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EFFECT OF CREDIT RISK MANAGEMENT ON MARKET PERFORMANCE OF DEPOSIT MONEY BANKS LISTED IN NIGERIA

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ABSTRACT

This study investigated the effect of credit risk management on market performance of deposit money banks in Nigeria. Net asset per share was used as a proxy for the the dependent variable, market performance while capital adequacy ratio, sensitivity to market ratio, and credit to deposit ratio served as proxies to the independent variable, credit risk management. A sample of 12 deposit money banks were used for the period of eleven years spanning 2012 to 2022. The study employed ex-post facto and longitudinal research design. Data were collected from annual reports of the selected deposit money banks and five (5) specific objectives and hypotheses were subjected to some preliminary data tests like descriptive statistics. Pearson correlation analysis and Variance Inflation factor (VIF) were analyzed using panel regression analysis. Using a sample of 132 banks-year observations, the result revealed that credit to deposit ratio had negative effect on market performance proxied as net assets per share of deposit money banks in Nigeria; Conversely, Capital adequacy ratio and sensitivity to market ratio had positive but non-significant effect on market performance of deposit money banks in Nigeria. The study concluded that banks should improve credit management capacity, strengthen supervisory authorities, increase deposit moblisation, and develop reliable risk management strategies with minimal punishment for loan repayment default. Based on the findings above, the study recommended among others, that adequate provision against loan loss should be made and Nigerian banks should adopt an aggressive deposit mobilization to increase credit availability and develop a reliable credit risk management strategy with adequate punishment for loan payment defaults.

Key words: *Capital adequacy ratio, Credit risk management, Credit to deposit ratio, Market performance, Sensitivity to market ratio.*

INTRODUCTION

The operation of financial institutions, particularly banking institutions, determines whether the financial system is successful or unsuccessful (Alfiyan et al., 2023). Financial institutions serve as a bridge between fund administrators and fund holders (Mankiw, 2018), and this makes banks closely related to economic growth through the financial services they provide. The intermediary role of banks is considered as the accelerator of economic growth. Therefore, the stability of the banking sector is considered as a precondition for economic stability and growth (Halling & Hayden, 2016). However the stability of the banking sector depends on its profitability and credit risk management (Naser, Ahmadi & Emami, 2013).

Risks are uncertainties due to variations in expected returns. The dictum in finance says that the higher the risk, the higher the return. Therefore, risk can be opportunity or threat. In order to get higher returns, bank can either take an increased risk or lower operating costs. Thus, managers must evaluate and balance the tradeoffs between risk and returns.

Credit risk management is important to bank management because banks are risk machines; they take risks and transform them to banking products and services (Bessis, 2012). According to Yang et al. (2023), accurate credit risk forecasting enables businesses to plan ahead and prevent bankruptcies. Corporate credit risk prediction systems have a propensity to take more and more features into account. Credit risk management provides a leading indicator of the quality of banks credit portfolio which greatly influences or prevents the failure of a bank, as the failure of a bank is influenced to a large extent by the quality of credit decisions and thus the quality of the risk assets, which can be deterred as a result of poor corporate governance performance (Charles & Kenneth, 2013). Credit risk is a serious threat to the performance of banks, as some of the reviewed studies showed a negative effect; therefore necessitate its management.

Considering the importance policy makers and industry practitioners placed on credit risk management as a distress prevention strategy, it is crucial to know whether credit risk management influences banks performance regardless of several banks failure in Nigeria. Thus, credit risk is one of the most important risks faced by banks. Perhaps, this is responsible for the growing body of literature in this aspect of research discourse in developed countries yet, not much has been discussed in developing countries, especially Nigeria. Due to different methodologies, particularly in the definition of proxies used as surrogates for credit risk management, mixed results were produced by prior studies. Also, literature on credit risk management in the banking sector focused on single types of credit risk like non-performing loans while missing out on the interdependence of other measurements.

Objectives

The main objective of this study is to evaluate the effect of credit risk management on market performance of listed deposit money banks in Nigeria. The specific objectives are to:

1. evaluate the effect of capital adequacy ratio on market performance of listed deposit money banks in Nigeria.
2. ascertain the effect of sensitivity to market ratio on market performance of listed deposit money banks in Nigeria.

3. determine the effect credit to deposit ratio on market performance of listed deposit money banks in Nigeria.

Hypotheses

In view of the specific objectives of the study, the following hypotheses were formulated:

H_{01}: Capital adequacy ratio does not have significant effect on market performance of listed deposit money banks in Nigeria.

H_{02}: Sensitivity to market ratio does not have significant effect on market performance of listed deposit money banks in Nigeria.

H_{03}: Credit to deposit ratio does not have significant effect on market performance of listed deposit money banks in Nigeria.

LITERATURE REVIEW

Credit Risk Management

Credit risk management serves as a process of identifying, evaluating, monitoring and controlling of risk arising from the possibility of default in loan repayments by some borrowers which results in decrease in banks income due to the need to establish allowance for these bad debts. Credit risk management arises any time bank funds are extended, committed, invested, or otherwise exposed through actual or implied contractual agreements, whether reflected on or off the balance sheet (Abiola & Olausi, 2014). Credit risk management incorporates the decision-making process; prior to making the credit decision, all credit commitments are followed up, including all monitoring and reporting process. The credit decision depends on the financial data and judgmental evaluation of the whole market, borrower financial status, management and shareholders. According to Arunkumar and Kotreshwar (2015), there are two distinct dimensions of credit risk management preventive measures and corrective measures. Preventive measures ensure better credit portfolio diversification through providing early warning signals of future defaults, it include risk evaluation, risk measurement and risk pricing. On the other side, the aim of curative measures is to minimize post-sanction loan losses through steps such as securitization, hedging trading, risk sharing and legal enforcement.

