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EFFECT OF RISK ON FINANCIAL PERFORMANCE OF LISTED COMMERCIAL BANK IN NIGERIA

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ABSTRACT
The study investigated the effect of risk on financial performance of quoted commercial bank in Nigeria. The study sheds light on the surprising link between risk and financial performance of quoted commercial bank in Nigeria. The study covered a ten-year period from 2014 to 2023. The specific objective was to analyze the impact of non-performing loan (NPL) ratio, Loan loss ratio, Capital adequacy ratio (LCR) and custom on financial performance of listed commercial bank in Nigeria. The study employed Ex-post facto research design in which secondary data were collected from annual reports and financial statements of five purposively listed commercial banks from 2014 to 2023. Panel least square regression was adopted for the analysis using E-views 10 statistical tools. Findings made indicates that non-performing loan ratio has a significant positive impact on the financial performance (p-value = 0.0000), loan loss ratio has a significant positive impact on financial performance. (p-value = 0.0000), capital adequacy ratio has a significant negative impact on financial performance (p-value = 0.0000) and custom has insignificant negative impact on the financial performance of quoted commercial bank in Nigeria. (p-value =0.6030). The study recommended among others that banks should implement stringent policies and strategies to reduce non-performing loans. This will help lower the NPL ratio and improve financial performance as higher NPLs were found to positively impact performance, suggesting recovery efforts may be yielding results. Strict loan monitoring and borrower evaluation can help curb rising NPLs.

Key words: *Capital Adequacy Ratio, Custom And Financial Performance, Loan Loss Ratio, Non-Performing Loan Ratio*

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1. INTRODUCTION

Nigeria's banking sector serves as a crucial economic driver, mobilizing savings and facilitating investments within Africa's largest economy, valued at approximately $477 billion in 2023 (Ezike & Oke, 2023). Despite significant regulatory reforms implemented by the Central Bank of Nigeria (CBN)—including the 2004-2005 recapitalization exercise and adoption of Basel standards—commercial banks continue facing multifaceted risks affecting their financial performance (Adeoti et al., 2022). The 24 commercial banks, with 13 listed on the Nigerian Exchange Group representing 80% of sector assets (Okolie & Izedonmi, 2020),

operate in a challenging economic environment characterized by high inflation (28.92% in 2023) and currency devaluation (Oyerogba, 2021). These institutions contend with various risk dimensions: credit risk, with non-performing loan ratios fluctuating between 6-10% between 2019-2023 (Oko & Agbonifoh, 2022); market risk, heightened by macroeconomic volatility following naira devaluations (Ifeacho & Ngalawa, 2022); operational risk, which increased 186% between 2019-2023 due to digital transformation (Oyetade & Obamuyi, 2023); and compliance risk from stringent CBN regulations (Adewale & Abidemi, 2021). Financial performance indicators reveal concerning trends, with sector-wide Return on Assets declining from 2.4% in 2019 to 1.7% in 2023, and Return on Equity decreasing from 21.2% to 15.8% during the same period (Olaoye & Olarewaju, 2023). Despite these challenges, the sector has maintained liquidity ratios above the 30% regulatory minimum, demonstrating resilience (Isibor et al., 2021), while capital adequacy improved from 15.2% to 16.8% between 2019-2023 (Okoye & Orogun, 2022).

The relationship between risk and financial performance in Nigerian banks represents a complex dynamic influenced by both bank-specific factors and broader economic conditions. Empirical evidence suggests an inverse relationship between certain risk categories and profitability, with Ogbulu and Uruakpa (2021) finding that a 1% increase in credit risk corresponded to a 0.37% decrease in Return on Assets for listed Nigerian banks between 2019-2022. However, well-managed risk can enhance performance through improved operational efficiency (Egbide et al., 2022). Banks face substantial challenges in managing this risk-performance relationship, including information asymmetry, technological limitations, regulatory compliance costs, and macroeconomic instability (Umoren & Udoayang, 2020). The COVID-19 pandemic further complicated matters, with banks reporting a 42% increase in loan restructuring between 2020-2021 (Adegboye & Iweriebor, 2022). In response, banks have implemented advanced analytics for credit scoring (improving default prediction accuracy by up to 28%), increased cybersecurity investments (with major banks allocating 12-18% of IT budgets to cybersecurity in 2023), and adopted enterprise risk management frameworks (Adeleke & Olayinka, 2022). Regulatory authorities have contributed through risk-based supervision and enhanced disclosure standards (Ukoha et al., 2021), yet Nigerian banks continue navigating the delicate balance between risk and return.

The study identifies a troubling pattern of bank failures, exemplified by Heritage Bank's recent collapse, prompting the CBN to mandate commercial banks' compliance with new regulatory frameworks by March 31, 2024. Despite implemented risk management strategies, banks struggle with financial stability due to inadequate credit risk assessment, failure to

anticipate market fluctuations, and poor governance (Ojo & Ojo, 2021). While studies by Afolabi and Adeyemo (2020) and Nwankwo et al. (2022) have explored risk management dimensions, they lack actionable insights into why existing measures fail to improve financial performance, with comprehensive analysis specific to Nigeria remaining limited (Ibrahim, 2023).

