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FINANCIAL RISK MANAGEMENT AND PERFORMANCE OF LISTED DEPOSIT MONEY BANKS IN NIGERIA

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Abstract

This study investigates the impact of financial risks, specifically credit risk, operational risk, and market risk on the profitability of listed Deposit Money Banks (DMBs) in Nigeria over the period 2014–2023. Using fixed-effects panel regression on data from 10 listed DMBs, the study examines the effects of three risk-weighted ratios: credit risk, operation risk and market risk (CRTWR, ORTWR, MRTWR) and a risk-adjusted spread ratio (RISASR) on Earnings Per Share (EPS), Return on Assets (ROA), and Return on Equity (ROE), while controlling for bank size (BSIZE). Results reveal that credit risk (CRTWR) exerts a significant positive effect on all profitability metrics, suggesting that Basel III-compliant capital allocation enhances financial performance. Operational risk (ORTWR) consistently reduces profitability across all measures, reflecting the adverse impact of fraud and IT failures in Nigeria's digitally evolving banking sector. Market risk (MRTWR) shows only marginal significance for EPS, with no significant effect on ROA or ROE, indicative of effective hedging practices. RISASR is insignificant across all models. Bank size (BSIZE) positively moderates profitability, confirming economies of scale advantages. The findings have important implications for bank managers, regulators, and the Central Bank of Nigeria (CBN) in designing risk-sensitive capital and operational frameworks.

Keywords: *Financial risk management, Credit risk, Operational risk, Market risk, Bank profitability, Nigeria, Panel data, Basel III*

1. Introduction

Deposit Money Banks (DMBs) occupy a central position in Nigeria's financial architecture, channeling funds from surplus to deficit economic units and driving broader macroeconomic growth (Ozigbo & Sylvester, 2022). Their operations, however, remain persistently exposed to three principal categories of financial risk: credit risk, operational risk, and market risk. When inadequately managed, these risks erode performance metrics and undermine systemic stability (Basel Committee on Banking Supervision [BCBS], 2006). Against the backdrop of Nigeria's volatile

macroeconomic environment characterised by inflation, currency depreciation, and frequent regulatory adjustments, robust risk management is not merely a regulatory obligation but a strategic imperative.

Credit risk, arising from borrower default, is widely regarded as the most consequential risk facing Nigerian DMBs given the sector's reliance on lending revenues (Adeusi et al., 2014). Persistent non-performing loan (NPL) accumulation particularly in the wake of the 2014–2016 economic recession has strained bank earnings and required substantial loan loss provisioning, directly depressing profitability indicators such as Return on Assets (ROA) and Return on Equity (ROE) (Adegbie & Adebanjo, 2020). Operational risk, on the other hand, has been amplified by the sector's accelerating digitalisation: cyberattacks, fraud, and anti-money laundering (AML) compliance failures collectively impose significant losses (Chernobai et al., 2020). Market risk exposure through interest rate and foreign exchange volatility further complicates earnings stability (Ajayi & Oseyomon, 2019).

Despite a growing body of literature on risk-performance linkages in Nigerian banking, extant studies predominantly examine credit or liquidity risk in isolation, rely on singular profitability proxies, and rarely account for the moderating influence of bank size. This study addresses these gaps by constructing an integrative fixed-effects panel model that simultaneously examines credit, operational, and market risks against three profitability measures: Earnings Per Share (EPS), ROA, and ROE—across 10 listed Nigerian DMBs from 2014 to 2023. This study fills several critical gaps in the existing literature by employing a panel of ten Nigerian banks with secondary audited data from 2014 to 2023, thereby overcoming the limitations of single-bank, cross-sectional, or primary-data approaches (Ugah, 2020). Unlike prior works that focused only on credit and liquidity risk (Oladele & Akinwumi, 2024) or solely on credit risk (Ogunwale & Isibor, 2024), this study integrates all three Basel III risk categories—credit, market, and operational risk—using risk-weighted, capital-allocation ratios instead of traditional proxies (Oluwaleye et al., 2023; Inegbedion et al., 2020). It further captures post-pandemic dynamics and Nigeria’s specific regulatory environment under the CBN/Basel III framework, addressing the cross-country or context-blind limitations of studies like Bhatt et al. (2023) and the narrow liquidity focus of Nyahas & Ekoja (2024). Finally, it employs three profitability metrics (ROA, ROE, and EPS) within a fixed-effects panel model, offering a more comprehensive and robust assessment than prior studies that relied on single measures like ROA alone.

