Research Article

Financial Risk And Performance Of Quoted Deposit Money Banks In Nigeria: A Comparative Analysis Of Credit And Market Risks

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ARTICLE INFO	ABSTRACT
	The performance of Nigerian banks is critical to the nation's economic development, but effectively managing financial risk remains a fundamental challenge. This study investigates the relationship between financial risks—specifically credit and market risks—and the performance of quoted deposit money banks in Nigeria between 2014 and 2023. The objectives include examining the effects of market and credit risks on the financial performance of these banks, measured by return on assets (ROA) and return on equity (ROE). Quantitative secondary data were obtained from the quoted deposit money bank's statements of financial position. The study employed descriptive statistics and panel regression analysis to explore the relationships between the dependent variables (ROA and ROE) and independent variables (credit risk and market risk). The results revealed that market risk (MARSK) and credit risk (CRESK) account for approximately 65% and 63% of the variations in ROA and ROE, respectively. The regression models suggest ROA = -0.0367631(CRESK) - 0.002511(MARSK) and ROE = -2.376544(CRESK) + 2.176926(MARSK). The study recommends that banks enhance their risk management practices by adopting financial derivatives and asset securitisation strategies to mitigate market and credit risks. Additionally, banks should improve credit screening processes and reduce bad debts to optimize their financial performance.". **Keywords:** Financial Risk, Market Risk, Credit Risk, Bank Size, Financial Performance, Quoted Deposit Money Banks, Return on Assets (ROA), Return on Equity (ROE), Earnings Per Share (EPS), Nigeria

INTRODUCTION

In the realm of financial services, banks encounter a variety of financial risks, including market and credit risk. Nigerian deposit money banks face numerous challenges, particularly in the area of risk management. If effectively addressed, these challenges could transform into significant opportunities; however, failure to do so may jeopardize the bank's corporate viability (Salihu et al., 2023). The competitive landscape has prompted financial institutions to adopt a survival mindset, leading them to mitigate risks that could threaten their existence. Such risks can adversely impact bank performance, as they represent the probability that actual returns from investments or loans may deviate from expected outcomes (Saghir & Tabasam, 2020). Attaining the business objectives of a bank inherently involves various risks that can endanger both performance and longevity (Muhammad & Khan, 2018). This is because intermediary functions are inherently risky; thus, effective risk management is crucial for enhancing shareholder returns, which ultimately influences the bank's performance and stability. The critical issue that has garnered the attention of numerous scholars and researchers is the relationship between risk management and performance, given the far-reaching consequences that inadequate risk management can impose on a wide array of stakeholders, including depositors, managers, and shareholders. Consequently, proficient risk management has become an indispensable competency for contemporary financial institutions, as those who excel in this area are anticipated to achieve superior performance (Olufemi & Sunmisola, 2022). Risk management, as outlined by Susilawati et al. (2022), is a comprehensive process that involves the identification of potential threats or

disruptive factors. It requires a thorough evaluation of various alternatives to determine whether to eliminate or mitigate these identified threats. This approach enables organizations to gain a deeper understanding of the diverse range of risks contemporary businesses encounter, extending beyond just market and credit risks.

Market risks can result in rapid and substantial losses during periods of market volatility and, in extreme cases, may lead to the total collapse of institutions. Market risk pertains to the potential adverse effects on an institution due to fluctuations in market prices, particularly those related to interest rates, foreign exchange rates, and the prices of equities and commodities. Additionally, market risk can arise when banks accept financial instruments subject to price volatility as loan collateral (Rafique et al., 2020). As the banking sector increasingly adopts innovative practices, the range and severity of risks faced by these institutions also escalate correspondingly. Effective risk management is essential to safeguard the banking sector's stability amidst its growth. A survey conducted in 1995 among major financial institutions in the United States indicated that at least 90% were employing some form of financial engineering to mitigate market risks, including those associated with interest rates, foreign exchange, and commodity prices (Olufemi & Sunmisola, 2022). Furthermore, banks, insurance companies, and savings and loan institutions actively participate in derivatives markets. While there is significant overlap in the fundamental reasons for utilising derivatives and financial engineering techniques, the specific risks managers encounter can differ across various industries. Market risks, encompassing exchange rate, inflation, and interest rate risks, directly impact banks' financial performance. Typically, these market risks are beyond the control of banks, as they are influenced by broader economic factors (Susilawati et al., 2022). Degree of financial leverage, foreign exchange rate exposure and interest rate risk were used as market risk indicators. Degree of financial leverage (DFL) is best used to help a company determine financial leverage risk. It is practically a measure of the degree of financial risk; thus, the higher the ratio is, the riskier the business is considered to be as it relies too much on debts, and any changes within the economic environment or in interest rates may have an extremely negative impact on how the business evolves. Also, Credit risk is primarily brought on by factors such as a lack of non-executive directors on the board, lax credit assessment practices, poor lending practices, a lack of capital and liquidity, directed lending; extensive bank licensing, subpar loan underwriting, reckless lending; and subpar credit assessment (Yimka et al., 2015).