The goal of credit risk management, according to Donald and Ronald (2016), is to maximise a bank's risk-adjusted rate of return by maintaining credit risk exposure within acceptable parameters. Banks need to manage the credit risk inherent in the entire portfolio as well as the risk in individual credits or transactions. The effective management of credit risk is a critical component of a comprehensive approach to risk management and essential to the long-term

success of any banking organization. In the same vein, Naomi (2011) added that the effective management of credit risk is a critical component of a comprehensive approach to risk management and essential to the long-term success of any banking organisation. Lending involves the creation and management of risk assets, and it is an important task of bank management. Credit risk occurs when a bank provides credit facilities to a debtor and there is a risk that the debtor will not repay the obligation which will then have an impact on the entity thereby resulting in the decline in the profitability of the bank (Alshatti, 2015)

Capital Adequacy Ratio

Capital adequacy is an important concept in business particularly in the banking business because of its role in providing cover for its risky assets. Capital adequacy measures how much of a bank's capital represented by its net worth can allay the unfavorable effects of its risky loans (Economic Times Bureau, 2010), it mitigates widespread distress in the banking industry and spurs business exertion and performance (Ezike & Oke, 2013) and increases credit risk when it is low (Mukhtarov, Yüksel & Mammadov, 2018).

Capital adequacy is the capital expected to maintain balance with the risks exposure of the financial institution such as credit risk, market risk and operational risk, in order to absorb the potential losses and protect the financial institution's debt holder. Capital adequacy ratio (CAR) is also an independent variable and is chosen because it is the core measure of a banks financial strength from a regulator's point of view. Capital adequacy ratio consists of the types of financial capital considered as the most reliable and liquid, primarily shareholders equity. Bank with good capital adequacy ratio have good profitability. With good capital requirement, commercial banks are able to absorb loans that have gone bad (Abiola & Olausi, 2014). In addition to this, a bank with a strong capital adequacy ratio is also able to absorb possible loan losses and hence avoids bank run, insolvency and failure.

Capital adequacy ratio is a measure of the amount of bank's capital expressed as a percentage of its risk weighted exposure. Theoretically, banks with good capital adequacy ratio have a good profitability. A bank with strong capital adequacy is also able to absorb possible loan losses and thus avoid falling into insolvency and failure (Bhattarai, 2016). Capital adequacy ratio is therefore to be captured as shareholders' fund measured by total assets.

This is expressed mathematically as

$$\text{CAR} = \frac{\text{Shareholders Fund}}{\text{Total Assets}}$$

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Sensitivity to Market Ratio

Sensitivity to market ratio measures the risk sensitive liabilities and risk sensitive assets. It is a process of determining the likelihood that a specified negative event will occur. It is conceded as a substantial degree of standardization of process and documentation. The quality of banks loan portfolio at any time, along the lines of the report are presented. That total receivable, including loans, leases and commitments and derivatives, are reported in a single format (Mutua, 2014).

Sensitivity to market ratio informs managers about where there are some supervision problems. Changes in any of the variables may have significant effects on the bank credit risk. According to Masoud and Sema (2018), sensitivity to market ratio helps to measure the banks level of risk at the interest rates and exchange rates that may affect the capital adequacy. It pertains to how adverse changes in markets (including interest rate, exchange rate, equity, and commodity markets) could affect the banks earnings and capital position.

Sensitivity covers how particular risk exposures can affect institutions. Examiners assess an organizations sensitivity to market risk by monitoring the management of credit concentrations (Bishnu, 2019). Sensitivity to market risk mathematically expressed as thus:

$$SMR = \frac{\text{Profit}}{\text{Non Performing Loan}}.$$

Credit to Deposit Ratio

The credit to deposit ratio (CDR) is a major tool to examine the liquidity of a bank and measures the ratio of fund that a bank has utilized in credit out of the total deposits collected. The higher the CDR the more effective bank utilize the fund it collected (Jha & Hui, 2012). This ratio measures the ability of the management to use the assets in offering loans which ultimately creates high profitability (Ibrahim, 2014). This ratio helps us showing the relationship between loans and advances which are granted and the total deposited collected by the bank. A high ratio indicates better mobilization of collected deposit and vice-versa. It should be noted that too high ratio may not be better from liquidity point of view.

According to Mutua (2014), credit deposit ratio is a ratio between the banks total loans and total deposits. The ratio is generally expressed in percentage terms if the ratio is lower than one, the bank relied on its own deposits to make loans to its customers, without any outside borrowing.

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This is mathematically expressed as thus:

$$\text{CDR} = \frac{\text{Total Loans}}{\text{Total Deposits}}$$

Market Performance

Performance is a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation (Okeke, 2015). There are many different ways to measure market performance, but all measures should be taken in aggregation. Line items such as revenue from operations, operating income or cash flow from operations can be used, as well as total unit sales. Furthermore, the analyst or investor may wish to look deeper into financial statements and seek out margin growth rates or any declining debt. According to Erikie and Osagie (2017), market performance is the measuring of results of a firm's policies and operations in monetary terms. These results are reflected in the firm's return on investment, return on assets, value added, return on equity, return on networth, return on total assets and return on capital employed.