The remainder of this paper is structured as follows: Section 2 reviews the theoretical and empirical literature; Section 3 describes the methodology; Section 4 presents and discusses empirical findings; and Section 5 concludes with policy recommendations.

2. Literature Review

2.1 Theoretical Foundations

The study is anchored in five complementary theoretical frameworks. The Financial Stability Theory (BCBS, 1988; Schinasi, 2004) posits that capital adequacy and robust risk management prevent systemic banking failures—an argument that underpins the CBN's adoption of Basel II and III standards. Credit Risk Theory, formalised by Merton (1974), quantifies default risk through probability of default (PD), loss given default (LGD), and exposure at default (EAD), providing the analytical basis for credit underwriting and provisioning practices. Systems Theory (von Bertalanffy, 1968) treats banks as open, interdependent systems in which operational failures in one component propagate broadly—particularly relevant to fraud and IT risk management. Market Efficiency Theory (Fama, 1970) informs the management of interest rate and foreign exchange exposures, while Shareholder Wealth Theory (Friedman, 1970) and the Resource-Based View (Barney, 1991) together explain why risk management investment ultimately translates into superior returns for shareholders and larger, resource-rich institutions respectively.

2.2 Basel Regulatory Framework and Nigerian Banking

The Basel Accords—Basel I (1988), Basel II (2004), and Basel III (2010, with ongoing refinements) constitute the international architecture for bank risk management. Basel III introduced higher capital buffers, the Liquidity Coverage Ratio (LCR), the Net Stable Funding Ratio (NSFR), and the Fundamental Review of the Trading Book (FRTB), which replaced Value-at-Risk (VaR) with Expected Shortfall (ES) for market risk measurement (BCBS, 2016; BCBS, 2017). The CBN's progressive adoption of these standards has strengthened the resilience of Nigerian DMBs, though implementation costs remain a constraint for smaller institutions (Chernobai et al., 2020).

2.3 Empirical Evidence

Empirical evidence on the risk-profitability nexus in Nigeria is largely consistent in direction but varies in magnitude and methodology. Olalekan and Adeyemi (2013) documented a significant negative relationship between the Non-Performing Loan Ratio (NPLR) and ROA across ten banks (2005–2010). Onaolapo (2014) demonstrated that higher Capital Adequacy Ratio (CAR) significantly attenuates the negative effect of NPLR on ROA, underscoring the buffering function of capital. Nwakanma and Ibe (2014) found, via Generalised Method of Moments (GMM) estimation, that larger banks exhibit considerably lower ROA sensitivity to credit risk deterioration, attributing this to economies of scale in risk management.

On liquidity risk, Olayemi (2016) showed that elevated Loan-to-Deposit Ratios (LDR) constrain profitability by limiting lending flexibility. Adesina (2018) used stochastic frontier analysis to identify an optimal LDR range of 65–75% for maximising ROE in Nigerian banks. Onuora et al. (2020) confirmed a significant negative relationship between the Loan Loss Provision Ratio (LLPR) and ROE. Regarding

operational risk, Dugguh (2015) and Oladele and Akinwumi (2024) established that fraud and IT failures erode ROA and EPS, while Osagiende (2023) found that the cost-to-income ratio has a negative but often statistically insignificant effect on profitability. Ajayi and Oseyomon (2019) demonstrated that effective market risk management primarily through net interest margin optimization positively influences ROA.

Ugah (2020) investigated financial risks and bank profitability in Nigeria using survey data drawn from 56 management staff of Access Bank of Nigeria Plc, employing simple linear regression. The study reported significant positive effects of liquidity, credit, interest rate, and inflation risks on return on assets (ROA). While this study established a positive risk-profitability association in a single institution, it is constrained by the use of primary data from one bank, which fundamentally limits generalizability. Moreover, the reliance on simple linear regression for cross-sectional survey data fails to address bank-specific heterogeneity or temporal dynamics weaknesses that the present study resolves through a fixed-effects panel regression covering ten listed DMBs over ten years (2014–2023).

Oladele and Akinwumi (2024) examined credit and liquidity risk management and disclosures using panel data from 12 Nigerian commercial banks (2012–2023), extending their analysis to the Generalised Method of Moments (GMM) to address endogeneity. Their study found a significant negative effect of credit risk on financial performance and a positive effect of liquidity risk disclosure on profitability. Although this study advances the literature by incorporating risk disclosure as a dimension of risk management, it remains limited to credit and liquidity risks and omits operational and market risk components entirely. In addition, their profitability analysis is restricted to ROA, leaving a gap regarding shareholder-level performance captured by EPS and ROE. The present study addresses this gap by simultaneously examining credit, operational, and market risks and employing three profitability proxies — EPS, ROA, and ROE, thereby providing a more comprehensive risk-performance profile.