A limited range of studies is available on risk categories for Nigerian banks. Studies conducted in the context of developed countries provide results on market, credit, liquidity and operational risks faced by banks, while studies in developing countries mainly provide results only on credit, liquidity and operational risks (Chukwunulu et al., 2019; Isiaka et al., 2018); However, studies explicitly conducted for Nigeria mainly provide results only on credit and operational risks, while studies on market and credit risks are rare (Ogunsola & Ogheneoparobo, 2022; Wahyudi et al., 2019). Therefore, there is a need for a comprehensive study on Nigerian DMBs, including market and operational risk categories. To determine whether these treatments of these risk factors are beneficial to Nigerian DMBs, it is necessary to examine the impact of these risk factors comprehensively. Hence, this study is designed to cover these observed gaps in the literature on the effects of risk on the performance of DMBs in Nigeria. The objectives of this study include the following;
i. Examine the effect of market risk on the financial performance of quoted deposit money banks in Nigeria.
ii. Evaluate the effect of credit risk on the financial performance of quoted deposit money banks in Nigeria.

LITERATURE REVIEW

Concept of Financial Risk

Financial hazards have many different root causes, one of which is loan repayment defaults, which result in nonperforming loans (NPL) for banks. These risks are some of the most significant and challenging ones that banks encounter when carrying out their legally mandated operating responsibilities (Kwashie et al., 2022). Financial risks include, but are not limited to, those related to credit, liquidity, markets, and insolvency. In a financial transaction, interest rate risk, currency risk, and business risk are additional potential financial problems (Nguyen et al., 2022). Deposit Money Banks (DMBs) must implement policies to manage the multiple risks that financial organisations like these confront. Banks must consider all the aforementioned financial risks, but credit and liquidity risks seem the most important to their regular business operations. This is so that the bank's capacity to maintain its financial stability will not be significantly impacted by the bulk of other risks, which can be shifted to consumers. The links between credit and liquidity issues greatly influence a bank's bottom line. When a business decides to invest, it exposes itself to a range of financial risks, both commercially and financially. Depending on the kind of financial instrument, these risks are available in various sizes (Bunyaminu et al., 2021). Possible financial hazards include market volatility, bankruptcy, rising inflation, and recession. The interaction between human factors and specific risk factors, according to John (2020), emphasises the need for close attention to both human factors and the main drivers for risk management: a change driver that derives primarily from the need to comprehend how people behave in dynamic environments and the presence of risks.

Market Risk

Commercial banks are generally faced with various risks in their day-to-day business, which they cannot avoid but must learn to live with. The only way for banks to live with these risks is by making sure their effects are minimised through managing the risks. These risks include market risk, operating risk, liquidity risk, credit risk, and risks associated with finance. Most commercial banks are exposed to variations in the market worth of their savings because they frequently seize asset securities on their balance sheet, which exposes them a lot. A sudden market decline in the securities of most commercial banks could force most of the banks to raise capital as most of those financial institutions, for instance, commercial banks seize significant percentages of assets in debt investments extensively considered as "safe" (as well as U.S government bonds) hence peel backside on lending, to say nothing of the failure in shareholder's equity from the investment losses. Exchange rate, inflation, and interest rate risks are forms of market risk that impact the performance of banks across the entire industry. It is determined by different factors that affect the whole economy, making it outside most commercial banks' control. Degree of financial leverage, foreign exchange rate exposure and interest rate risk are used as market risk indicators. Degree of financial leverage (DFL) is best used to help a company determine financial leverage risk. Most changes which might happen within the economic environment or among the interest rate will have an extremely negative impact on how the business will evolve; hence, the higher the ratio is, the riskier the firm is considered to be as it relies too much on debts. This is a measure of the degree of financial leverage. Money-related gains and losses may have distinctive effects on reported income that are crucial to the market belief among particular organisations. The sensitivity of cash flows to changes in the foreign exchange rate is an organisation's foreign exchange rate disclosure. Most of the studies examined disclosure as a result of how an entity's market worth and the current value of its projected cash flows will respond to variations in exchange rates because cash flows are very complex to evaluate. Foreign exchange exposure is the extent to which an organisation is affected by exchange rate changes. The magnitude of the gain or loss that results from a fastidious exchange rate is the transaction exposure, which is the foreign exchange loss or gain on a transaction that has already been entered into and denominated in a foreign currency.