According to Chandrasekharan (2012), market performance is an extent to which a company's financial health over a period of time is measured. In other words, it is a financial action used in order to generate higher sales, profitability and worth of a business entity for its shareholders through managing its current and non-current assets, financing, equity, revenues and expenses. Its main purpose is to provide completion to the point information to shareholders and stakeholders and encourage them in making decisions. It can be used to evaluate similar companies from the same industry or to compare industries in aggregation. One of the best ways of evaluating a sector market performance is by the use of financial or ratio analysis. It shows the relation between one quantity or performance indicators over another, expressed mathematically and tries to summarize huge database for one eye view regarding the market performance of a firm (Chandra, 2017). Market Price of Shares and Net Assets Per Share were used as a market performance measurement in the prior expectations of Nahiba (2017), Raheman, Salleh, Afza and Chek (2014) and Abd.Hamid, Abdul Aziz, Dora and Said (2017) etc.

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For the purpose of this study, net assets per share (NAPS) was proposed as a measurement for market performance. This was captured as Net Assets divided by Paid up Capital i.e (NAPS)

This is expressed mathematically as

$$NAPS = \frac{\text{Net Assets}}{\text{Paid up Capital}}$$

Theoretical Review

Modern Portfolio Theory (MPT)

Modern portfolio theory, propounded by Harry Markowitz in 1952, states that a conservative investor can do better by choosing a mix of low-risk and riskier investments than by going entirely with low-risk choices. The theory aims to maximise returns while minimising risk by diversifying investments across different asset classes. It attempts to maximize portfolio expected return for a given amount of portfolio risk, or equivalently minimize risk for a given level of expected return, by carefully choosing the proportions of various assets. The portfolio theory integrates the process of efficient portfolio formation to the pricing of individual assets. It emphasized that risk is an inherent part of higher reward. The theory also explained that some sources of risk associated with individual assets can be eliminated or diversified away, by holding a proper combination of assets. Some of the issues not addressed by the theory include; how banks can form a portfolio of loans that minimize risk and maximize return. It does not outline ways of determining a risk free portfolio. Lastly, the theory does not address various risks other than credit risk that are faced by banks when managing a loan portfolio. Therefore, the theory cannot apply holistically when managing credit risk in banks. Thus, theory of multiple lending was introduced as shown below:

Empirical Studies

Kolapo, Ayeni and Oke (2012) carried out an empirical investigation into the quantitative effect of credit risk on the performance of commercial banks in Nigeria over the period of 11 years (2000-2010). Five commercial banking firms were selected on a cross sectional basis for eleven years. The traditional profit theory was employed to formulate profit, measured by Return on Asset (ROA), as a function of the ratio of Non-performing loan to loan & Advances (NPL/LA), ratio of Total loan & Advances to Total deposit (LA/TD) and the ratio of loan loss provision to classified loans (LLP/CL) as measures of credit risk. Panel model analysis was used to estimate the determinants of the profit function. The results showed that the effect of credit risk on bank performance measured by the Return on Assets of banks is cross-sectional

invariant. That is the effect is similar across banks in Nigeria, though the degree to which individual banks are affected is not captured by the method of analysis employed in the study. Based on this finding, the study recommended that banks in Nigeria should enhance their capacity in credit analysis and loan administration while the regulatory authority should pay more attention to banks compliance to relevant provisions of the Bank and other Financial Institutions Act (1999) and prudential guidelines.

Abiola and Olausi (2014) investigated the impact of credit risk management on the performance of commercial banks in Nigeria. Financial reports of seven commercial banking firms were used to analyze for seven years (2005 – 2011). The panel regression model was employed for the estimation of the model. In the model, Return on Equity (ROE) and Return on Asset (ROA) were used as the performance indicators while Non-Performing Loans (NPL) and Capital Adequacy Ratio (CAR) as credit risk management indicators. The findings revealed that credit risk management has a significant impact on the profitability of commercial banks in Nigeria. The study also revealed that commercial banks with higher capital adequacy ratio can better advance more loans and absorb credit losses whenever they crop up and therefore record better profitability. Thus recommended that the regulatory authorities should pay more attention to banks compliance to relevant provisions of the Bank and other Financial Institutions Act1991 and prudential guidelines.

Ejoh, Okpa and Egbe (2014) investigated the impact of credit risk and liquidity risk management on the profitability of deposit money banks in Nigeria with particular reference to First bank of Nigeria Plc. Descriptive research design was used for the study where questionnaires were administered to a sample size of eighty (80) respondents. The data obtained were presented in tables and analysed using simple percentages. The formulated hypotheses were tested using the Pearson product moment correlation. The results of the study revealed that there is a significant relationship between credit management and bank profitability and there is a significant relationship between bank liquidity and profitability among deposit money banks in Nigeria. Based on the findings, it was recommended that deposit money banks should set up effective system of internal controls to monitor the risk control mechanisms in use in order to ensure complete compliance with bank philosophy. Again, banks should always maintain a balance between deposit-loan ratio in order to avoid asset liabilities mismatch.