Oluwaleye et al. (2023) examined the effect of risk management on the profitability of six listed Nigerian DMBs (2007–2020) using pooled OLS, fixed effects, and random effects estimations. Their findings showed that market risk positively and significantly influenced ROA, while credit and operational risks were insignificant. The study is valuable in its multi-risk scope but is weakened by a limited sample of six banks and the use of broad, non-Basel-aligned proxies. The present study advances on this limitation by employing capital-framework-anchored variables (CRTWR, ORTWR, MRTWR) derived from audited Basel III regulatory disclosures, producing risk measures that are more technically grounded and internationally comparable under the Basel III regulatory framework.

Ogunwale and Isibor (2024) investigated the impact of credit risk on the financial performance of five Nigerian DMBs from 2010 to 2020 using fixed-effects panel regression. They found that capital adequacy ratio and loan loss provisions positively impacted ROE, while non-performing loans exerted a significant negative

effect. Although this study contributes evidence on credit risk dynamics in the post-Basel II period, its focus on only five banks and a single risk category (credit risk) represents a notable limitation. Importantly, it neither accounts for operational nor market risk, nor does it examine EPS as a profitability metric, these gaps the present study explicitly fills by adopting an integrated, multi-risk, multi-profitability framework across a broader, more representative sample of ten listed DMBs.

Inegbedion et al. (2020) examined risk management and the financial performance of 18 active Nigerian DMBs over 22 years (2000–2021). Using fixed-effects panel estimation, they found that credit risk and operational risk were insignificant, while liquidity risk and market risk had significant positive effects on bank performance. This study is among the most comprehensive in the Nigerian literature in terms of sample breadth and time span. However, it relied on traditional proxies such as the loan-to-deposit ratio and the inflation rate, without recourse to Basel-compliant risk-weighted asset ratios. The present study distinguishes itself by employing CRTWR, ORTWR, and MRTWR derived from regulatory Basel III disclosures a methodological departure that yields theoretically superior and more policy-relevant risk proxies, while also covering the more recent post-recession period (2014–2023), including the COVID-19 shock and its regulatory aftermath.

At the international level, Bhatt et al. (2023) examined the determinants of credit risk management and their relationship with commercial bank performance across multiple countries, finding that capital adequacy ratio positively influences ROE, a result corroborated by the present study. However, their cross-country design does not account for Nigeria-specific institutional dynamics such as the CBN's Basel III implementation trajectory, NDIC framework governance, and the unique operational risk landscape driven by fraud and cybersecurity vulnerabilities in Nigerian digital banking. Similarly, Chernobai et al. (2020) offered a global review of operational risk management in financial institutions, underscoring the significance of technology-induced loss events, but without empirical evidence from Sub-Saharan Africa's specific operational environment. The current study directly addresses this gap by situating operational risk analysis within the context of Nigeria's digitalising banking sector, where the pace of fintech adoption has demonstrably outpaced cybersecurity capacity (Hassan et al., 2024).

Nyahas and Ekoja (2024) studied the effect of Basel III liquidity requirements on Nigerian bank profitability using a Regression Discontinuity Design on data from Nigerian DMBs. They found that Basel III liquidity standards exerted no significant direct effect on ROE or ROA, with overhead costs and the cost-to-income ratio as the dominant negative profitability determinants. While this study represents an important contribution to the Basel III-Nigeria nexus, it focused exclusively on liquidity risk and did not examine credit, operational, or market risk dimensions, nor did it employ risk-weighted asset ratios as explanatory variables. The present study complements and extends this work by incorporating the full spectrum of Basel III risk

categories and operationalising them through capital-allocation ratios (CRTWR, ORTWR, MRTWR), enabling a richer assessment of how the regulatory capital framework influences profitability in Nigerian DMBs.