1.1 Objectives

The broad objective of the study is to evaluate the effect of risk on financial performance of quoted commercial banks in Nigeria. Specifically, the study intends to:

1. analyzing the effect of non-performing loan ratio on financial performance.
2. ascertaining the effect of loan loss ratio on financial performance.
3. determining the effect of capital adequacy ratio on financial performance.
4. assessing the effect of custom ratio on financial performance.

1.2 Hypotheses

H_{o1}: Non-performing loan ratio has no significant effect on the financial performance of listed commercial banks in Nigeria.

H_{o2}: Loan loss ratio has no significant effect on financial performance of listed commercial banks in Nigeria.

H_{o3}: Capital adequacy ratio has no significant effect on financial performance of listed commercial banks in Nigeria.

H_{o4}: Custom ratio has no significant effect on financial performance of listed commercial bank in Nigeria.

2. LITERATURE REVIEW

2.1 Conceptual Review

2.1.1 Concept of Risk

Risk in Nigerian commercial banking represents the potential for variability in outcomes that may result in financial losses, regulatory penalties, or reputational damage. Ezike and Oke (2023) define banking risk as the probability of adverse events impairing an institution's ability to achieve financial objectives or maintain adequate capital. This multidimensional concept has gained prominence following economic shocks including the 2020 oil price collapse, COVID-19 pandemic, and currency pressures (Ajayi & Adegboye, 2022). The NDIC Banking Sector Report (2022) categorizes banking risks into interrelated dimensions:

credit risk, liquidity risk, market risk, operational risk, and systemic risk, with credit risk representing the most significant threat to profitability and capital adequacy.

Olalekan and Adeyinka (2022) define banking risk as "the quantifiable likelihood of loss arising from unexpected changes in financial variables affecting a bank's asset-liability structure, with direct consequences for capital adequacy and earnings stability." Kolapo et al. (2021) emphasize that Nigerian banking risk must be understood as both endogenous (internally generated through lending practices) and exogenous (externally imposed through regulatory requirements and macroeconomic conditions). The CBN Financial Stability Report (2022) conceptualizes risk not merely as a threat to minimize but as a parameter to optimize within regulatory boundaries.Empirical evidence underscores risk's significance for financial performance. Ezeoha (2021) found that a one percentage point increase in non-performing loan ratios corresponded to approximately 0.3 percentage points reduction in return on assets for Nigerian quoted banks between 2019-2021. Kolapo and Olaniyan (2023) demonstrated that banks with superior risk management capabilities outperformed peers by significant margins during economic downturns.

2.1.2 Non-performing Loan Ratio

Non-performing loan (NPL) ratio measures the proportion of a bank's loan portfolio that has defaulted or is in arrears, calculated as NPLs divided by gross loans (Kolapo & Olaniyan, 2023). This critical metric assesses a bank's loan portfolio quality and overall financial health, providing insight into the proportion of loans in default or approaching default compared to the total loan portfolio. According to Ezike and Oke (2023), NPL types include substandard loans (overdue 90-180 days), doubtful loans (overdue 180-360 days), and loss loans (overdue beyond 360 days), with the Central Bank of Nigeria further distinguishing between restructured NPLs and inherited NPLs through acquisitions. The NDIC Banking Sector Report (2022) identifies sectoral NPL ratios as critical indicators, with oil and gas, manufacturing, and consumer segments exhibiting distinct default patterns.

The NPL ratio formula is: NPL Ratio = (Non-performing Loans / Total Outstanding Loans) × 100%. Common NPL classifications include: Standard (past due but still receiving payments), Substandard (inadequately protected or vulnerable to default), Doubtful (high probability of loss but possible recovery), Loss (uncollectible loans written off), and Restructured (renegotiated due to borrower's financial difficulties). The IMF reported global average NPL ratios increased from 3.3% in 2019 to 3.7% in 2020 during the pandemic (IMF,

2021), though impacts varied regionally. The European Banking Authority noted EU banks' NPL ratios decreased from 3.0% to 2.6% in the same period due to government support measures (EBA, 2021). Managing NPL ratios has become a focus for financial institutions through improved credit risk practices, early warning systems, and effective loan recovery processes. The BIS (2022) emphasized the need for proactive NPL portfolio management, while Smith et al. (2023) highlighted artificial intelligence's potential in enhancing credit risk assessment.

2.1.3 Capital Adequacy Ratio (CAR)

Capital Adequacy Ratio (CAR) is a crucial metric assessing a bank's financial stability and ability to withstand potential losses. It represents the proportion of a bank's capital to its risk-weighted assets, indicating the institution's capacity to absorb unexpected losses while maintaining solvency (Tran et al., 2020). Regulatory bodies worldwide mandate minimum CAR requirements to ensure banking system safety.

The formula for calculating CAR is: CAR = (Total Capital) / Risk-Weighted Assets

CAR has gained importance amid economic uncertainties and financial crises. Maintaining adequate CAR helps banks protect depositors, promote public confidence, and contribute to financial system stability (Ozili, 2021). Additionally, strong CAR enhances a bank's creditworthiness and potentially lowers funding costs.The Central Bank of Nigeria requires banks to maintain a minimum regulatory CAR of 10%/15% on an ongoing basis, meaning banks must hold minimum capital relative to risk-weighted assets. Recent studies show higher CAR levels generally correspond with improved bank performance and reduced financial distress likelihood (Jiang et al., 2023), though excessively high levels may reduce profitability through opportunity costs.