Etale, Ayunku, and Etale (2016) studied on impact of non-performing loans and bank performance in Nigeria, generated data for its research from annual reports of the listed banks domiciled with the CBN and NDIC. Statistical measures of unit root test, descriptive statistics, and regression techniques were used to analyze the data. Specifically, results indicated that bad loans and doubtful loans impacted negatively, and in a significant manner, on return on capital employed, which was used as a measure of bank performance; while substandard loans did not have a significant impact on return on capital employed with both having a negative relationship.

Adeusi and Dada (2017) examined the impact of credit risk management on deposit money banks performance in Nigeria using panel regression model on ten selected banks for the period 2001-2015. The performance proxy Profit after Tax (PAT) was made as function of Non-performing Loan Ratio (NPLR), Loan Loss Provision Ratio (LLPR), Loan to Total Asset Ratio (LTAR), Interest Rate (INTR) and Inflation Rate (INFR). Fixed effect, Random effect and Hausman test was conducted on the variables. The result from the panel analysis indicated that NPLR, LLPR and INTR exhibit a negative relationship while LTAR and INFR depict a positive relationship with deposit money bank performance. Based on this result, the study concluded that despite the various initiatives and reforms carried out by the government and the monetary authorities, high incidence of credit risk resulting from poor management is still prominent among the deposit money banks due to increased default in loans and advances recorded. Based on this finding, the study recommended that deposit money banks in Nigeria should always pay particular attention to their credit risk management policies in order to reduce the occurrence of non-performing loans recorded. Also, ensures compliance with banks' philosophy and set up effective system of internal control to monitor the risk control mechanisms so as to enhance the performance of deposit money banks' in Nigeria.

According to John and Okika (2019), banking businesses worldwide are often bedeviled with the risk of providing credit facilities to borrowers. The performance, in terms of economic and financial stability of these banks is adversely affected by credit risks. Deposit Money Banks (DMBs) in Nigeria are not left out of this challenge. It is essential to understand how credit risks impact the financial performance of DMBs so as to mitigate and control its unfavorable effect on banks' performance. The study examined the impact of credit risks on the financial performance of listed DMBs in Nigeria, from 2006-2017. Data for the study were secondary in nature and gotten from audited financial reports of all the 15 listed DMBs in Nigeria as on 31st December, 2017. Regression tools were employed for data analysis, and

the results show that non-performing loans and impairment loan charge-off have negative and significant impact on the financial performance of banks. The impact of capital adequacy on financial performance is negative but statistically insignificant. The study recommended that DMBs should improve their risk management strategy to reduce the increase of default loans. In addition, a short-term periodic review of prudential guidelines and other regulations governing the issuance of credit facilities by DMBs is advocated, so that current realities and intrigues about credit risks will be captured in policies.

Nwanna and Oguezue (2017) conducted a study on effect of credit management on profitability of deposit money banks in Nigeria. The study employed multiple regression analysis in E-views 9. The findings of the study revealed that loans and advances and loan loss provision have positive and significant effect on profitability, while nonperforming loan has a negative and insignificant effect on profitability. The study concluded that management of banks should evaluate credit request before granting any form of loan to customer(s) to circumvent high rate of non-performing loan. It recommended that the banks should ensure that customers have verifiable guarantors and collateral before granting them loan. The rapid increase in Non-performing loan in most deposit banks shows that some deposit money banks may not be complying with guidance issued by regulating agencies in charge of loan facilities across the banks.

Ogundajo, Oyedokun and Okwuosa (2020) investigated credit management and bank profitability especially the factor of the non-performing loan, loan loss provision and loan and advances and their impact on profitability. This study made use of ex-post facto research design. Data from audited annual reports of 5 sampled deposit money banks listed on the Nigerian stock exchange for the year 2013-2017 were used. Data were analyzed panel regression analysis. The result shows that credit risk management has a significant positive effect on the profitability of Nigerian banks. The non-performing loan has a significant negative effect on return on capital employed, loan loss provision has an insignificant positive effect on return on capital employed and loan and advances has a significant positive effect on return on capital employed.

METHODOLOGY

The study adopted *ex-post Facto* research design. It is a design that predicts the effect of one variable (independent variables) on the other variable (dependent variable). It is alternatively referred to as causal comparative design (Adeyemi & Ajinbola, 2019). *Ex-Post Facto* design

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were used in this study in order to determine the effect of the explanatory variables (CDR, SMR & CAR) on the dependent variable (NAPS) and also because the existing data used cannot be manipulated or controlled.

Out of a population of 14 listed deposit money banks on Nigerian Exchange Limited as at 2021 business list comprising Access Holdings Plc, Eco Bank Transnational Incorporated, First Bank Plc, Fidelity Bank Plc, Guaranty Trust Holding Company Plc, Jaiz Bank Plc, Stanbic IBTC Holdings Plc, Sterling Bank Plc, Union Bank Nigeria Plc, United Bank for Africa Plc, Unity Bank Plc, Wema Bank Plc and Zenith Bank Plc, a sample of 12 listed deposit money banks were judgmentally sampled based on the entire set of data available. The sampled deposit money banks were Access Bank Plc, Eco Bank Plc, Fidelity Bank Plc, First Bank Plc, Guaranty Trust Bank Plc, Sterling Bank Plc, Stanbic IBTC Holdings, Union Bank Plc, United Bank of Africa Plc, Unity Bank, Wema Bank Plc, and Zenith International. Hence, data were extracted from the audited financial statements of the sampled deposit money banks for a period of 11 years (2012-2022).