Determinants of Financial Performance

A commercial bank's performance across the whole industry or the economy is influenced by various factors that significantly impact its financial performance. These factors can be external or internal. Many studies have been carried out; hence, every study brings out various variables which affect banks' performance, and they include;

Capital Adequacy

It refers to a situation where resource-mobilising institutions, such as commercial banks, hold the amount of wealth mandated by the central bank. In other words, it can be defined as a measure of the bank's capital. The ratio CAR can also be articulated differently as the percentage of a bank's risk-weighted by credit exposures. Another paramount importance of capital adequacy is that it promotes constancy and effectiveness of financial systems worldwide and takes heed of depositors; hence, it is calculated for different fastidious reasons. Kosmidous 2009 in his research defines the ratio as any quantity of impartiality to take up any shock the financial institution, such as a commercial bank, may experience. The ratio is used for two purposes: to absorb losses with no bank being obligated to cease operation and to absorb losses in the occasion of a winding up by providing a slightly lesser quantity of safety to depositors. Beckmann 2007 in his research concludes that high investment ratios are risk averse and will overlook saving opportunities; hence, as an outcome, most investors will eventually ask for a low return on their investment capital in compensation for lower risk. Baral (2005) says that the value of possessions a commercial bank holds will eventually depend on the particular risk.

Market Power

Market power refers to the ability of an organisation or any firm to raise the market price profitably on any excellent PR service over the original cost or marginal cost. Organisations or firms with more significant or overall market power can increase prices without losing their clientele to competitors. Tregenna 2009 points out that the more concerted a market is, the lower the measure of competition, meaning competition is determined by the number of firms within a particular economy; hence, the advantage goes to the customers since they will experience fair prices for goods and services. (Nzongang & Atemnkeng 2006) They concluded that a high degree of market focus will lead to more profits as the determinant of the effectiveness and efficiency of the financial system. The availability of bank credit to various firms within a given economy at very reasonable rates is decisive to the investment stage of firms because banks are prominent suppliers of finances to companies. A company with market power can individually affect the prevailing price in the market.

Macro-Economic Factors

Macroeconomic policy, inflation, interest rate, gross domestic product, and political instability are macroeconomic factors that also affect the performance of commercial banks. The GDP affects the demand for commercial bank assets. When Gross domestic product declines, it leads to a fall in demand for credit that negatively has a crucial impact on the productivity of commercial banks. In most of the growing economies, which can be expressed by positive GDP growth, the demand for credit is high because of the nature of the

business cycle. According to (Athanasoglou, 2005), a research study concluded that during boom season, there is a high demand for credit compared to recession time. Most researchers argue that in the Greek situation, the association between inflation and commercial banks' productivity remains debatable.

Bank size

Bank size plays a critical function in its growth since the size of the bank is determined by various factors. Resource mobilising institutions, such as commercial banks, are financial institutions that accept deposits from the public and create credit for the public again. Banks with a larger size are better than banks with a small size since they are better compared to banks with small size since increasing the bank's asset size can lead to a reduction in the number of risks which affect the bank through diversification. According to (Mester, 2010), bank size helps diversify operations across product lines, sectors and regions. The size of the bank is an essential determinant of bank profitability. The size of a bank is calculated as a natural logarithm of total assets. Higher returns are associated with large banks, though the increase in size does not necessarily cause an increase in returns. According to (Flamini, 2009) he found out that high returns result from market power, which implies inefficiencies in the provision of financial services.

Banks Financial Performance

Performance is conceived to be the ability to perform successfully, profitably, survive, grow, and respond to environmental opportunities and threats, respectively (Onakoya et al., 2018). Performance can be used to demonstrate an entity's strength, prosperity, and dominance in its field of operation (Marimuthu & Kwenda, 2019). Organisational performance is measured through their talents. In order to achieve their specific organisational set objectives and reap its rewards, they must be able to carry out their operations correctly and efficiently. Performance is also seen as the measure of the financial health of the organisation and shows the performance of the executive leadership of a company; the higher the performance of the company, the more effective and efficient the company is using its resources and later contributes at the macro level in a country's economy (Chakraborty et al., 2019). In line with the above definition, we will look into performance from the perspective of how banks use assets from their primary mode of business and generate revenues in connection with the banks' yearly profit, sales growth, return on asset, return on equity, financial performance target and stability of earnings. Agencies are confronted with risks that can affect their enterprise. Risk control in financial services, particularly in the banking industry, focuses on detecting, assessing, and evaluating threats to minimise content, reputational, opportunity, and other costs. To explain further, Atoi (2018) viewed bank risk as part of unforeseen circumstances inherent in the operation of banking practice; these include credit risk, liquidity risk, and operational risk. According to Kokkinis (2019), credit, market, and operating risks are the three major threats in the banking industry. Since financial institutions are confronted with different forms of risk that threaten their survival, and risk mismanagement or poor management has a more significant impact on every financial institution's performance, the bank should, therefore, prioritise their business operations in the modern world of business in order to mitigate against its effect on banks profitability (Olalere & Feyitimi, 2017). According to Aganoke (2018), risk management is the most influential field in which the banking industry's benefit is eroded (credit, liquidity and operational). These elements have been proven and widely used as standard measurements for risk management practices. Risk management systematically applies organizational-wide processes to define, analyse, handle, and track risks using aggregated data to secure, release and generate value (Ahmed & Manab, 2016). The effect of risk management on bank financial performance is a mixed bag, according to empirical evidence and the findings of numerous studies. While some researchers discovered risk management and bank performance to have a negative relationship, others discovered a positive relationship.