2.1.4 Loan Loss Ratio

The Loan Loss Ratio, also known as Provision for Loan Losses Ratio or Credit Loss Ratio, is a critical financial metric used by banks to assess loan portfolio quality and manage credit risk. It reveals the percentage of loans expected to be uncollectible, indicating potential impacts on an institution's financial health.

The ratio is calculated as: Loan Loss Ratio = (Provision for Loan Losses / Total Loans Outstanding) × 100%

The provision for loan losses is an estimated amount set aside to cover potential loan portfolio losses, based on historical loss rates, current economic conditions, and specific portfolio characteristics. According to Deloitte (2021), banks increasingly refine their methodologies for calculating provisions using sophisticated data analytics and forward-looking economic scenarios. Regulatory changes have underscored this ratio's importance, particularly the Current Expected Credit Loss (CECL) model introduction in the US in 2020. As noted by the Federal Reserve Bank of San Francisco (2022), CECL implementation has significantly changed how banks calculate provisions, making the Loan Loss Ratio an even more critical indicator for assessing risk management practices and financial stability.

2.1.5 Custom Ratio

Custom ratio is a financial metric tailored to businesses' unique needs and industry requirements to assess specific performance areas. Unlike standardized ratios, these bespoke measures provide insights into particular operational aspects not adequately captured by traditional metrics. They allow organizations to track specific goals, benchmark against competitors, and make informed decisions based on relevant data (Kenton, 2022).Custom ratio formulas vary depending on the specific metrics analyzed and organizational objectives. They involve selecting relevant financial or operational data points combined meaningfully. For example, a retailer might create a ratio measuring online marketing effectiveness by dividing online sales revenue by digital advertising spend, while a manufacturer might assess production efficiency by dividing units produced by machine operating hours (Bragg, 2021). The COVID-19 pandemic highlighted custom ratios' importance, with PwC (2021) finding 76% of CFOs considering implementing new metrics to reflect the changing business landscape. These ratios measure factors like remote work productivity and digital transformation progress, such as comparing revenue from digital versus traditional channels (McKinsey & Company, 2020). While valuable for tailored analysis, custom ratios should complement rather than replace standard financial metrics, with Deloitte (2023) recommending well-defined, consistently calculated measures aligned with strategic objectives.

2.1.6 Financial Performance

Financial performance is a fundamental measure of a company's overall financial health, reflecting its ability to generate revenue, manage expenses, and create value for shareholders. It encompasses various financial metrics and ratios providing insights into profitability, liquidity, solvency, and efficiency (Kaur & Soni, 2020). In today's dynamic business

environment, understanding and optimizing financial performance has become essential for maintaining competitiveness and ensuring long-term sustainability.

Recent research has highlighted financial performance's multifaceted nature. Dutta et al. (2021) argued that traditional accounting-based measures like ROA and ROE may not fully capture a company's financial prowess in the digital age, proposing integration of market-based indicators like Tobin's Q and EVA to better reflect investor confidence and value creation potential. Zhang et al. (2022) revealed a positive correlation between ESG performance and financial outcomes through meta-analysis of 68 studies from 2015-2021. Arner et al. (2020) discussed how AI and machine learning enable real-time financial data analysis for swift decision-making. Following the COVID-19 pandemic, Didier et al. (2023) emphasized resilience as a key aspect of financial performance, examining how firms with strong cash reserves and flexible cost structures demonstrated superior financial resilience during the crisis.

2.1.7 Return on Assets

Return on Assets (ROA) is a fundamental financial ratio measuring a company's profitability relative to its total assets. This metric indicates how effectively a firm utilizes assets to generate earnings, particularly valuable in assessing capital-intensive industries where substantial fixed asset investments are common (Chen & Gong, 2021). By quantifying return generated per dollar of assets, ROA enables stakeholders to evaluate management's efficiency in deploying capital resources.

The formula for ROA is: ROA = Net Income / Total Assets

A higher ROA indicates better asset management and profitability. According to Smith (2021), effective asset utilization is crucial for enhancing overall financial health and investor confidence.Some analysts prefer using average total assets to account for year-round fluctuations (Wang et al., 2020). Higgins and Omer (2022) advocated using EBIT instead of Net Income to focus on operational efficiency, excluding financial leverage and tax strategy effects.

Li and Zhang (2021) found traditional ROA calculations may undervalue firms with substantial intangible assets. Ozili (2023) studied ROA trends during COVID-19, showing e-commerce and healthcare improvements while travel declined, highlighting ROA's role as an

adaptability indicator. This metric remains vital for stakeholders assessing operational efficiency (Johnson, 2023).

2.1.8 Effect of Risk and Financial Performance

Risk has emerged as a critical determinant of financial performance in today's volatile business environment. Through identifying, assessing, and mitigating potential threats, companies can safeguard earnings and enhance shareholder value. Eckles et al. (2021) examined U.S. firms across various industries and found those with robust enterprise risk management (ERM) frameworks exhibited higher return on equity and lower earnings volatility, suggesting comprehensive risk oversight contributes to sustained profitability. In the banking sector, credit risk management plays a pivotal role. Alshatti and Thirlwall (2022) analyzed Jordanian banks, revealing that effective credit scoring models and diversified loan portfolios significantly improved net interest margins and reduced non-performing loans, underscoring how sophisticated risk tools directly boost financial performance in lending institutions.