The study adapted and modify the Model of Ojiakor, Ezeudu and Ekemezie (2017) in determining the effect of credit risk management on market performance of listed deposit money banks in Nigeria. This is shown below as thus:

Ojiakor, Ezeudu and Ekemezie (2017): $P_{it} = \beta_0 + \beta 1NPL_{it} + \beta_2 CAR_{it} + \beta_3 AQR_{it} + \mu$ …….. Eqn 1

The Functional Model expressed in a Mathematical Form is shown below as thus:

$NAPS_t = F(CDR, SMR , CAR)$ …….. Eqn 2.

The econometric form of the regression for the study is expressed as thus:

$NAPS_t = \beta_0 + \beta_1 CAR_t + \beta_2 SMR_t + \beta_3 CDR_t + \mu$ …….. Eqn 3.

Where:

NAPS = Net Assets Per Share

CAR = Capital Adequacy Ratio

SMR = Sensitivity to Market Ratio

CDR = Credit to Deposit Ratio

ε_{it} = Radom error term or stochastic variables of the model capturing other unexplanatory variables. Subscripts *i* denote number of banks, *t* denotes years or time-series dimensions ranging from 2012-2022, and β_0, β_1, β_2, β_3, β_4, β_5, Stands for Regression model coefficients

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Data extracted were analyzed on Eview package using descriptive statistics, correlation, variance inflation factor and regression analysis.

RESULTS AND DISCUSSIONS

The Table below shows the descriptive statistics of the 12 deposit money banks that make up our sample.

Table 1 Descriptive Statistics Result

	NAPS	CAR	SMR	CDR
Mean	2.540000	0.752750	0.015167	0.492350
Median	2.625000	0.529000	0.020000	0.399000
Maximum	21.10000	2.180000	0.230000	2.180000
Minimum	-42.00000	0.010000	-0.150000	0.010000
Std. Dev.	5.593852	0.615836	0.078461	0.426661
Skewness	-3.915114	0.799264	0.231440	1.538925
Kurtosis	33.15172	2.472688	2.853577	5.869522
Jarque-Bera	5337.411	15.58341	1.296337	97.39020
Probability	0.000000	0.000413	0.523003	0.000000
Sum	335.2800	99.36300	2.002000	64.99020
Sum Sq. Dev.	4099.144	49.68221	0.806456	23.84716
Observations	132	132	132	132

Source: Researchers summary of Overall descriptive result (2023) using E-view 12

*Note: *1% level of significance, **5% level of significance, ***10% level of significance.*

The descriptive statistics result in Table 1 showed the mean values for each of the variables, their maximum values, minimum values, standard deviation and Jarque-Bera values which show the normality and nature of the data. The result provides some insight into the nature of the selected deposit money banks in Nigeria that were used in the study. The researcher sought to establish the central tendency and distribution of credit risk management variables and market performance among the selected deposit money banks in Nigeria. Market performance which was the dependent variable was measured using net assets per share which was captured using Net assets divided by paid up capital.

Firstly, it was observed that over the period under review, the sampled banks have average positive net assets per share. Within the period under review, the banks have maximum value of net assets per share of 21.10 while the minimum value of net assets per share was -42.00. The large difference between the maximum and minimum values of net assets per share indicates that the performance of the deposit money banks differs greatly among the banks selected and over the period under review, this shows that the banks are not heterogeneous in nature. This extreme large value of NAPS implies that some banks in the sample performed poorly while some had very good NAPS when compared to the average value. This, therefore, means that banks with mean value of NAPS higher or equal to 2.54 are high profitable banks with average net assets per share equal 2.54 while banks with the value below 2.54 are low

profitable banks with low market performance. Hence, it can be argued that Nigeria banks had been efficient enough to generate a higher rate of return out of their assets when scaled to paid up capital. The mean value NAPS which proxy market performance of the sampled banks was 2.54 while their median value was 2.63 respectively. This, therefore, means that banks with NAPS of 2.54 and above are classified as above average performing banks while those with their NAPS value below 2.54 were classified as below average in their performance. NAPS shows the ability of deposit money banks in Nigeria to generate profit from banks assets and reflect how well banks real investments resources to generate profits from an accounting perspective.

Capital adequacy ratio has a minimum value of 0.753% and a maximum of 2.180%; an average (mean) of 75.2% with a standard deviation of 61.6%. The average amount of CAR is higher than the minimum capital requirement of the BASEL and Central Bank of Nigeria (15%) showing that the banks have the ability to bear loss results from a loan default. The maximum and minimum values of capital adequacy ratio shows a positive value of 2.180 and 0.010 respectively while its median value reveals 0.529. The standard deviation for capital adequacy ratio was 0.616 demonstrating that out of the 12 selected deposit money banks in Nigeria, the capital adequacy ratio was spread around the mean with about 0.616 deviation around the mean. The skewness for the capital adequacy ratio was 0.799 meaning it was positive implying that most values on capital adequacy ratio were bunched to the left. The kurtosis for capital adequacy ratio was 2.473 which is less than 3 hence, it is said to be playtikurtic hence it may not have outliers.