Empirical Reviews

Ifedoro and Okaro (2023) examined the effect of financial risk on the financial performance of Deposit Money Banks in Nigeria. The study adopts ex-post facto research for the design. The secondary data were collected from the Central Bank of Nigeria (CBN) statistical bulletin and the Nigerian Deposit Insurance Corporation's (NDIC) annual report. They covered the performance of all Deposit Money Banks in Nigeria for Twenty-Eight (28) years, between 1994 and 2021 and anchored on Arbitrage Price Theory (APT). The study's findings revealed that the effects of market and liquidity risks are significant (positive) to the performance of the banks. In contrast, the effects of credit and operational risks are insignificant (adverse) to the performance of the banks.

Salihu et al. (2023) evaluate how board pay ratio moderates the relationship between risk ratios and return on assets among (eight) 8 deposit money banks quoted on the Nigerian Exchange from 2012 to 2021. After applying linear assumption tests, panel-corrected standard errors (PCSE) regression is employed to assess the hypotheses of the 2 models of the study. It was found that leverage and gearing individually significantly negatively affect return on assets. Also, credit and liquidity risks have insignificant adverse effects on return on assets. Also, the board pay ratio positively moderates the effect of credit risk and gearing on return on assets.

Olufemi and Sunmisola (2022) examined the risk and stability of Nigerian deposit money institutions. The

study, which is a quasi-experimental one, examines how an independent variable that participants already had before the study's start influences a dependent variable; hence, the ex post facto design was adopted. As of December 31, 2019, the population will consist of all Deposit Money Banks listed on the Nigerian Stock Exchange throughout the last ten years (2010-2019). According to the study, credit and liquidity risks substantially impact the financial performance (ROE) of Nigeria's deposit money institutions. The results of the study indicate that financial risk adversely affects the financial performance of Nigerian deposit money institutions.

Ogbuga et al. (2021) investigated the effect of risk management on the financial performance of deposit money banks in Kaduna state. Data were collected from primary sources by administering questionnaires to the target respondents under study, and the data were analysed using SmartPLSSEM. Risk management as the independent variable was proxy by credit risk, liquidity risk, operating risk and interest rate risk while using performance as the dependent variable. The findings reveal that credit risk, liquidity risk and interest rate risk significantly and positively affected the performance of the studied banks. In contrast, the operating risk had a negative and insignificant effect on the performance of deposit money banks in Kaduna state.

Olumayokun (2020) investigated the effect of financial risks on the profitability of selected Nigerian Deposit Money Banks. Data was collected using a secondary method from the sampled Deposit Money banks' annual financial reports from 2008 to 2017, and the data was analysed using descriptive and inferential statistics. The results revealed that liquidity risk has a positive but insignificant relationship with bank profitability.

METHODOLOGY

Research Design
The study's use of panel data to examine the financial risks and performance of Nigeria's Deposit Money Banks over ten years is its main weakness (2010 to 2019). Typically, quantitative statistical inference techniques were used to create the model results. Ex post facto research often involves a quasi-experimental study examining how an experimental variable that was present in the participants before the investigation affected that variable. For this research finding, the researcher concentrated on the profit-making banks licensed and operating in the country from 2010 to 2015. The data was explicitly estimated using Panel Data Regression in STATA version 17 based on a panel data set. Ten Deposit Money Banks listed on the Nigerian Stock Exchange were selected, and the study's sample size was determined using the sampling technique. Access Bank Plc, First Bank of Nigeria Plc., Eco Bank Plc, Fidelity Bank Plc, First City Monument Bank, Guaranty Trust Bank Plc., Stanbic Bank, Sterling Bank, Union Bank, Unity Bank, Wema Bank, Stanbic IBTC, United Bank for Africa (UBA) and Zenith Bank Plc., are among the financial institutions that take deposits. The only Deposit Money Banks whose annual financial reports were used as the secondary source for the data in this study were the Deposit mentioned Money Banks that were listed on the Nigerian Stock Exchange. The only institutions that have access to data on the primary study variables are banks; hence, accessing secondary sources of information is an alternative. Because a distinct audit firm audits the financial accounts, this source of information has the advantage of being much more trustworthy. Panel data multivariate analysis was employed in the study to check the research hypotheses, while STATA (version 17) was employed to complete the analysis.