Shen et al. (2023) studied Chinese commercial banks and discovered those employing scenario analysis and maintaining flexible supplier networks experienced smaller revenue declines and faster recoveries during COVID-19 disruptions. Additionally, Jalali et al. (2020) found firms investing in cybersecurity measures had fewer data breaches, preserving customer trust, avoiding regulatory fines, and maintaining higher market valuations compared to peers with weaker digital risk management.

2.2 Theoretical Framework

2.2.1 Modern Portfolio Theory

Modern Portfolio Theory (MPT), developed by Harry Markowitz in 1952, fundamentally transformed financial risk management and asset allocation approaches. Markowitz's work, which earned him the 1990 Nobel Prize in Economics, established a quantitative methodology for optimizing portfolios based on expected returns and risk (Markowitz, 1952). MPT introduces several key concepts: the efficient frontier, where portfolios maximize returns for given risk levels; diversification as a quantifiable risk-reduction strategy; and the distinction between systematic and unsystematic risk (Elton & Gruber, 1997). The Capital Asset Pricing Model (CAPM), developed by Sharpe (1964) and Lintner (1965), extended MPT by quantifying risk-return relationships through beta coefficients.

For Nigerian commercial banks, MPT provides a framework for balancing profit maximization with risk management in a volatile economic environment (Kolapo et al., 2021). The theory suggests banks should evaluate risks collectively rather than in isolation, potentially improving portfolio efficiency (Osuji & Agbada, 2020). When applied to banking, MPT extends beyond securities to loan portfolio management and balance sheet optimization (Machiraju, 2008). Nigerian banks can use MPT principles to evaluate sector concentrations and optimize capital adequacy ratios (Olalekan & Adeyinka, 2022). Research by Kolapo et al. (2021) shows that banks implementing sector-based diversification experienced lower NPL volatility and better risk-adjusted performance.

MPT's banking application rests on several assumptions: rational, risk-averse decision-making; normally distributed returns; market efficiency; single-period investment horizons; and stable correlations between assets. These assumptions may not fully reflect Nigeria's complex banking environment, which features relationship banking practices and significant information asymmetries (Ajayi & Adegboye, 2022). For Nigerian Qualified Deposit Money Banks (QDMBs), MPT provides insights into managing non-performing loans through diversification. Ezeoha (2021) found that diversified banks maintained NPL ratios 3.2 percentage points lower than competitors with concentrated exposures. Similarly, MPT-based provisioning models helped banks maintain more stable loan loss ratios during economic volatility (Kolapo & Olaniyan, 2023).

The Nigeria Deposit Insurance Corporation (2022) reported system-wide NPL ratio improvements, particularly in institutions implementing portfolio diversification techniques. Additionally, banks employing MPT optimization techniques maintained capital adequacy ratios approximately 2.3 percentage points higher than regulatory minimums while achieving comparable profitability (Olalekan & Adeyinka, 2022).

3. MATERIAL AND METHODS

The study employed *ex-post facto* research design. The population of the study focused on five listed commercial banks on the Nigeria Exchange Group. The researcher sampled the five listed commercials bank on the Nigeria Exchange Group. Secondary data were used and obtained from annual reports of listed commercial banks in Nigeria for a period between 2014 to 2023. Data generated for the study were collated and analyzed using Panel Least Square Regression Model and operated with E-Views 10. OLS diagnostics tests were used in the multilinearity test.

The model shows the functional and conceptual effect of the dependent variable and the independent variables. The dependent variable is financial performance (Returns on Asset) while the independent variable is Risk (non-performing loan ratio, Capital Adequacy ratio, Loan Loss Ratio and Custom Ratio). The study expects that risk of commercial banks will be reveals and how to manage the risk to aid financial performance; The study adapts the model by Ibianga and Enyi (2024) is used in determining the effect of risk on financial performance of commercial banks in Nigeria. This is shown below as thus: $Y = f(X) + \mu$

The above model could be re-constructed as thus as estimated by Ibianga and Enyi (2024);

$O_I = \beta_0 + \beta_1 LLP + \beta_2 CAR + \beta_3 NPL + \beta_4 LDR + \varepsilon$……..….Eqn 1.

The above model was adapted and modified as thus;

ROA = f(NPL, CR, LLR, CAR) ……..….Eqn 2.

Hence, further modification of model is stated below;

$ROA_{it} = \beta_0 + \beta_1 NPL_{it} + \beta_2 CR_{it} + \beta_3 LLR_{it} + \beta_4 CAR_{it} + \varepsilon_{it}$……..….Eqn 3.

Where:

ROA_{it} = Return on Assets

NPL_{it} = Non-performing Loan Ratio .

CR_{it} = Custom Ratio

LLR_{it} = Loan Loss Ratio.

CAR_{it} = Capital Adequacy Ratio.

$\beta 0$ = Constant term (intercept).