The average profit to non-performing loan which proxy sensitivity ratio (SMR) in the deposit money banks for the last 11 years was 0.015 (1.5%) with standard deviations of 0.078. The sensitivity ratio of the deposit money banks is very moderate when compared to the world average (2-3%). The result, in general, implies that the accumulation of non-performing loan being offset by the profit of banks which was claimed as the critical problem of the banking sector was adequate as they are sensitive enough to manage the adverse effect of non-performing loans.

The mean values of credit to deposit ratio (CDR) of the selected banks was 0.492 while its median value was 0.399. The maximum value of credit to deposit ratio was 2.180 while the minimum value was 0.010. This means that it was only banks that adopted an aggressive

deposit mobilization to increase credit availability and develop a reliable credit risk management strategy with adequate punishment for loan payment defaults was chosen. The standard deviation for credit to deposit ratio was 0.427 demonstrating that out of the selected 12 deposit money banks in Nigeria, the credit to deposit ratio was spread around the mean with about 0.427 deviation around the mean. The skewness for the credit to deposit ratio was 1.539 meaning it was positive implying that most values on credit to deposit ratio were bunched to the left. The kurtosis for credit to deposit ratio was 5.870 which is greater than 3 hence it is said to be leptokurtic hence it may have few outliers.

Pearson Correlation Matrix

Pearson correlation matrix was applied to check the degree of association between credit risk management metrics and market performance so as to determine the nature or degree of association i.e. positive or negative correlation and the magnitude of the correlation between dependent variable (market performance) and independent variables with other explanatory variables. Correlation coefficient measures the direction and degree of association between two or more variables. It is worthy to note at this point that correlation measures association not causality. Correlation can be positive (>0) or negative (<0). A positive correlation means that two variables move in the same direction while a negative correlation means they move in opposite direction. Therefore, in examining the association among the variables, we employed the Pearson correlation coefficient (correlation matrix) and the results are presented in the table 2 below.

Table 2 Correlation Analysis Result

	NAPS	**CAR**	**SMR**	**CDR**
NAPS	1	-0.01051	0.013756	-0.17209
CAR	-0.01051	1	-0.01306	-0.20693
SMR	0.013756	-0.01306	1	-0.14455
CDR	-0.17209	-0.20693	-0.14455	1

Source: Researcher's summary of correlation result (2023) using E-view 12

The result of the correlation coefficient showed mixed correlation. This association identified buttresses the point that our variables have a linear relationship. Furthermore, the strength of the relationship between variables measured by the Pearson product-moment correlation showed that the association between the variables is relatively small and was below the threshold of 0.80, suggesting the absence of the problem of multicollinearity in the predictor variables. In this section we present and discuss the Pairwise correlations among the variables

of credit management variables and market performance. Table 2 shows that most of the correlation coefficients between the study variables are relatively low, nevertheless there are still some relatively high correlations between some of those variables. The above results show that there exists a positive and a very weak association between market performance measured using net assets per share and sensitivity ratio (NAPS and SMR = 0.0138). It was discovered that a negative and very weak association exists between market performance and capital adequacy ratio and credit to deposit ratio (NAPS/CAR and CDR = --0.0105/ -0.1721) respectively.

Going by the association between other explanatory variables, a negative correlation was documented against capital adequacy ratio and other explanatory variables (-0.0131 and -0.2069). In the same vein, sensitivity ratio documented an inverse correlation with all other explanatory variables (-0.1446 and -0.0851); while credit to deposit ratio documented a negative but very weak association with assets quality ratio (CDR and AQR = -0.1039). Therefore, in checking for multi-colinearity, the study noticed from the correlation table that no two explanatory variables were perfectly correlated. This indicates the absence of multi-colinearity problem in the model used for the analysis. This correlation matrix will not serve as a basis for generalization on the actual relationship between market performance and credit risk management as correlation matrix only gives a mere degree of relationship between the dependent and the independent variables themselves, this also justifies the use of the panel least regression.

Hausman Effect Test

The summary result of regression analysis is presented below. However, the study takes into cognizance the non-homogeneity nature of the deposit money banks in Nigeria, hence the need for testing its effect on the data. This necessitated the use of Hausman effect test to ascertain which effect to explain. That is whether fixed effect or random effect is to be used in interpreting the regression result or to ascertain that which is best to be adopted in the study since our data is a panel data with complete information.

Hausman Effect Test: Decision rule

H_0 – random effect is more preferable than fixed effect

H_1 – fixed effect is more preferable to random effect

When chi-square probability value is less than 5% – rejects H_0 and accepts H_1 ($P \leq 0.05$)

When chi-square probability value is greater than 5% – accepts H_0 and rejects H_1. ($P \geq 0.05$)

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Hausman test is used to decide between fixed effect model or random effect model. When the Chi square (Prob) value is greater than 5%, you interpret random effect and said that random effect is more preferred to fixed effect but when it is less than 5%, you interpret fixed effect and said that fixed effect is more preferred to random effect. Below is the summary of the Hausman test result:

Table 3 Hausman Effect Tests
Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	7.270878	5	0.2013

Source: Researchers summary of Hausman effect tests result (2023)

The Hausman test result above shows a chi-square statistics value of 7.2708 and probability value of 0.2013. This means that there is no homogeneity in the collection of the deposit money banks data. Since the Chi-square (Prob) value is more than 5%, hence we accept the random effect and interpret its regression while the fixed effect is rejected. Hausman test shows that the random-effects estimation (REM) method is more appropriate than the fixed effects (FEM) for all the deposit money banks in Nigeria; hence, the results from REM is presented and interpreted. Therefore, the study used the random effect to correct the problem of heterogeneity in the data used for the study; the random effect regression result is presented in table 4.

