CREDIT RISK MANAGEMENT EFFECT AND PROFITABILITY OF LISTED DEPOSIT MONEY BANKS IN NIGERIA

[1]Imeh Victor Adom, [2]Yua Henry, [3]S.A. Tyoakosu and [4]J.M. Korna

Abstract

This study empirically explored the effect of credit risk management on profitability of deposit money banks in Nigeria for the period, 2013-2023. The specific objectives of the study were to assess the effect of total loans to deposit ratio, nonperforming loans and capital adequacy ratio on the net interest margin of listed deposit money banks in Nigeria. Profitability was measured using Net interest margin (NIM). Ex-post facto research design was adopted for the study. The population of the study consist of the 14 deposit money banks listed on the Nigerian Exchange Group as at December, 21, 2023, where 12 listed deposit money banks were sampled for the study. Descriptive statistics was used to summarize the collected data while Panel regression technique was adopted in investigating the effect of credit risk management on profitability of listed deposit money banks in Nigeria 5% level of significance using STATA 15 software. The study found that total loans to deposit ratio has positive significant effect on the net interest margin of listed deposit money banks in Nigeria (p-value = 0.000< 0.05). Secondly, nonperforming loans ratio has positive significant effect on the net interest margin of listed deposit money banks in Nigeria (p-value = 0.047< 0.05). Lastly, the study found that capital adequacy ratio has negative significant effect on the net interest margin of listed deposit money banks in Nigeria (p-value = 0.000< 0.05). The study concluded that banks that comply with credit risk policies have a minimum risk exposure since their credit quality is high. The study recommended amongst others that regulatory policy requirements on non-performing loan should be maintained and deposit money banks should constantly review the credit risk control policies to ensure that every credit granted has a minimum risk on default.

[1,3,4] Department of Accounting and Finance, Joseph Sarwuan Tarka University, Makurdi
[2] Federal Polytechnic, Wannune Benue State.

INTRODUCTION

Bank profitability plays an essential role in the stability and growth of the financial sector in every economy globally (Yimka, 2015). Profitability refers to the ability of organizations to generate sustainable returns on their assets and equity, providing a cushion against risks and uncertainties, (Jianhua and Katler 2013; Wuave, Yua, and Yua, 2020).). In a similar vein, Jalloh (2017) stated that, profitability is a fundamental aspect of the banking sector, as it influences the allocation of resources, the availability of credit, and the overall economic growth of a nation. Accordingly, Chuke and Chinedu (2018) and Yua, and Temitope, (2024). mentioned that, profitability reflects the effectiveness and efficiency of banks in utilizing their resources to generate income and manage risks.

In recent years, the banking industry has witnessed significant changes and challenges. The aftermath of the global financial crisis, the advent of new technologies, regulatory reforms, changing customer expectations, and economic fluctuations have all contributed to an evolving banking landscape (Ali & Dhiman, 2019; Soomiyol, Bwuese, & Yua, 2023). Consequently, traditional banking models have undergone transformations, with a greater focus on cost efficiency and risk management (Adamu, 2022). This is why Adegbie, Asaolu and Enyi (2013) argued that, these factors have raised important questions regarding the profitability drivers of banks and the sustainability of their business models. In line with same thought pattern, Banu, Sayaduzzaman and Sil (2021) and Akwam, P. O., & Yua, H. (2021), explained that, understanding the profitability of banks requires an examination of various dimensions, but specifically, the internal factors. Internally, banks' profitability is posited to be influenced by their operational efficiency and credit risk management practices (Apere, 2016), while externally, macroeconomic conditions like interest rates and regulatory policies are among the key factors that affects bank profitability (John, 2016) and Soomiyol, , Teryima, Yua, & Temitope, (2024). The complex interplay between these factors presents a challenging landscape for researchers seeking to comprehend the dynamics of bank profitability.