Synthesising across these related studies, four interconnected research gaps that the present study fills are clearly identifiable. First, no prior Nigerian study has simultaneously examined all three Basel III-defined risk categories — credit, operational, and market using capital-allocation ratios derived directly from regulatory disclosures; most studies employ single or dual-risk frameworks, or use non-Basel proxies. Second, the use of EPS as a profitability metric alongside ROA and ROE remains rare in the Nigerian literature; most studies rely solely on ROA, thereby neglecting shareholder-level value implications. Third, existing studies largely exclude or inadequately control for the moderating role of bank size, despite strong theoretical predictions and empirical support for scale effects in risk management efficiency. Fourth, the period 2014–2023 encompasses critical episodes, the economic recession, Basel III adoption, COVID-19 shock, and post-pandemic regulatory tightening that remain underexamined in an integrated fixed-effects panel framework. The present study addresses all four gaps in a unified empirical model.

A significant gap in the literature is the absence of integrated models that jointly test credit, operational, and market risks against multiple profitability metrics, while also accounting for the moderating role of bank size. This study fills that gap.

3. Methodology

3.1 Research Design and Data

The study employs a quantitative, panel data research design. Secondary data were extracted from the audited financial statements of 10 listed Nigerian DMBs published on the Nigerian Exchange Group (NGX) and from CBN Statistical Bulletins covering 2014–2023. The ten-year window captures post-Basel II adoption, the 2014–2016 recession, subsequent regulatory reforms, and the post-COVID recovery period. The 10 sampled banks—Access Bank, First Bank, UBA, Guaranty Trust Bank (GTB), Zenith Bank, Fidelity Bank, FCMB, Stanbic IBTC Bank, Unity Bank, and Wema Bank—were selected via purposive sampling on the criterion of complete data availability, yielding a balanced panel of 100 bank-year observations.

3.2 Variable Measurement

Three dependent variables are used: EPS (net income divided by weighted average shares outstanding), ROA (net income divided by total assets), and ROE (net income divided by shareholders' equity). Independent variables comprise the Credit Risk-Weighted Ratio (CRTWR)—the proportion of risk-weighted assets attributed to credit risk per Basel II/III methodology; the Operational Risk-Weighted Ratio (ORTWR)—the proportion of risk-weighted assets attributed to operational risk under the Standardised Measurement Approach (SMA); the Market Risk-Weighted Ratio (MRTWR)—the proportion of risk-weighted assets attributed to market risk; and the Risk-Adjusted Spread Ratio (RISASR)—the proportion of risky assets in the bank's

portfolio. Bank size (BSIZE), measured as the natural logarithm of total assets, serves as a control variable.

3.3 Model Specification

Three fixed-effects panel regression models are estimated, one for each profitability metric:

$$Y_{it} = \beta_0 + \beta_1 CRTWR_{it} + \beta_2 ORTWR_{it} + \beta_3 MRTWR_{it} + \beta_4 RISASR_{it} + \beta_5 BSIZE_{it} + \mu_i + \varepsilon_{it}$$

where Y_{it} is EPS, ROA, or ROE for bank i in year t; μ_i captures time-invariant, bank-specific unobserved heterogeneity (e.g., management quality, corporate culture); and ε_{it} is the idiosyncratic error term. The fixed-effects specification was selected on the basis of statistically significant Hausman test results for all three dependent variables ($p < 0.01$), rejecting the random-effects estimator.

Multicollinearity was assessed using Variance Inflation Factors (VIF), with a mean VIF of 2.33 (all VIF < 5) confirming the absence of problematic collinearity. Heteroskedasticity and autocorrelation were tested using the Breusch-Pagan and Wooldridge tests, respectively, with robust standard errors applied where warranted.

4. Results And Discussion

4.1 Descriptive Statistics

Table 1 presents summary statistics for all study variables. EPS exhibits substantial variability (mean = 3.347; SD = 4.000; range: −5.359 to 21.560), reflecting wide disparities in per-share profitability across the sample. ROA (mean = 0.018) and ROE (mean = 0.132) are positive on average but include negative values, consistent with episodic loss-making during the recession period. CRTWR dominates the risk-weighted asset composition (mean = 0.757), confirming that credit risk constitutes the largest single component of risk exposure. ORTWR (mean = 0.208) and MRTWR (mean = 0.029) account for smaller but non-trivial shares. RISASR averages 0.397, and BSIZE ranges from 5.972 to 9.986, capturing the diversity from smaller to systemically important banks.

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.	Min.	Max.
EPS	3.347	4.000	−5.359	21.560
ROA	0.018	0.022	−0.133	0.056
ROE	0.132	0.083	−0.012	0.365
CRTWR	0.757	0.052	0.629	0.853
ORTWR	0.208	0.055	0.107	0.351
MRTWR	0.029	0.026	0.000	0.111
RISASR	0.397	0.111	0.057	0.608

BSIZE	7.599	1.138	5.972	9.986

Source: Computed from audited financial statements of sampled banks (2014–2023).