$\beta_1 - \beta_4$ = Coefficients of the independent variables.

ε_{it} = Error term.

Decision Rule

The decision was based on 5% (0.05) level of significance. The null hypothesis (Ho) will be accepted, if the Prob (F-statistic) value is greater (>) than the stated 5% level of significance, otherwise reject.

3.3 A Priori Expectation

The theoretical (a priori) expectations regarding the signs of the coefficients are as follows: $\beta o > 0$, $\beta 1 > 0$. It is anticipated that the coefficients associated with Disruptive Technologies will have a positive sign. This expectation is based on the belief that an increase in the level

of corporate profitability will correspondingly enhance the effects of listed deposit money bank on the Nigeria Exchange Group.

4. RESULT AND DISCUSSIONS

4.1 Descriptive Analysis

Table 1 Descriptive Statistics

	NPL	LLR	CAR	CR	ROA
Mean	0.045500	0.173260	0.164090	0.178280	0.009910
Median	0.033750	0.160800	0.168200	0.174650	0.001700
Maximum	0.109900	0.383700	0.190100	0.383700	0.083100
Minimum	0.011900	0.064700	0.106500	0.035900	0.000500
Std. Dev.	0.029032	0.078683	0.021868	0.093849	0.024665
Skewness	0.960875	1.675722	-1.650949	0.577772	2.658560
Kurtosis	2.963789	5.718130	5.265771	3.209060	8.085448
Jarque-Bera	7.696735	38.79252	33.40886	2.872890	112.7782
Probability	0.021314	0.000000	0.000000	0.237772	0.000000
Sum	2.275000	8.663000	8.204500	8.914000	0.495500
Sum Sq. Dev.	0.041299	0.303359	0.023431	0.431578	0.029809
Observations	50	50	50	50	50

Table 1 provides essential insights into the financial performance of quoted commercial banks in Nigeria, particularly through the lens of non-performing loan (NPL) ratio, loan loss ratio (LLR), and capital adequacy ratio (CAR). The NPL ratio, with a mean of 0.0455 and a maximum of 0.1099, indicates a moderate level of non-performing loans, which is confirmed by the hypothesis test showing a significant positive impact on financial performance (p-value = 0.0000). This suggests that as NPLs increase, banks face challenges in profitability. Similarly, the LLR, averaging 0.1733, also demonstrates a significant positive relationship with financial performance (p-value = 0.0000), indicating that higher loan losses necessitate greater reserves, adversely affecting overall bank performance.

On the other hand, the CAR, with a mean of 0.1641, highlights that while banks maintain adequate capital buffers, the hypothesis test reveals a significant negative effect on financial performance (p-value = 0.0000). This suggests that higher capital ratios, though indicative of stability, may restrict growth opportunities and thus profitability. In contrast, the custom variable does not show a significant impact on financial performance (p-value = 0.6030),

implying that it does not play a crucial role in this context. Overall, the decision rule at a 5% significance level leads to the rejection of the null hypotheses for NPL, LLR, and CAR, emphasizing their critical roles in influencing the financial viability of Nigerian commercial banks.

Table 2 Multi-Collinearity Test
Variance Inflation Factors
Date: 10/08/24 Time: 09:38
Sample: 2014 2023
Included observations: 50

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.000500	419.1181	NA
NPL	0.001573	3.814472	1.087857
LLR	0.000906	27.37928	4.603289
CAR	0.012577	288.5620	4.936399
CR	0.000153	5.193681	1.109222

Table 2 presents the results of the Multi-Collinearity Test, which evaluates the extent of correlation between independent variables in the regression model. The Variance Inflation Factor (VIF) is a crucial metric for identifying multicollinearity; values exceeding 10 are often considered indicative of significant multicollinearity issues. In this table, the VIF for the Non-Performing Loan (NPL) ratio is 3.81, the Loan Loss Ratio (LLR) is 27.38, and the Capital Adequacy Ratio (CAR) is 288.56, suggesting that LLR and CAR exhibit substantial multicollinearity. The centered VIF for these variables indicates a potential for inflated standard errors, which can undermine the reliability of coefficient estimates.

The uncentered VIF values further highlight the severity of multicollinearity, particularly for CAR, which could lead to misleading interpretations of its impact on the financial performance of quoted commercial banks in Nigeria. Additionally, the centered VIF values of 1.11 for the Current Ratio (CR) and 1.09 for NPL suggest that these variables are less correlated with others, indicating that they may be more reliable predictors.

4.2 Test of Hypotheses

The Panel Least Squares was used to address heteroskedasticity in the error terms of the regression model, while estimating the regression coefficients for hypotheses testing (Egbunike, Ogbodo & Ojimadu, 2019). The use of the panel data model was because of the unobserved, time-invariant characteristics of the individual firms that are correlated with the explanatory variables, which need to be accounted for to obtain unbiased estimates of the effect of risk on financial performamce.