Credit risk management is a concept that closely relates to uncertainty of adverse outcomes that do not reach the expected profit and negatively affect banks' loan management and profitability (Kafle, 2023; Yua, Yua, Ogbonna, 2021). Banks often have to apply the use of credit risk analysis to minimize adverse outcomes of losses in the course of giving out loans (Grace, 2012). In the banking context, risk asset refers to an asset owned by a bank (for example loans), whose value may fluctuate due to changes in interest rates, quality, and repayment (Ekinci & Poyraz, 2019).

It is worthy to note that, Kodithuwakku (2015) studied the possible effect of these credit risk management measures on profitability of banks in different regions and countries. Their research evidence produced mixed evidence. For example, while Saleh and Afifa (2020) found a positive effect on credit risk measures on profitability of banks in emerging market perspective, Munangi and Bongani (2020) specifically examined credit risk management and profitability in the context of South Africa and found a negative relationship. The reason for such contradiction could be due in part to limited institutional capacity, inappropriate credit policies, volatile interest rates, poor management, inappropriate laws, low capital and liquidity levels, directed lending/ poor lending practices, massive licensing of banks, poor loan underwriting, reckless lending, poor credit assessment, laxity in credit assessment, government interference and inadequate supervision by the central bank of different countries (Yimka, 2015; Yua, Ogohi, and Epor, 2022)

Despite the stringent regulations put in place by the central Bank of Nigeria and other regulatory bodies, the banking industry is still surrounded with the high credit risk in the form of non-performing loans. The rate of non-performing loans had its peak of 37.3% in 2009 and had a low rate of 3.0%in 2014 and it has been

increasing consistently to the rate of 11.4% in 2018 (CBN, 2019) and rate of 21.34% in 2022. (NBS, 2023) This also negatively affected the interest paid to customers on deposit on their savings in fact some banks pay and others don't pay at all. Credit risk management has often been a challenge to many deposit money banks in Nigeria, because despite the best practices measures in credit risk management put in place by the management of these banks, customers still have strong tendencies to delay or completely stop repayment of their loans, which often lead to problem of non-performing loans. The research gab exist in the adoption of variables used by past researchers, While most researchers such as Gadzo,Oduro and Asiedu,2019,Wanna and aoagueze, 2017 Li and Zou 2014; Ndusisi and Amedu,2018 ,Okpaand Egbe 2014 adopted return on assets, return on equity as proxy variables for profitability thereby giving conflicting findings. The current research effort is aimed at closing the gap by using Net interest margin (NIM) as proxy variable on profitability to determine the effect of credit risk management on profitability of deposit money Banks, Abdul-Maliq, Yua & Oje, (2024).

The broad objective of this research work is to examine the effect of credit risk management on profitability of deposit money banks in Nigeria. The specific objectives are to: assess the effect of total loans to deposit ratio on the net interest margin, non-performing loans ratio on the net interest margin, capital adequacy ratio on the net interest margin of listed deposit money banks in Nigeria.

2.0 LITERATURE REVIEW

2.1 Conceptual Framework

Conceptual framework is presented in a pictorial view of what the relationship between credit risk management and profitability looks like. The conceptual framework figure 1 below explains the relationship between credit risk management and profitability of banks