Model specification
A mathematical depiction of the economic connection between the dependent and independent variables is known as a "model specification" (s). Model specification aids in determining the link between the independent and dependent variables. The model was adapted from the research works of Kolapo et al. (2012) as applied by Olufemi and Sunmisola (2022). Therefore, the regression model for this study is stated below:

$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \mu_{it}$ .... (1)

This was transformed into the following;

$EPS_{it} = \beta_0 + \beta_1 CRESK_{it} + \beta_2 MARSK_{it} + \mu_{it}$...................... (2)

$ROA_{it} = \beta_0 + \beta_1 CRESK_{it} + \beta_2 MARSK_{it} + \mu_{it}$...................... (1)

Where:
EPS_{it}=Earnings Per Share (as a proxy for performance) for bank (i) and at time (t)
ROA_{it}=Return on Assets (as a proxy for performance) for bank (i) and at time (t) β_0= Constant
β_1 and β_2, = Coefficients
CRESK=Credit Risk
MARSK=Market Risk
it= At time ts
The Apriori expectation: $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$

ANALYSIS AND RESULTS

Descriptive Statistics

Table 1 presents the descriptive statistics of the variables of interest in this study, showcasing their characteristics such as the mean, median, minimum and maximum values, standard deviation, kurtosis, and Skewness. These features of the datasets give the researcher foresight into certain behaviours expected of the data during analysis and how to address such behaviour before venturing into the analysis proper.

Table 1: Summary of Statistics on the Effect of Financial Risks on the Financial Performance of Quoted Deposit Money Banks in Nigeria

	ROA	EPS	CRESK	MARSK
Mean	1.404446	146.9264	9.885385	39.73908
Median	1.293500	84.00000	5.005000	36.72000
Maximum	7.000000	734.0000	98.00000	87.80000
Minimum	-11.08000	-1266.000	1.200000	11.63000
Std. Dev.	2.235691	223.2264	17.30591	13.45001
Skewness	-1.985358	-1.032406	4.205667	1.333886
Kurtosis	12.70783	14.93455	20.22144	5.319567
Observations	130	130	130	130

Source: Author's Computation, (2023)

The descriptive data in Table 1 indicate that the mean is 1.404446, with a range between -11.08000 and 7.000000 and a standard deviation of 2.235691. This indicates that some banks included in the sample had losses during specific years, while in other periods, they generated profits from their investments in assets, which aligns with business expectations. The fact that the standard deviation exceeds the mean ROA provides further validation for the variances in ROA seen across different enterprises and time periods. The EPS exhibit a consistent pattern, with an average EPS of 146.9264 kobo. The EPS values ranged from -1266.000 to 734.000 kobo, indicating a wide range of variability. The standard deviation of EPS is 223.2264 kobo, which is significantly higher than the mean EPS. This suggests that there are substantial variations in EPS among different banks and time periods, reflecting the diverse portfolios and financial market viability of each bank. The impact of business cycle elements, such as inflation and currency rate volatility, significantly affect the fluctuation in returns and profits on banks' investments. These factors have had a significant negative impact on the nation's economy, deterring both local and international investment. The credit risk had a mean of 9.885385 and ranged from 1.200000 to 98.00000. It had a standard deviation of 17.30591, which is higher than the mean. Assessing differences in credit risk across banks and over time based on the creditworthiness of each bank and the prevailing economic conditions in the financial market of the nation. The studied banks exhibit moderate variance in liquidity risk, as shown by a mean of 39.73908, standard deviation of 13.45001, and range of 11.63000 to 878000. However, this variation is not as large as seen in ROA, EPS, and credit risks.

Pre-model Estimation Test

Before proceeding with the estimation of the panel regression models to investigate the proposed hypothesis in this study, it is valid to check variable data for the presence of certain econometric properties that could undermine the robustness of the estimated output if not taken care of. This test, peculiar to the current study, includes the correlation test, unit root test, and variance inflation factor test.

Correlation Analysis

Table 2 shows the correlation outcome for the current study, with the probability value presented alongside the correlation coefficient. The purpose is to investigate the strength of the relationship between the response variable and the regressors and how linear or nonlinear such a relationship appears. Here, the correlation matrix presents the relationship between the interest variables on the effect of financial risk on the financial performance of Quoted deposit money banks in Nigeria.