Table 3 Panel Model Regression

Dependent Variable: ROA

Method: Panel Least Squares

Date: 10/08/24 Time: 09:26

Sample: 2014 2023

Periods included: 10

Cross-sections included: 5

Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.073460	0.022370	3.283813	0.0020
NPL	0.214602	0.039656	5.411611	0.0000
LLR	0.147331	0.030099	4.894932	0.0000
CAR	-0.595310	0.112149	-5.308189	0.0000
CR	-0.006489	0.012387	-0.523820	0.6030

R-squared	0.909874	Mean dependent var	0.009910
Adjusted R-squared	0.901863	S.D. dependent var	0.024665
S.E. of regression	0.007727	Akaike info criterion	-6.793643
Sum squared resid	0.002687	Schwarz criterion	-6.602440
Log likelihood	174.8411	Hannan-Quinn criter.	-6.720832
F-statistic	113.5752	Durbin-Watson stat	2.366280
Prob(F-statistic)	0.000000		

Table 3 presents the results of a Panel Least Squares regression analysis, focusing on the effect of risk on financial performance of quoted commercial banks in Nigeria, as measured by

Return on Assets (ROA). The model demonstrates a high R-squared value of 0.9099, indicating that approximately 91% of the variation in ROA can be explained by the independent variables included in the model. The adjusted R-squared value of 0.9019 further confirms the model's effectiveness, suggesting that the model fits the data well. Notably, the F-statistic of 113.5752, with a corresponding p-value of 0.0000, indicates that the overall model is statistically significant.

Examining the coefficients, the non-performing loan (NPL) ratio and loan loss ratio (LLR) have positive and significant impacts on ROA, with p-values of 0.0000. Conversely, the capital adequacy ratio (CAR) exhibits a significant negative impact on ROA, indicating that higher capital adequacy might correlate with lower financial performance. The custom ratio (CR) shows a p-value of 0.6030, suggesting it does not significantly affect bank performance. These findings highlight the critical importance of managing non-performing loans and loan losses for enhancing financial performance in the banking sector.

4.2 Test of Hypotheses

4.2.1 Hypothesis I

Analysis of non-performing loan ratio's effect on Nigerian quoted commercial banks revealed a coefficient of 0.214602 and p-value of 0.0000. This statistically significant positive relationship indicates a 1% NPL increase corresponds to 0.214602% ROA increase. We reject the null hypothesis, concluding NPL ratio significantly affects financial performance, suggesting effective recovery strategies when NPLs rise.

4.2.2 Hypothesis II

Loan loss ratio showed a positive effect on Nigerian quoted commercial banks' performance with coefficient 0.147331 and p-value 0.0000. This indicates a 1% increase in loan loss ratio increases ROA by 0.147331%. We reject the null hypothesis, accepting that loan loss ratio significantly affects financial performance, highlighting the importance of strategic loan portfolio management.

4.2.3 Hypothesis III

Capital adequacy ratio demonstrated a significant negative effect on Nigerian quoted commercial banks' performance with coefficient -0.595310 and p-value 0.0000. Each 1% CAR increase decreases ROA by 0.595310%. We reject the null hypothesis, concluding that

excessive capital reserves may reduce operational efficiency and profitability, emphasizing the need for balanced capital management.

4.2.4 Hypothesis IV

Custom ratio showed minimal effect on Nigerian quoted commercial banks' performance with coefficient -0.006489 and p-value 0.6030. This statistically insignificant relationship indicates custom ratio changes barely affect ROA. We fail to reject the null hypothesis, concluding custom ratio does not significantly affect financial performance, suggesting other factors have greater influence.

These findings align with previous research by Kolapo et al. (2021) and Olalekan & Adeyinka (2022), which emphasized the importance of balanced risk management approaches.

5. CONCLUSION AND RECOMMENDATIONS

This study investigated the relationship between risk management practices and financial performance of quoted commercial banks in Nigeria. The analysis revealed that non-performing loan ratio and loan loss ratio positively impact return on assets, suggesting that effective management of credit risk can enhance profitability. Conversely, capital adequacy ratio showed a significant negative impact, indicating that excessive capital reserves may constrain operational efficiency and profit generation.

The findings underscore the importance of balanced risk management strategies that optimize the trade-offs between regulatory compliance and financial performance. Nigerian commercial banks should implement sophisticated portfolio diversification techniques aligned with Modern Portfolio Theory principles to mitigate concentration risks while maintaining profitability. Furthermore, the insignificant relationship between custom ratio and financial performance highlights that strategic focus should be directed toward established risk metrics with proven impact. Overall, the study contributes to the understanding of how risk management practices influence bank performance in Nigeria's evolving financial landscape.

Based on the research findings,

1. Nigerian commercial banks should implement a balanced approach to risk management that optimizes profitability while ensuring compliance with regulatory

requirements. Banks should develop sophisticated recovery strategies for non-performing loans to transform potential losses into performance drivers.

2. Loan loss provisioning should be forward-looking, incorporating correlation effects between different loan categories as suggested by Modern Portfolio Theory.

3. Regulatory authorities should reconsider capital adequacy requirements to prevent over-capitalization that might hamper operational efficiency.

4. banks should invest in advanced risk analytics capabilities to better identify, measure, and manage the specific risk factors that most significantly impact financial performance in Nigeria's unique economic context.

REFERENCES

Adegboye, K. A., & Iweriebor, S. (2022). COVID-19 and loan restructuring in Nigerian banks. *Journal of Banking Studies*, 14(3), 211-228.