Figure 1: Conceptual Diagram
Credit Risk Management
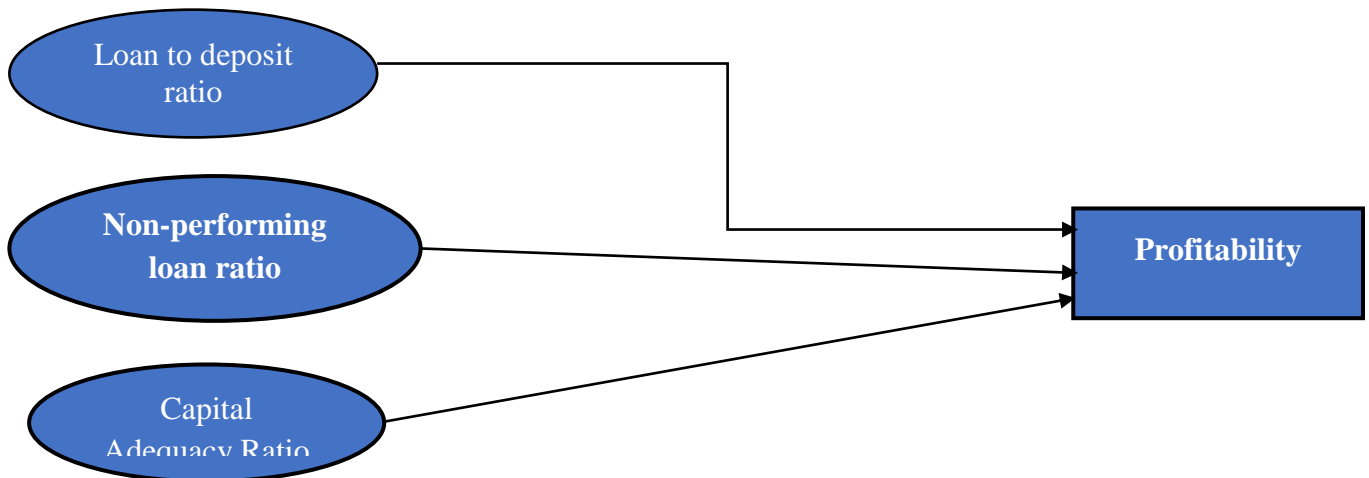
Credit Risk Management Components

Banks collect deposits from customers, which are risk assets due to their proneness to theft, destruction, or inflation. Many banks fail due to poor management of their lending portfolio, leading to liquidity or insolvency. The new Basel Accord requires banks to provide 8% minimum capital for operational risk, aiming to increase the Nigerian Regulatory Authority's minimum capital base. The Banks and Other Financial Institutions Act (BOFIA) regulates bank operations and restricts lending to avoid non-performing loans and ensure asset quality. However, Nigerian banks have faced challenges due to mismatches between assets and liabilities, leading to the

injection of N620 billion into the banking sector and the establishment of Assets Management Cooperation of Nigeria (AMCON), (Akani & Lucky, 2014).

b) Non-performing loans and banks financial performance

Non-performing loans (NPLs) are loan facilities that borrowers often struggle to repay, leading to bank failures in Nigeria. NPLs are bad debts with uncertain recovery due to their inability to be serviced as required. The health of a bank is not reflected by its balance sheet size but by the return on its assets, with earning power being an important indicator of bank performance. The quality of assets as security for a loan depends on the type and risk of loans granted to the borrower. The higher the ratio of assets to the total exposure of the borrower to the bank, the better for the bank. Sustaining sound assets quality involves careful granting of loans and compliance with banking rules (Akwam, & Yua, 2021). Poor assets quality affects the financial performance and soundness of the banking system. In Nigeria, the Banks and Other Financial Institution Act (BOFIA) 1990 regulates banks operations and restricts lending to avoid NPLs and ensure assets quality.

c) Capital Adequacy Ratio as Credit Risk Management Component

Capital adequacy is a principle that states that a bank's capital should match risks against its capital, as capital is the scarcest and costly resource. The Capital Adequacy Ratio (CAR) measures a bank's ability to absorb losses and sets standards for banks. A good CAR has enough capital to absorb potential losses, reducing the risk of insolvency. The formula for CAR is (Tier 1 Capital + Tier 2 Capital) / Risk-Weighted Assets. Value at Risk (VAR) is a tool for assessing capital requirements in terms of risk-based capital measurement and is a foundation of risk-based capital or economic capital. VAR is the upper bound of losses and is used to measure the appetite for risk of banks. The BASEL III requires the minimum capital adequacy ratio of banks operating at the international level to be 8%, while the CBN (2018) requires banks operating locally to maintain a capital adequacy ratio of 10% and those with international subsidiaries to maintain 15% of the set out standard of 16%. Profitability of banks is a crucial indicator of their ability to generate returns on investment, assets, and financial gains from their operations and activities. Analyzing profitability metrics like Net Interest Margin (NIM), Return on Assets (ROA), and Return on Equity (ROE) helps stakeholders assess a bank's performance and compare it to industry standards.