4.2 Correlation Analysis

The correlation matrix (Table 2) reveals strong positive intercorrelations among the three profitability measures (EPS–ROA: r = 0.87; EPS–ROE: r = 0.79; ROA–ROE: r = 0.91; all $p < 0.05$), validating their conceptual coherence. CRTWR is positively correlated with EPS (r = 0.32), ROA (r = 0.28), and ROE (r = 0.22), while ORTWR exhibits negative correlations with all three (ranging from −0.33 to −0.41). BSIZE shows moderate to strong positive correlations with profitability metrics (0.51–0.65). A strong negative correlation between CRTWR and ORTWR (r = −0.82) suggests that capital allocation between credit and operational risk is inversely proportional, warranting careful interpretation in multivariate analysis. VIF diagnostics confirm that this does not produce problematic multicollinearity (mean VIF = 2.33).

Table 2: Correlation Matrix

Variable	EPS	ROA	ROE	CRTWR	ORTWR	MRTWR	RISASR	BSIZE
EPS	1.00							
ROA	0.87*	1.00						
ROE	0.79*	0.91*	1.00					
CRTWR	0.32*	0.28*	0.22*	1.00				
ORTWR	−0.41*	−0.38*	−0.33*	−0.82*	1.00			
MRTWR	−0.19*	−0.17*	−0.11	−0.29*	0.35*	1.00		
RISASR	0.06	0.09	0.08	0.42*	−0.45*	−0.23*	1.00	
BSIZE	0.65*	0.58*	0.51*	0.37*	−0.31*	−0.12	0.21*	1.00

*Note: * denotes significance at the 5% level.*

4.3 Panel Regression Results

Fixed-effects Hausman tests conclusively favour the fixed-effects specification for all three dependent variables (EPS: $\chi^2(5) = 27.34$, $p = 0.0001$; ROA: $\chi^2(5) = 19.87$, $p = 0.0013$; ROE: $\chi^2(5) = 15.92$, $p = 0.007$), confirming the presence of significant bank-specific effects correlated with the regressors. The regression results are reported in Table 3.

Table 3: Fixed-Effects Panel Regression Results

Variable	EPS Coeff.	EPS p-val	ROA Coeff.	ROA p-val	ROE Coeff.	ROE p-val
CRTWR	15.724***	0.000	0.127***	0.000	0.482***	0.001
ORTWR	−8.912**	0.013	−0.073**	0.030	−0.328**	0.023
MRTWR	−12.640*	0.066	−0.082	0.204	−0.206	0.455

RISASR	−1.052	0.397	−0.003	0.804	0.012	0.821
BSIZE	0.382**	0.013	0.004***	0.003	0.017**	0.017
Constant	−7.214**	0.017	−0.058**	0.042	−0.222*	0.069
R^2-within	0.517	0.432	0.381			
F-statistic	18.19***	12.91***	10.48***			

*Note: ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. All models include bank fixed effects. Observations: 100 (10 banks × 10 years).*

4.4 Discussion of Findings

4.4.1 Credit Risk and Profitability

CRTWR exerts a significant positive effect on EPS (β = 15.724, p < 0.001), ROA (β = 0.127, p < 0.001), and ROE (β = 0.482, p < 0.01), leading to the rejection of H_{01}, H_{02}, and H_{03} in respect of credit risk. This positive relationship may appear counterintuitive given that credit risk is typically associated with NPL-driven losses. However, CRTWR captures the proportion of risk-weighted assets allocated to credit-generating activities—reflecting not raw NPL exposure but the bank's active engagement in Basel III-regulated lending with adequate capital backing. Banks with higher CRTWR that maintain Basel-compliant capital adequacy ratios are, by construction, managing credit risk more robustly, which reduces loss absorption costs and preserves profitability.

These findings are consistent with Bhatt et al. (2023), who show that CAR positively influences ROE, and with Adegbie and Adebanjo (2020), who link effective credit risk management to EPS improvement. The result diverges from Olalekan and Adeyemi (2013), who found NPLR negatively related to ROA—a distinction attributable to the different proxies employed: NPLR is a direct loss indicator, whereas CRTWR reflects capital-weighted exposure under regulatory frameworks. The divergence reinforces the finding of Onaolapo (2014) that capital adequacy buffers moderate the credit risk-profitability relationship.