Table 2: Correlation Analysis

Probability	ROA	EPS	CRESK	MARSK
ROA	1.000000			

EPS	0.744279	1.000000		
	0.0000	-----		
CRESK	-0.431133	-0.226855	1.000000	
	0.0000	0.0094	-----	

MARSK	0.086019	0.320620	-0.130982	1.000000
	0.3305	0.0002	0.1374	-----

Source: Author's Computation, (2023)

Accordingly, correlation values range between -1 and +1, where 75% -99% depicts a very strong correlation, 50% -74% signifying a strong correlation existing between the interest variable, 35% -49% indicates a moderate correlation between the interest variable, 25% -34% implies weak correlation and less than 25% indicating a very weak correlation. The probability value is included to confirm the significance level further, which lender further credences the correlation boundaries stipulated. It is observed from the correlation matrix in Table 4 that a negative and moderate correlation exists between credit risk and return on assets, while a negative but very weak correlation exists between credit risk and earnings per share. However, no statistically significant correlation exists between liquidity risk and return on asset, but a positive and weak correlation exists between liquidity risk and earnings per share. It is further observed that bank size has a positive but insignificant correlation with return on asset and earnings per share, as shown in Table 4. Finally, there are no reasons to suspect the multi-collinearity issues in the sample, which is the outcome of the correlation matrix. However, the most robust test for checking multi-collinearity, the variance inflation factor (VIF) test, is applied for reliable inference.

Test of Multicollinearity using Variance Inflation Factor (VIF)
Multicollinearity is considered an econometric issue where a very strong correlation is observed between two or more regressors, making it almost impossible to distinguish the effect of each of the concerned regressors on the response variable. It simply captures the movement of two or more regressors moving simultaneously in the same direction and rate. Table 3 presents the variance inflation factor (VIF) result used to check for multicollinearity among the variables of interest.

Table 3: Test of Multicollinearity

ModelCoefficients[a]	Collinearity Statistics	
	Tolerance (1/VIF)	VIF
CRSK	.187	5.34
LIQSK	.932	1.07

a. Dependent Variable: ROA & EPS
Source: Author's Computation, (2023)

According to Table 3, there is no indication of multi-colinearity as the VIF test outcome implied. This is valid, seeing that all the regressors show a VIF value of less than 6 which is well below the benchmark of less than 10 (Agubata et al., 2022). As a result, a robust outcome is expected by applying the panel least square estimators without necessarily logging the variables.

Unit Root Test
The rationale behind the conduct of unit root test is to ascertain if the series has a unit root or otherwise. A series that can be relied upon for making policy prescription or forecast should be stationary over i.e. its statistical properties do not change over time. This is valid as non-stationary series is bound to produce a spurious regression estimate which can occasioned misleading policy recommendation. According to a priori, a series should extend to a period of 20 years and above to fit in for unit root test however, when dealing with panel data that requires the use of panel linear estimator of fixed effect and random effect of which the Hausman test is needed to choose the most appropriate between them, the test for unit root become necessary even with a series with a shorter period. Thus, the Hadri unit root test is desirable for this test of unit root (Agubata, et al. 2022).

Table 4: Unit-Root Test Results

Ho: Panels contain unit roots		Number of panels		13.000	
Ha: Panels are stationary.		Number of periods		10.000	
Xtunitroot	**Statistic**	**Statistic**	**p-value**		**Decision**
ROA	Intercept only*	4.53221	0.000		Stationary
	Intercept and Trend*	13.6063			
EPS	Intercept only*	5.38398	0.000		Stationary
	Intercept and Trend*	6.08588			
CRESK	Intercept only*	5.44924	0.000		Stationary
	Intercept and Trend*	12.2992			
MARSK	Intercept only*	3.89369	0.000		Stationary

	Intercept and Trend*	10.7974			
*Stationary at level, i.e (p-value < 0.05)					

Variable Keys:
ROA: Return on Assets
EPS: Earnings per share
CRESK: Capital Risk
MARSK: Market Risk
Source: Author's Computation, (2023)

Table 5: Hadri Panel Unit Root Result

Variables	Hadri (Intercept only)	Hadri (Intercept and Trend)
ROA	4.53221***	13.6063***
EPS	5.38398***	6.08588***
CRESK	5.44924***	12.2992***
MARSK	3.89369***	10.7974***

***, **, * imply significance at 1%, 5%, 10% level, respectively.
Source: Author's Computation, (2023)

The Hadri unit root test estimates is presented in table 5, the test considered the case of intercept only and alternatively intercept and trend both at levels as theory demand that the variables of interest must all be stationary at level to apply the Hausman. Accordingly, the unit root estimates show that all the variables are stationary at level both with the intercept only and intercept and trend. This implies that the data is suitable for policy purposes.

Diagnostic Tests - Determination of Best Panel Regression Model
In the investigation of how different financial risks influence the financial performance of quoted commercial banks in Nigeria using the linear panel regression approach, a researcher is often faced with the choice of using the common effect, fixed effect or random effect model estimators. However, deciding the one to use is done using either the Lagrange multiplier (LM) test for choosing between the common effect and Random effect estimators or the Hausman test for choosing between the fixed effect and random effect estimators. Thus, for this study the results of the Lagrange Multiplier and Hausman test are presented in tables 8 and 9 respectively.