2.2.   Theoretical Clarification

This study is anchored on the modern portfolio theory to lend credence to the possible relationship between credit risk management and profitability of listed deposit money banks.

2.2.1 Modern Portfolio Theory

Modern Portfolio Theory (MPT), developed by Harry Markowitz in 1952, is a fundamental theory in finance that focuses on optimizing investment portfolios by considering the relationship between risk and return. MPT is a framework that focuses on banks' rational investment decisions and risk management strategies to maximize returns while minimizing risks. It is built upon two key principles: diversification and the efficient frontier. Diversification involves spreading investments across different assets to reduce the impact of individual asset volatility on the overall portfolio. The efficient frontier represents the set of portfolios that offer the highest expected return for a given level of risk or the lowest risk for a given level of return. MPT is particularly relevant to credit risk management in deposit money banks, as credit facilities are diversified into long and short-term facilities and sector-dependent to mitigate inherent risks. The Basel Accords, a series of international regulatory frameworks, have significantly influenced risk management practices in banks worldwide. Basel III emphasizes risk-based capital ratios, which require banks to efficiently maintain adequate loan to deposit ratios, nonperforming loan ratios, and a sound capital adequacy ratio.

2.3   Review of Related Empirical Studies

Kafle (2023) examined the impact of credit risk management on the profitability of Nepalese commercial banks using a pooled ordinary least square model. Results showed that capital adequacy ratio, loan to deposit ratio, cash reserve ratio, and bank size positively affect profitability, while non-performing loan ratio negatively affects it. However, the inclusion of bank size as a measure is criticized.

Butola, Dube and Jain (2022). Study examining the relationship between credit risk management and profitability in Indian banks found that factors such as credit to deposit ratio, operating profit to total assets ratio, and capital adequacy ratio positively affect profitability, while net interest margin, non-performing assets to net advances, and provision coverage ratio negatively affect profitability.

Adamu (2022) study analyzed the impact of credit risk management on the profitability of Nigerian deposit money banks from 2011 to 2020. Results showed that non-performing loans negatively affected profitability, while loan to deposit ratios had a positive effect. The study suggests that Nigerian banks should mitigate adverse selection risks through effective credit appraisal procedures.

Al Zaidanin and Al Zaidanin (2021) The study found that non-performing loans negatively impact Nigerian deposit money banks' profitability, while loan to deposit ratios positively affect it, suggesting the need for effective credit appraisal procedures.

Banu, Sayaduzzaman, & Sil, (2021). The study analyzed the impact of credit risk management indicators on the profitability of state-owned commercial banks in Bangladesh from 2012 to 2016. It found that various credit risk management indicators, such as loan and advance, classified loan, and leverage ratio, had insignificant effects on profitability attributes like return on assets and net profit percentage. The model should be revised to exclude leverage.

Saleh and Afifa (2020) investigated the effect of credit risk, liquidity risk and bank capital on bank profitability over a nine-year period (2010–2018) by examining empirical evidence from an emerging market. Their study is grounded on econometric panel data using GMM methods. The results from their study indicates that, credit risk, liquidity risk, and bank capital variables have an impact on bank profitability. Saleh and Afifa (2020) majorly used non-performing loan ratio as measure of credit risk management of the banks, to is in line with extant literatures and theories of credit risk management.

Munangi and Bongani (2020) The study analyzed the impact of credit risk on the financial performance of 18 South African banks from 2008 to 2018, using panel data regression techniques. Results showed that credit risk negatively impacted performance, while growth positively impacted it. This aligns with previous studies focusing on non-performing loan ratios.

Ekinci and Poyraz (2019) study in Turkey found a negative relationship between credit risk and return on assets and return on equity for 21 commercial banks. This suggests poor credit risk management in Turkish banks, necessitating effective measures to address the issue. However, the study lacks generalization as it only considers one aspect of credit risk management, neglecting other crucial aspects.