Table 4 Random Effects Regression Result
Dependent Variable: NAPS
Method: Panel EGLS (Cross-section random effects)
Date: 11/20/23 Time: 08:08
Sample: 2012 2022
Periods included: 11
Cross-sections included: 12
Total panel (balanced) observations: 132
Swamy and Arora estimator of component variances
White cross-section standard errors & covariance (d.f. corrected)
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.23190	4.179858	2.447906	0.0159
CAR	0.721860	0.882500	0.817971	0.4151
SMR	0.876656	7.016931	0.124934	0.9008
CDR	-2.294580	3.021835	-0.759333	0.4492

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Effects Specification			
		S.D.	Rho
Cross-section random		2.100686	0.1533
Period fixed (dummy variables)			
Idiosyncratic random		4.937827	0.8467
	Weighted Statistics		
R-squared	0.216018	Mean dependent var	2.540000
Adjusted R-squared	0.114641	S.D. dependent var	5.286844
S.E. of regression	4.974577	Sum squared resid	2870.584
F-statistic	2.130841	Durbin-Watson stat	2.018081
Prob(F-statistic)	0.012808		
	Unweighted Statistics		
R-squared	0.162625	Mean dependent var	2.540000
Sum squared resid	3432.521	Durbin-Watson stat	1.687701

Source: Random Regression result (2023) from Eview 12

The table 4 above shows the panel regression analysis of 12 deposit money banks in Nigeria. From the table above, the F-statistics value of 2.131 and their p-value of 0.0128 showed that the overall regression analysis of our variables in the regression model was generally significant at 5% level of significance and it shows that the model was well specified in explaining market performance of 12 deposit money banks in Nigeria. From the result above, the study observed that the R. squared value was 0.2160 (21.6%) approximately and R-squared adjusted value was 0.115 (11.5%). The value of R- squared which is the coefficient of determination stood at 21.6% which implies that 22% of the systematic variations in individual dependent variables were explained in the model while about 78% were unexplained thereby captured by the stochastic error term. Again, the adjusted R-squared which stood at 11.5% indicates that all the independent variables jointly explain about 12% of the system variation in market performance of our sampled banks in over the eleven (11) years period while about 88% of the total variations were unaccounted for, hence captured by the stochastic error term. This reveals that about 22% market performance via net assets per share can be attributable to the credit risk management selected for the study while about 78% were unexplained thus captured by other factors that are likely to improve market performance but were not included in the model. Moreover, the F-statistics value of 2.1308 and its probability value of 0.0128 shows that the market performance model used for the analysis were statistically significant at 5% level. This confirms the appropriateness of our model used for the analysis. The Durbin Watson statistics value of 2.0180 that the model is well spread

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since the value equals 2 and that there have not been self or auto correlation problem and that error are independent of each other.

Testing of Hypotheses

Hypothesis One

H_{01}: Capital adequacy ratio has no significant effect on market performance of deposit money banks in Nigeria.

H_{i1}: Capital adequacy ratio has significant effect on market performance of deposit money banks in Nigeria.

It can be observed from the regression Table 4 that capital adequacy ratio has a positive coefficient value of 0.7219. This reveals a very weak and positive effect on net assets per share of Nigeria banks. As indicated in Table 4, there is a positive relationship between CAR and NAPS. The minimum CAR requirement of deposit money banks in Nigeria is 15% whereas our average CAR was 75% (see descriptive statistics) which is higher than the minimum requirement, even though that capital adequacy ratio was found to be statistically insignificant but positively associated with the market performance of banks. By implication, this means that a 1% increase in capital adequacy leads to a corresponding increase in net assets per share of banks. This means that increases in capital adequacy ratio of Nigeria banks increases the likelihood for them to make profit. The bank has a reserve beyond the necessary amount enough to handle unexpected risk. As banks with strong capital base has every tendency of making profit in the long run. It maintains stability and protection against depositors and confidence on the deposit money banks in Nigeria. Thus banks with higher capital adequacy ratio have more incentive to increase their market performance as a result of effective management of shareholders fund. The t-value of 0.818 reveals that banks capital adequacy ratio has a weak effect on net assets per share of selected banks but its effect is not statistically strong enough to drive its market performance. The probability value of 0.4151 reveals that the effect of capital adequacy ratio on banks profitability in Nigeria is statistically insignificant. Therefore, accepts the second null hypothesis (H02), which states that capital adequacy ratio has no significant effect on market performance of deposit money banks in Nigeria.

This finding therefore supports our apriori expectation as well as the findings of Mardiana and Dianata (2018), Ogilo (2012) and Khouri (2011) that recorded negative and weak effect but disagrees with the findings of Hosna and Manzura (2009), Grace (2012), Hosna et al. (2009), Khouri (2011), Boland (2012), Li yugi (2007) and Adeusi, Akeke, Adebisi and

Oladunjoye (2013) that documented a positive and strong effect between capital adequacy risk and performance of banks.