Adeoti, J. A., Oke, M. O., & Abidemi, C. (2022). Banking sector reforms and risk management in Nigeria: An evaluation. *Nigerian Journal of Financial Research*, 35(2), 78-94.

Adeleke, B. S., & Olayinka, T. R. (2022). Enterprise risk management frameworks in Nigerian financial institutions. *Risk Management Journal*, 17(4), 305-319.

Adewale, E. T., & Abidemi, F. G. (2021). Compliance risk and regulatory challenges in Nigerian banking sector. *Journal of Banking and Finance*, 45(3), 112-127.

Afolabi, T. S., & Adeyemo, K. A. (2020). Risk management practices and financial stability in Nigerian commercial banks. *Journal of Economics and Finance*, 12(3), 234-248.

Ajayi, L. B., & Adegboye, K. A. (2022). Banking risk dimensions in post-pandemic Nigeria. *Journal of Financial Risk Management*, 16(2), 87-103.

Alshatti, A. S., & Thirlwall, A. P. (2022). Impact of credit risk management on financial performance: Evidence from Jordanian banks. *International Journal of Banking and Finance*, 19(2), 145-163.

Arner, D. W., Zetzsche, D. A., Buckley, R. P., & Barberis, J. N. (2020). The future of financial data analytics: Real-time financial performance tracking. *Journal of Finance and Technology*, 5(1), 78-92.

Bank for International Settlements. (2022). *Principles for the effective management and supervision of NPL portfolios*. BIS.

Bragg, S. M. (2021). *Business ratios and formulas: A comprehensive guide* (4th ed.). Wiley.

Chen, R., & Gong, L. (2021). Return on assets as a measure of corporate performance: A meta-analysis. *Journal of Financial Analysis*, 24(3), 285-301.

Deloitte. (2021). *Banking loan loss provisions: Analytics and methodologies*. Deloitte Global Reports.

Deloitte. (2023). *Custom financial metrics: Best practices for implementation*. Deloitte Financial Advisory Services.

Didier, T., Huneeus, F., Larrain, M., & Schmukler, S. L. (2023). Financial resilience during the COVID-19 pandemic. *Journal of Finance*, 78(1), 45-67.

Dutta, S., Kumar, V., & Shukla, A. (2021). Financial performance measurement in the digital era: Beyond accounting metrics. *International Journal of Finance and Economics*, 26(3), 4259-4275.

Eckles, D. L., Hoyt, R. E., & Miller, S. M. (2021). The impact of enterprise risk management on firm performance: Evidence from U.S. firms. *Journal of Risk and Insurance*, 88(2), 322-340.

Egbide, B. C., Olaoye, F. O., & Uwuigbe, U. (2022). Risk management efficiency and financial performance in Nigerian banks. *Risk Management Journal*, 25(3), 156-172.

Elton, E. J., & Gruber, M. J. (1997). Modern portfolio theory, 1950 to date. *Journal of Banking & Finance*, 21(11-12), 1743-1759.

European Banking Authority. (2021). *Risk dashboard Q4 2020*. EBA.

Ezeoha, A. E. (2021). Non-performing loans and financial performance in Nigerian banking: A sectoral analysis. *African Journal of Accounting and Finance*, 13(2), 45-61.

Ezike, J. E., & Oke, M. O. (2023). Banking risk conceptualization in Nigeria's evolving financial landscape. *Risk Management and Financial Institutions Journal*, 14(2), 78-92.

Federal Reserve Bank of San Francisco. (2022). *The impact of CECL implementation on bank loan loss provisions*. FRBSF Economic Letter.

Higgins, D., & Omer, T. C. (2022). Alternative ROA calculations for operational efficiency analysis. *Journal of Financial Statement Analysis*, 17(4), 412-430.

Ibrahim, S. (2023). Risk management practices in Nigerian banks: A critical review. *Journal of Risk Research*, 15(3), 208-221.

Ibianga, E., & Enyi, P. (2024). Risk and financial performance nexus in commercial banks. *Journal of Accounting Theory and Practice*, 14(2), 156-167.

Ifeacho, C., & Ngalawa, H. (2022). Market risk and exchange rate volatility in Nigeria's banking sector. *Journal of Financial Markets*, 17(3), 178-193.

International Monetary Fund. (2021). *Global financial stability report: Bridge to recovery*. IMF.

Isibor, A. A., Omankhanlen, A. E., Okoye, L. U., & Achugamonu, B. U. (2021). Liquidity management and banking sector resilience in Nigeria. *Journal of Banking and Financial Economics*, 15(2), 123-139.

Jalali, M. S., Kaiser, J. P., Siegel, M., & Madnick, S. (2020). The Internet of Things and cybersecurity: A firm-level analysis of financial impact. *MIS Quarterly*, 44(1), 361-387.

Jiang, Y., Liu, Y., & Wang, H. (2023). Capital adequacy, bank efficiency, and financial stability: International evidence. *Journal of Banking & Finance*, 137, 106-118.

Johnson, K. (2023). The evolving role of ROA in financial analysis. *Financial Analysts Journal*, 79(2), 45-57.

Kaur, N., & Soni, T. (2020). Determining factors of financial performance: A comprehensive review. *Journal of Finance and Accounting*, 8(3), 145-160.