Ali and Dhiman (2019) The study examines the relationship between credit risk management and the financial performance of public commercial banks in India from 2010-2017. It uses panel regression analysis and considers credit risk management as an independent variable and profitability as a dependent variable. The results show a significant influence of credit risk management on banks' performance.

Namasake (2019) The study analyzed the impact of market risk on the financial performance of Kenyan commercial banks from 2010 to 2015, finding that financial leverage, interest rate, and foreign exchange exposure had significant negative and negative relationships with bank profitability.

Adegbie and Dada (2018) The study assessed the impact of risk asset and liquidity management on the sustainable performance of Nigerian Deposit Money Banks. Data was collected from all banks, and four hypotheses were tested. Results showed strong relationships between risk asset and liquidity management, with non-performing loans and low cash deposits negatively impacting assets and capital.

Rozina and Kumar (2018) The study examines the impact of non-performing loans (NPLs) on bank profitability using econometric techniques. Results show that NPLs make up over 50% of total loans on Dhaka Stock Exchange listed banks from 2008 to 2013. NPLs significantly negatively impact net profit margins, indicating a lack of risk management and a threat to bank profitability.

Chuke and Chinedu (2018) investigated the impact of credit risk management on the performance of deposit money banks in Nigeria using five banks that had highest asset base. Ex-post facto research design was adopted using dataset for the period 2000–2014 collated from the annual reports and financial statement of the selected deposit money banks. Three hypotheses were proposed and tested using ordinary least square regression model. Their study findings reveal that credit risk management had a positive and significant impact on total loans and advances, the return on asset and return on equity of the deposit money banks.

Ngozi (2018) examined non-performing loan and its effects on the stability of Nigerian banks with national and international operational licenses from 2014-Q2 to 2017-Q2. A restricted dynamic GMM is employed to estimate the macroeconomic and bank specific drivers of non-performing loan for each licensed category. Z-Score is constructed to proxy banking stability, and its response to shocks NPLs is examined in a panel vector autoregressive framework. Her results reveal that drivers of NPLs vary across the two categories of banks, but, weighted average lending rate is a vital macroeconomic driver of NPLs for both. Her study results also confirm the moral hazard hypothesis and risk-return trade off- efficient- market theory.

Timothy (2018) examined both bank specific variable (return on asset) and macroeconomic factors (gross domestic product, unemployment rate and exchange rate) determinants of non-performing loan of commercial banks in Nigeria. His research is an explanatory research design that identifies the cause and effect relationships between the non-performing loan and its determinants. Two commercial banks in Nigeria were sampled judgmentally. His study used secondary sources of data, which is panel data in nature, over the period 2010-2015. The study found that GDP ratio had positive relationship with ROA, whereas exchange rate as well as unemployment rate had negative relationship with ROA.

Mohiuddin and Shafir (2018) examined the effects of liquidity risk on performance of Islamic banks in Bangladesh. They analyzed the effect of liquidity risk on the Islamic banks performance for the period 2012 to 2016. ROA and ROE are used as Bank performance measurement tools and Loan to deposit ratio, liquid risky asset to total asset, capital to total asset ratio are used as liquidity indicators. Correlation and panel Regression analysis are done to find the effect of liquidity on bank performance. The correlation found significant relationship between Bank performance and liquidity indicators. On the other hand, regression analysis showed that there is negative significant relationship between bank performance and liquidity indicators.

Osayi and Audu (2018) The study investigates the impact of financial market derivatives on the performance of Deposit Money Banks in Nigeria. It uses profit after tax (PAT) and Derivative Financial Liabilities, Derivative Financial Assets, Trading Income on Derivative, and Total Asset as measures. The research found a positive relationship between Derivative Financial Assets and the performance of Nigerian banks, with total assets significantly influenced by derivative financial assets.

Lydnon, Peter and Ebitare (2016) The study analyzed the relationship between non-performing loans (BAL and DOL) and bank performance in Nigeria from 1994-2014. Results showed that high levels of non-performing

loans would reduce bank performance in the long run. The study supports Felix and Claudine's (2008) findings that non-performing loans negatively impact bank profitability, using return on asset (ROA) as a proxy.