Hypothesis Two

H_{o2}: Sensitivity to market ratio has no significant effect on market performance of deposit money banks in Nigeria.

H_{i2}: Sensitivity to market ratio has significant effect on market performance of deposit money banks in Nigeria.

The regression result in Table 4 revealed that sensitivity to market ratio has positive and insignificant effect on net assets per share of quoted deposit money banks in Nigeria with a positive coefficient value of 0.877% and t-statistics value of 0.1249 and a probability value of 0.9008 which is statistically insignificant not even at 10% level of significant. This positive effect implies that a 1% increase in the sensitivity of information given to bank managers informs managers about where there are some supervision problems and thus the enough preparations will be made to avert such problems thus increasing the net asset per share of banks. Increase in sensitivity to market ratio helps to measure the banks level of risk at the interest rates and exchange rates that may affect the capital adequacy of banks. This awareness increases the net assets per share of deposit money banks in Nigeria. The t-values of 0.1249 reveal that banks sensitivity to market ratio has a weak effect on market ratio of selected banks. The probability value of 0.9008 reveals that the effect of sensitivity to market ratio on banks market performance in Nigeria is statistically insignificant. As a result of this insignificant result documented, this leads to the acceptance of our third null hypothesis, therefore we conclude that there exist a weak and positive but insignificant effect between sensitivity to market ratio and market performance of deposit money banks in Nigeria. This finding therefore supports our apriori expectation as well as the findings of Masoud and Sema (2018), which noted positive effect of sensitivity to market ratio on market performance of deposit money bank in Nigeria.

Hypothesis Three

H_{03}: Credit to deposit ratio has no significant effect on return on assets of Deposit Money Banks in Nigeria.

H_{i3}: Credit to deposit ratio has significant effect on return on assets of Deposit Money Banks in Nigeria.

The analysis result of the effect of credit risk management on market performance of quoted deposit money Banks in Nigeria showed a coefficient value of -2.295, t-value of -0.759 and a P-value of 0.4492 for credit to deposit ratio variable. The coefficient value of -2.295 shows that credit to deposit ratio is negatively related to net assets per share of deposit money banks in Nigeria. The result suggests that Non-Performing Loans (NPL) which measures the extent of credit default risk sustained by deposit money banks have a negative effect on NAPS. The result in this study suggests the need for strong credit risk management to keep the level of NPL as low as possible which will help to maintain the high profitability level of the deposit money banks in order to increase the banks net assets per share. In order to reduce NPL, deposit money banks in Nigeria should evaluate the potential risk that may cause the borrower to default on its loan obligation. Therefore, based on t-statistics values of credit risk management and its coefficient, banks credit to deposit ratio (CDR) appears to be statistically insignificant and negatively associated with the market performance for banks in financial year. This indicates that an increase in the net assets per share level of banks leads to a decrease in their credit risk of selected banks to the tune of -2.29%. By implication, this means that a reduction in the banks nonperforming loans level will result to about 2.29% increase in banks net assets per share. There is evidence that lower non-performing loans values are significantly associated with a slight decrease in profitability level of banks. The higher the credit risk of banks, the lower the market performance of banks and this attract loss of potential investors to their banks. That is, it may not be the level of nonperforming loans that is significantly related to the level of net assets per share; rather, it is the amount of provision made that is negatively associated with the profit. The t-value of -0.759 reveals that banks credit to deposit ratio has a moderate effect on net assets per share of selected banks. The probability value of 0.4492 reveals that the effect of credit to deposit ratio on Nigeria banks market performance is statistically insignificant at 5% level of significance. The p-value result re-affirms the t-test statistics result.

This finding, therefore, supports our apriori expectation as well as the findings of Onyefulu, Okoye and Orjinta (2020), Etale, Ayunku and Etale (2016), Kagi (2011), and Alper and Anbar (2011) who documented negative and significant result between credit risk and firm performance but negates the findings of Harvey and Merkowsky (2008), Akonga (2014) that found positive and significant results. This result therefore accepts our fourth null hypothesis (H04), which states that credit to deposit ratio risk has no significant effect on market performance of deposit money banks in Nigeria and therefore rejects our alternate hypothesis

and conclude that credit to deposit ratio has no significant effect on market performance of banks which was statistically insignificant at 5% level of significance.

CONCLUSION AND RECOMMENDATIONS

This study observed that one of the major risks affecting market performances of Nigeria banks was the credit to deposit ratio since it was seen to have significant effect in all the banks whereas capital adequacy ratio and sensitivity to market ratio were peculiar with deposit money banks. It is therefore concluded that banks engaging in risk projects can either lose or gain and that informed decisions need to be adhered to in such scenarios. Consequently, managers of banks need to come up with strategies capable of managing these by taking into consideration return on shareholders assets when dealing with banks performance.

On the basis of the findings and conclusions of the study, the study made the following recommendations:

i. Nigeria banks should maintain strong capital base to boost their capital adequacy ratio even though it was found to have insignificant result.

ii. The study recommends that banks should manage sensitivity risks involved during their operations to minimize potential risks and losses involved even though it was found to have insignificant result.

iii. Adequate provision against loan loss should be made and Nigeria banks should adopt an aggressive deposit mobilization to increase credit availability and develop a reliable credit risk management strategy with adequate punishment for loan payment defaults.

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