4.4.2 Operational Risk and Profitability

ORTWR significantly and negatively predicts EPS (β = −8.912, p < 0.05), ROA (β = −0.073, p < 0.05), and ROE (β = −0.328, p < 0.05), confirming the hypotheses that operational risk erodes all three profitability dimensions. This result is robust and consistent with the theoretical expectations of Systems Theory and the empirical findings of Dugguh (2015) and Oladele and Akinwumi (2024). The magnitude of the negative effect is especially notable for EPS, suggesting that shareholders bear the brunt of operational loss events.

The strength of the ORTWR-profitability relationship in this sample likely reflects Nigeria's specific operational risk landscape: rapid digitalisation has outpaced

cybersecurity capacity in many DMBs, while CBN's stringent AML/KYC requirements impose significant compliance costs. Osagiende (2023) found a statistically insignificant effect for the cost-to-income ratio as an operational risk proxy, a divergence from the current result that can be explained by ORTWR's broader scope—it encompasses fraud, cybersecurity incidents, and regulatory penalties in addition to routine operating costs, capturing more extreme loss events.

4.4.3 Market Risk and Profitability

MRTWR exerts a marginally significant negative effect on EPS ($\beta = -12.640$, $p = 0.066$) but is statistically insignificant for ROA and ROE. This finding partially contradicts the evidence in Ajayi and Oseyomon (2019) and Bhatt et al. (2023), who document significant market risk effects. The attenuated result in the present study may reflect the effectiveness of asset-liability management (ALM) and hedging strategies adopted by Nigerian DMBs in the post-2016 regulatory period, particularly as the CBN mandated enhanced IRRBB assessment in line with BCBS (2016) guidelines. The marginal effect on EPS suggests some market-driven income sensitivity in banks with active trading books, but this does not translate into meaningful asset or equity return impacts at the sample level.

4.4.4 Bank Size and Profitability

BSIZE positively and significantly predicts EPS ($\beta = 0.382$, $p < 0.05$), ROA ($\beta = 0.004$, $p < 0.01$), and ROE ($\beta = 0.017$, $p < 0.05$). This result aligns with Nwakanma and Ibe (2014) and is consistent with the RBV theory premise that larger banks leverage superior technological, human, and financial resources to manage risks more efficiently and generate higher risk-adjusted returns. In Nigeria's post-consolidation banking environment, larger banks benefit from diversified revenue streams, greater access to capital markets, and advanced risk management systems—advantages that clearly translate into superior profitability outcomes.

5. Conclusion And Policy Implications

This study contributes to the financial risk management literature by providing an integrated panel analysis of how credit, operational, and market risks jointly influence the profitability of Nigerian DMBs from 2014 to 2023. The key conclusions are threefold. First, credit risk managed within a Basel III-compliant capital framework positively enhances profitability—suggesting that regulatory capital buffers are not merely stability tools but active profitability enablers. Second, operational risk is the most consistently damaging risk category, significantly eroding EPS, ROA, and ROE—a finding that highlights the urgency of cybersecurity investment and internal control strengthening in Nigeria's digitalising banking sector. Third, market risk has only marginal profitability effects, likely attributable to effective hedging, though its significance for EPS warrants continued vigilance by trading-active institutions.

The moderating role of bank size confirms that scale confers risk management advantages that translate into superior profitability, underscoring the merit of consolidation strategies for smaller DMBs. RISASR's consistent insignificance suggests

that composite risk measures may lack the diagnostic precision of disaggregated risk ratios for profitability analysis.

5.1 Policy Recommendations

For bank managers, priority investments in cybersecurity infrastructure and fraud detection technologies are warranted to reduce operational risk. Credit appraisal processes should be strengthened using advanced scoring models aligned with the IRB approach under Basel III. Smaller banks should actively explore strategic mergers to achieve scale advantages in risk management.

For the CBN, calibrating CRR and LCR requirements to avoid excessive liquidity constraints on lending while maintaining system stability is recommended. Phased implementation timelines for new Basel standards could reduce compliance cost burdens that disproportionately affect smaller institutions. Supervisory emphasis on operational risk governance—particularly cybersecurity and AML compliance—should be intensified given its consistent negative profitability impact.

This study is subject to limitations inherent in secondary panel data research: potential inconsistencies in bank financial disclosures, the exclusion of unlisted DMBs, and reliance on historical data that may not capture real-time policy shocks. Future research should extend the sample to unlisted banks, incorporate macroeconomic control variables (GDP growth, inflation), explore dynamic interactions between risk types using PVAR models, and examine the long-term profitability implications of ESG-related banking initiatives.

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