Apere, (2016) The study examined the correlation between Nigerian banks' capital adequacy and return on assets from 2001 to 2014, using secondary data from the Central Bank of Nigeria and the World Bank. Using econometric techniques, the study found a long-term positive relationship between these variables.

Olawale (2015) The study investigates the impact of credit risk on commercial banks' performance, focusing on the negative impact of classified assets on bank capitalization. Results show a negative relationship between loan and advances ratio and profitability, but not significant at 5% significance.

Siyanbola, Oloaye and Olurin (2015) The study investigated the impact of gearing on the performance of Nigerian manufacturing companies. A survey design with twenty workers was used, and three hypotheses were tested. Results showed that efficiently managed gearing leads to increased earnings and competitive market standing, and a direct relationship between gearing and company performance.

LI Xiaodong and Zhang (2014) A study in China found that corporate risk-return relationships in the electric power and thermal industry are negatively influenced by past risk and performance expectations, while performance expectations and aspirations are positively influenced by corporate risk. This supports the Behavioral Theory of Firm's argument.

Tijani and Mathias (2013) also investigated corporate use of derivatives and financial risk management in Nigeria with evidence from non- financial firms. They employed multivariate analysis and logistic regression tests on SPSS version 18. Their findings revealed very low usage of derivatives. And this was traced to lack of knowledge on the use of derivatives and the underdeveloped nature of our financial market.

Ani et al. (2012) examined the determinants of bank profitability in Nigeria from 2001 to 2010. A sample of 15 deposit money banks (DMBs) was drawn which consisted of stand-alone banks and banks that retained their brand names after the 2005 bank consolidation exercise. Internal factors such as size, asset composition and quality, and capital adequacy were used. The study found out that size has significant negative relationship and asset composition shows a significant positive relationship with profitability.

Ogilo (2012) The study compares credit risk management on the financial performance of Kenyan commercial banks using secondary data from the Central Bank of Kenya. It found a strong impact of CAMEL components on bank performance, with earnings having a strong relationship with performance. The CAMEL model can be used as a proxy for credit risk management.

3.0 METHODOLOGY

3.1 Study Design

This research adopted the ex-post facto research design which involves the collection of data across banks on same key variables over specific time for the purpose of identifying a common trend of behavior amongst the banks. The design is useful in determining the prevailing behaviors in a population at a certain point in time, and is considered appropriate for the present study in other to explore the effect of credit risk management on profitability of listed deposit money banks in Nigeria.

3.2 Population of the Study

The population of the study consist of the 14 deposit money banks listed on the Nigerian Exchange Group as at December, 21, 2023. They are Access Bank plc, Fidelity Bank plc, Eco Bank,First city Monument Bank Limited, First Bank of Nigeria Plc, Jiaz Bank, Guaranty Trust Bank plc, Keystone Bank plc. Union Bank of Nigeria Plc, United Bank for Africa Plc, Zenith Bank Plc, Stanbic IBTC Bank plc, Sterling Bank plc and Wema Bank plc.

3.3 Sample Size and Sampling Technique

The sample for the study includes 12 listed deposit money banks. These banks are selected through a purposive sampling technique. The banks were selected based on the following criteria, firstly, Banks that report their finances in naira value, secondly, banks with complete data ranging from 2013 to 2023, As a result, Jaiz Bank is excluded on the basis of being listed in 2015 while, Eco-bank is excluded for reporting mostly in US Dollar values. The twelve banks selected that met the above criteria are as follows; Access Bank Plc, Fidelity Bank Plc, First City Monument Bank Limited, First Bank of Nigeria Limited, Guaranty Trust Bank Plc, Keystone Bank Plc, Union Bank of Nigeria Plc, United Bank for Africa Plc, Zenith Bank Plc, Stanbic IBTC Bank Plc, Sterling Bank Plc and Wema Bank plc.