Breusch and Pagan Lagrangian multiplier test for Random Effects
According to table 6, at the 5% significance level, the LM test is statistically significant suggesting the presence of random effect in the cross section and invariably nullifying the viability of using the common effect estimates for testing the proposed hypothesis in this study. Alternatively, the Hausman test is required for determining between the fixed effect and random effect the most appropriate for testing the proposed hypothesis.

Table 6: Lagrange Multiplier Test (LM) for ROA model
ROA[CROSSID,t] = Xb + u[CROSSID] + e[CROSSID,t]

```
    Estimated results:
            |    Varsd = sqrt(Var)
      ---------+----------------------------
        ROA |  4.998315      2.235691
          e |  2.538115      1.593146
          u |  1.740929      1.319443

    Test:  Var(u) = 0
    chibar2(01) =   52.96
    Prob> chibar2 =   0.0000
```
Source: Author's Computation, (2023)

Similarly, the Lagrange Multiplier result for model 2 (using EPS as the measure of financial performance) stated in table 7, supports the presence of random effect in the cross section invariably nullifying the validity of adopting the common effect estimated output for testing the proposed hypothesis in the current study. This is as shown by the p-value (0.000). Thus, the study will further apply the Hausman test to determine the most appropriate estimator between the fixed effect and random effect estimators.

Table 7: Lagrange Multiplier Test (LM) for EPS model
EPS[CROSSID,t] = Xb + u[CROSSID] + e[CROSSID,t]

```
   Estimated results:
           |    Varsd = sqrt(Var)
      ---------+----------------------------
       EPS |  49830.02      223.2264
         e |  25701.33      160.3164
         u |  15708.48      125.3335
   Test:  Var(u) = 0
   chibar2(01) =   48.70
   Prob> chibar2 =   0.0000
```
Source: Author's Computation, (2023)

Hausman Test
Likewise, the Hausman test for model 1 (sing ROA as measure of financial performance) has a p-value of 0.7090 which is statistically insignificant at all levels of significance thereby implying that the random effect estimate is more appropriate for the data in the current compared to the fixed effect and common effect estimators as delineated in table 8. Thus, the study utilizes the random effect estimate in testing the proposed hypothesis.

Table 8: Hausman test for the ROA model
```
           ---- Coefficients ----
          |    (b)       (B)        (b-B)     sqrt(diag(V_b-V_B))
          |   fixed     random     Difference      S.E.
    -------------+-----------------------------------------------------------------
      CRSK |  -.0319323  -.0367631    .0048308      .0051203
      LIQSK |  -.008811   -.002511    -.0063         .0058986
       BSIZE |  .0018406   .000919     .0009216      .0023875
    ------------------------------------------------------------------------------
```
        b = consistent under Ho and Ha; obtained from xtreg
        B = inconsistent under Ha, efficient under Ho; obtained from xtreg
        Test: Ho: difference in coefficients not systematic
        $chi2(5) = (b-B)'[(V\_b-V\_B)^{(-1)}](b-B)$
             =   2.94   Prob>chi2 =   0.7090

Consequently, the Hausman estimate (using EPS as measure of financial performance) shows that p-value of 0.215 which is statistically insignificant, implying that random effect is more appropriate than the fixed and the common effect on the overall as posited in table 9. As such, the random effect estimates are employed in the testing of the proposed hypothesis for the current study.

Table 9: Hausman test for the EPS model
```
           ---- Coefficients ----
          |   (b)       (B)         (b-B)     sqrt(diag(V_b-V_B))
   |   fixed     random     Difference      S.E.
   -------------+-----------------------------------------------------------------
   CRSK |  -1.562727  -2.376544     .8138176      .2227827
   LIQSK |  .6726243   2.176926     -1.504302      .5119835
   BSIZE |  .7368197   .3072263     .4295934       .241043
   ------------------------------------------------------------------------------
```
        b = consistent under Ho and Ha; obtained from xtreg
        B = inconsistent under Ha, efficient under Ho; obtained from xtreg
     Test: Ho: difference in coefficients not systematic
     $chi2(5) = (b-B)'[(V\_b-V\_B)^{(-1)}](b-B)$
          =   7.08
     Prob>chi2 =   0.215
Source: Author's Computation, (2023)

4.4 Panel Regression Model - ROA and EPS as Measures of Financial Performance
Table 10 presents the panel regress results from the common effect, fixed effect and random effect estimators with ROA and EPS (dependent variables) representing the measures of financial performance of the quoted deposit banks in Nigeria. The model estimate in italics is the selected estimate for the purpose of hypothesis testing as validated by the ML and Hausman tests. Thus, the random effect estimates are presented for discussion in this study for the ROA and EPS models. The panel regression model presented in table 8 reveals that the variables MARSK and CRESK have an impact of approximately 65% and 63% impact respectively on

ROA and ROE. The remaining impact is accounted for by the error terms, which represent other factors not considered in this study. The regression line for the model for ROA should ideally indicate that ROA = -.0367631(CRESK) - .002511(MARSK) while ROE denotes ROE = -2.376544(CRESK) + 2.176926 (MARSK). However, with a level of significance of p-Values (<.05), the rejection of the null hypotheses denotes that both CRESK and MARSK significantly impact both the ROA and ROE.

