the most potent determinant of profitability. Third, and most importantly, governance works through credit risk: approximately 53% (independence) and 52% (gender diversity) of governance effects are channelled through NPLs. The study demonstrates that boards add value not directly, but by shaping the quality of the loan portfolio.

Recommendations

To the Central Bank of Nigeria:

1. Enhance independence verification processes
2. Transition gender diversity from aspiration to mandatory requirement

3. Mandate independent directors on credit committees
4. Shift supervisory focus from meeting quantity to meeting quality

To Bank Boards:

5. Sustain and deepen board independence
6. Accelerate gender diversity as a strategic priority
7. Strengthen credit risk oversight
8. Review meeting effectiveness annually

5.3 Limitations and Future Research

Limitations include sample size (10 banks), scope of board characteristics (4 attributes), measurement of independence (annual report classification), and endogeneity concerns. Future research should incorporate additional governance variables, test non-linear relationships, explore other mediators, conduct comparative African studies, and employ quasi-experimental methods.

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