3.4 Source of Data Collection

The study collected secondary data from the audited annual reports of the sampled deposit money banks under review which include reports/data on net profit, assets and liabilities, loans and advances, deposits, as well as performing and non-performing loans. These reports were used to calculate the loans to deposit ratio, nonperforming loan ratio, capital adequacy ratio, and the net interest margin ratio. The data collected spanned over a period of 10 (Ten) years for each deposit money bank ranging from 2013-2023

3.5 Instrument and Measurement of the Variables

In this sub-section, the measurement of the variables was done along the lines of dependent variable and the independent variable used in the study.

a) Dependent Variables

The dependent variable profitability was measured using the net interest margin (NIM) proxy. The NIM for a bank is measured as total interest revenue minus the total interest expenses divided by average earning assets in a given year.

b) Independent Variables

The independent variables in this study were represented by the credit risk management components proxy by total loans to deposit ratio (TLDR), Nonperforming Loans Ratio (NPLR), and Capital Adequacy Ratio (CAR). A tabular summary of the variable measurement is explained in table 2 below.

Table 1: Summary of Variables

Variable	Symbol	Measurement	Aprior-expectation	Class	Source
Net interest margin	NIM	Net int. margin total int. revenue- total exp. divided by average earning assets.	+	Dependent	Ani et al. (2012)
Loans –Deposit Ratio	TLDR	Total loans divided by total deposit	+	Independent	Adegbie and Dada (2018).
Non-performing loan ratio	NPLR	Non-performing loan divided by total loans	+	Independent	Butola et al. (2022)
Capital Adequacy ratio	CAR	Tier 1 and Tier 2 capital divided by risk weighted assets	+	Independent	Kwashie et al. (2022)

3.6 Techniques of Data Analysis

The descriptive statistics was used to summarize the collected data in a clear and understandable way using numerical approach. The Panel regression technique was adopted in investigating the effect of credit risk management on profitability of listed deposit money banks in Nigeria.

In evaluating the panel regression results, the Haussman specification test was used to select between fixed effect and random effect. The individual statistical significance test (T-test) and overall statistical significance test (F-test) was also used. Importantly, the goodness of fit of the model was ascertained using the coefficient of determination (R^2). The panel analysis was done after descriptive statistics, normality test, correlation analysis, variance inflation test (test for multicollinearity). All analyses was conducted at 5% level of significance using STATA 15 software.

Normality Test, in this case, the Shpiro-wilk w statistic test determines if the data series are normally distributed by evaluating the disparity of theShpiro-wilk w of the series compared with those from the normal distribution. TheShpiro-wilk w statistic test is a goodness-of-fit test of whether the sample data have theShpiro-wilkw matching a normal distribution.

The study employed different statistical instruments to test for the degree of multicollinearity of the model. The correlation matrix and the Variance Inflation Factor (VIF) was used for examining this. If the variance inflation result is above 10 then it calls for concern.

 A pooled OLS regression result was generated using the dataset. After the OLS regression result, the heteroskedasticity was conducted using Breuseh-pagan/cook Weisberg test for heteroskedasticity to check if the variability of error terms is constant.

3.7 Model Specification

The multiple regression model will be employed in this study as follows:

Net interest margin = f (loan to deposit ratio + nonperforming loan ratio + capital adequacy ratio)……………..
……………………………………………………………………….Model 1

The model is specified in econometric form as follows:

$NIM_{it} = \beta 0 + \beta 1 TLDR_{it} + \beta 2 NPLR_{it} + \beta 3 CAR_{it} + \varepsilon_{it}$…..... …………………………….....Model 2

Where; NIM= Net interest margin, TLDR=Total loans to deposit ratio, NPLR=Nonperforming loan ratio and CAR=Capital adequacy ratio.