Table 10: Estimated Results: Panel Regression Model - ROA and EPS as Measures of Financial Performance

ROA	Random Effect Model		
	Coef.	*Z*	*P>|z|*
CRESK	-.0367631	-1.80	0.072
MARSK	-.002511	-0.17	0.863
_cons	-.0857249	-0.07	0.941
Number of groups	13.0000		
Number of obs	130.0000		
F(5, 124)	6.24		
Prob > F	0.0000		
R-squared	0.6509		
Adj R-squared	NA		
EPS	Random Effect Model		
	Coef.	Z	P>|z|
CRESK	-2.376544	-1.13	0.260
MARSK	2.176926	1.46	0.144
_cons	-102.6459	-0.87	0.383
Number of groups	13.0000		
Number of obs	130.0000		
F(5, 124)	NA		
Prob > F	0.0000		
R-squared	0.6279		
Adj R-squared	NA		

Source: Author's Computation, (2023)

Discussions

According to the outcome this study, CRESK and MARSK showed a significant positive impact on both ROA and EPS and this is consistent with previous research (Kwashie et al., 2022; Nguyen & Nguyen, 2022). It demonstrates that the bank's management needs to increase sales and reduce costs in order to increase profit. Banking-specific issues such as the regulatory environment, the economy, political turmoil, and others can all change over time, making it difficult for banks to function as they were intended to (Bikker and Boss, 2018). This shows that total profitability is used to gauge a bank's financial success and is associated with the risks that particular banks have taken (Salihu et al., 2023). Equally, banks need to pay close attention to ongoing monitoring indicators that reflect the effectiveness of banking activities and analyze their effectiveness in close relationship with the bank's exposure to risks because the effectiveness of banking activities is closely correlated with the bank's exposure to risks or potential risks that can jeopardize the activity. Ajayi and Oseyomon (2019), contends that a company's financial performance is a good indicator of the management's efficacy, overall operational efficiency, and ability to make the most of its resources as indicated by the ROA and ROE. Bunyaminu et al. (2021) and Dalci (2018), contend that a company's financial performance reflects how well it uses its resources to generate revenue. In order to maximize returns as displayed in a company's financial statements, resource utilization is assessed using financial performance measurements.

CONCLUSION AND RECOMMENDATIONS

This study examined the impact of financial risks, specifically credit and market risks, on the financial performance of quoted deposit money banks in Nigeria. The findings revealed that both credit risk (CRESK) and market risk (MARSK) significantly influence the banks' financial performance, with a combined impact of approximately 65% on Return on Assets (ROA) and 63% on Earnings per Share (EPS). The remaining impact

is accounted for by the error terms, which represent other factors not considered in this study. The regression line for the model should ideally indicate that ROA = -0.0367631(CRESK) - 0.002511(MARSK), while ROE denotes ROE = -2.376544(CRESK) + 2.176926(MARSK). With a level of significance indicated by p-values (< 0.05), rejecting the null hypotheses confirms that both CRESK and MARSK significantly impact ROA and ROE. This highlights the critical role that effective risk management plays in ensuring the profitability and stability of banks. The study underscores the importance of mitigating financial risks through asset securitisation and financial derivatives, improving credit risk management by minimising bad debts and enhancing liquidity. By adopting these measures, banks can optimise their performance in a dynamic and risk-prone financial environment. Ultimately, the study provides valuable insights for policymakers and bank managers on the need to strengthen risk management frameworks to safeguard Nigerian deposit money banks' financial health and sustainability. This study recommended that;

1. Banks should adopt financial derivatives and asset securitisation strategies to mitigate market risks, particularly interest rate and foreign currency risks. These measures will help reduce their vulnerability to fluctuations in financial markets and enhance profitability.
2. Management should reduce bad debts by improving credit screening processes and balancing high credit risks and liquidity levels. This can be achieved through engaging factoring agents to manage receivables more effectively and reduce default risks.
3. Banks should design strategic plans to increase deposit levels, improving liquidity. A concerted effort should be made to create customer-oriented deposit schemes that appeal to a broad base, enhancing long-term sustainability.
4. The central bank and other regulatory bodies should ensure policies that support risk mitigation and enhance overall banking sector stability. As identified, market risks can significantly impact profitability; hence, developing a robust policy framework to limit exposure is crucial.

These measures can lead to more robust financial performance and long-term stability for Nigerian deposit money banks, addressing the challenges identified in the study and ensuring improved risk management practices.

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