Kenton, W. (2022). *Custom financial ratios and their applications in business analysis* (2nd ed.). Financial Press.

Kolapo, T. F., & Olaniyan, T. O. (2023). Banking risk management capabilities and financial performance in Nigeria. *Risk Management Journal*, 17(3), 189-204.

Kolapo, T. F., Ayeni, R. K., & Oke, M. O. (2021). Risk management and financial performance of listed commercial banks in Nigeria. *Nigerian Journal of Banking and Finance*, 15(3), 67-82.

Li, K., & Zhang, X. (2021). Intangible assets and ROA: Reconsidering traditional performance metrics. *Journal of Financial Economics*, 141(3), 1134-1153.

Lintner, J. (1965). The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. *The Review of Economics and Statistics*, 47(1), 13-37.

Machiraju, H. R. (2008). *Modern commercial banking* (2nd ed.). New Age International.

Markowitz, H. (1952). Portfolio selection. *The Journal of Finance*, 7(1), 77-91.

McKinsey & Company. (2020). *The future of financial metrics: Measuring what matters in a digital age*. McKinsey Insights.

Nigeria Deposit Insurance Corporation. (2022). *Banking sector report: Risk management practices and financial stability*. NDIC Publications.

Nwankwo, O. F., Ogbonna, K. S., & Akamike, F. C. (2022). Risk management strategies and financial health: Evidence from Nigerian banks. *Journal of Financial Economics and Banking*, 14(2), 156-171.

Ogbulu, O. M., & Uruakpa, P. C. (2021). Credit risk and profitability of listed Nigerian banks. *Journal of Economics and Financial Studies*, 13(2), 78-94.

Ojo, O. M., & Ojo, K. O. (2021). Financial stability and risk management failures in Nigerian banks. *Journal of Banking and Finance Research*, 16(3), 189-204.

Oko, S. U., & Agbonifoh, B. A. (2022). Credit risk dynamics in Nigerian commercial banks: An empirical investigation. *Journal of Credit Risk*, 14(2), 123-137.

Okolie, A. O., & Izedonmi, F. I. (2020). Market structure and performance of listed commercial banks in Nigeria. *International Journal of Business and Finance Research*, 14(3), 67-82.

Okoye, L. U., & Orogun, F. I. (2022). Capital adequacy trends in Nigerian banking sector: An empirical analysis. *Journal of Financial Regulation and Compliance*, 18(3), 234-249.

Olalekan, A., & Adeyinka, S. (2022). Banking risk conceptualization and performance metrics in Nigeria. *Journal of Financial Risk Management*, 15(2), 145-159.

Olaoye, F. O., & Olarewaju, O. M. (2023). Financial performance trends in Nigerian banking sector: An empirical analysis. *Journal of Accounting Research*, 15(2), 167-182.

Osuji, C. C., & Agbada, A. O. (2020). Modern portfolio theory and bank performance in Nigeria. *International Journal of Economics and Financial Issues*, 10(3), 182-191.

Oyerogba, E. O. (2021). Economic volatility and banking performance in Nigeria: A dynamic panel approach. *Journal of Financial Economics*, 16(2), 123-138.

Oyetade, L., & Obamuyi, T. M. (2023). Operational risk in digital banking: Nigerian experience. *Journal of Operational Risk*, 14(3), 156-171.

Ozili, P. K. (2021). Banking sector performance during the COVID-19 pandemic. *Journal of Banking Regulation*, 22(2), 180-189.

Ozili, P. K. (2023). Return on assets as performance indicator during economic disruptions. *Journal of Applied Financial Research*, 15(2), 78-93.

PwC. (2021). *CFO pulse survey: Measuring business performance in a changed world*. PwC Global.

Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *The Journal of Finance*, 19(3), 425-442.

Shen, H., Fu, M., Pan, H., Yu, Z., & Chen, Y. (2023). The impact of supply chain risk management on financial performance during the COVID-19 pandemic. *International Journal of Production Economics*, 249, 108-119.

Smith, J. (2021). Asset utilization and corporate financial health. *Corporate Finance Review*, 25(4), 55-67.

Smith, R., Johnson, P., & Williams, T. (2023). Artificial intelligence in credit risk assessment: A review. *Journal of Financial Technology*, 5(3), 278-291.

Tran, D. V., Hassan, M. K., & Akter, R. (2020). Ownership structure and bank risk-taking: Empirical evidence from Asian banks. *Journal of Banking & Finance*, 122, Article 105859.

Ukoha, C., Elom-Obed, F. O., & Awa, F. N. (2021). Risk-based supervision and financial stability in Nigeria. *Journal of Banking Regulation*, 14(3), 234-249.

Umoren, A. O., & Udoayang, J. O. (2020). Risk management challenges in Nigerian banking sector. *International Journal of Financial Studies*, 8(3), 117-132.

Wang, L., Dai, Y., & Zhang, H. (2020). Average total assets in ROA calculation: Empirical evidence from global firms. *Advances in Accounting*, 49, Article 100478.

Zhang, L., Shan, Y. G., & Chang, M. (2022). ESG performance and financial outcomes: Meta-analytical insights. *Journal of Business Ethics*, 176(1), 115-138.