4.0 RESULTS AND DISCUSSION

4.1 Descriptive Statistics

Table 2: Descriptive Statistics

Variables	Obs.	Mean	Std Dev.	Min.	Max
NIM	120	3.706223	1.821548	0.052536	6.993622
TLDR	120	0.121338	0.0843437	0.0000805	0.6422916
NPLR	120	0.2159172	0.061566	0.0221102	0.381285
CAR	120	0.1149617	0.1149617	0.0161	0.3007

Source: Stata Version 15 is output

The result in table 2 shows a total of 120 observations. This is because the study sampled 12 deposit money banks for a period of 10 years. The result indicates that there is one dependent and three independent variables in the data set. Based on the study period, the result proves that Net Interest Margin has a mean of 3.706 with a standard deviation of 1.822. This implies that credit risk management under investigation witness a high effect

on profitability using Net Interest Margin as a proxy of profitability. This result points to the fact that within the study period, credit risk management variables under investigation have high positive effect on Net Interest Margin. The descriptive statistic further show that NPLR has the highest mean (0.216) among the independent variables with a low variability of 0.062 while the minimum and maximum stand at .022 and .381 respectively. The TLDR and CAR have .121 and .115 as their mean with variation of .084 and .062 respectively. The maximum value of TLDR stand at .642 while minimum stand at .000, NPLR maximum value .381 and minimum is .022 and CAR has a maximum value of .301while the minimum value is .016.

4.1.1   Correlation Results

Table 3: Correlation between Explanatory Variable

Variables	TLDR	NPLR	CAR
TLDR	1.0000	-	-
NPLR	0.1632	1.0000	-
CAR	0.5373	0.3107	1.0000

Source: Stata Version 15 Output

Table 3 shows that the highest correlation amongst the independent variable is between CAR and NPLR is 0.3107. The correlation between TLDR and CAR is 0.537 and that NPLR and TLDR 0.1632 this clearly shows that there is absence of multicollinearity amongst the predictor variables. It is important to recall that multicollinearity problem amongst the independent variables in a data set is an issue that is capable of denying the researcher the use of multiple regression as a major technique for data analysis. Multicollinearity problem posit that, the independent variable are highly correlated in such a way that the effect of the separate explanatory variable cannot be felt on the dependent variable (Takumu, 2012).

4.1.2   Tests of Multicollinearity

To further authenticate the absence of multicollinearity issues in the data set, the variable inflation of factor specific estimation test was carried out to further confirm the absence of multicollinearity problems among the predator variables.

Table 4: VIF for Independent Variables

Variables	VIF	I/VIF
CAR	1.51	0.660181
TLDR	1.41	0.711260
NPLR	1.11	0.903460
Mean VIF	1.34	

Source: Stata version 15 output

The result in Table 4 shows that the average variance inflation factor among the predictor variables was 1.34 which is above 1 and below 10. The VIF of CAR 1.51 that of TLDR is 1.41 and NPLR is 1.11. This result coupled with that of correlation analysis authenticates that there is absence of multicollinearity among the independent variables.

Table 5: Heteroskedasticity Test

Breusch-pagan/cook Weisberg test for heteroskedasticity

Ho: Constant variance

Variable; Fitted values of NIM

Chi_2 (1) =28.16

Prob.> Chi_2 =0.0000

_____

Table 5 shows a pooled OLS regression result was generated using the dataset. After the OLS regression result, the heteroskedasticity was conducted using Breuseh-pagan/cook Weisberg test for heteroskedasticity to check if the variability of error terms is constant. The presence of heteroskedasticity indicate that the variation of the residual or error terms may not be constant and cold not affect inference made from beta coefficients. Coefficient of determination (R^2) and F- Statistics of the study model. The result of the test shows the presence of heteroskedasticity as the probability of Chi-square lies below 5% based on the P-Value of 0.0000.

4.1.3 Test of Normality

Test of normality is a statistical method used to check if a set of data follows normal distribution. To check the normality of the data, the Shapiro-Wilk (1965) test was used. Shapiro-Wilk test is a normality test with the null hypothesis statistics that a sample X1..... Xn originated from a usually distributed population (Shapiro &Wilk, 1965). Thus, the Shapiro Wilk test's null hypothesis is that usually the population is spread (Razali&Wah, 2011). In other words, if the p-value is lower than the alpha level selected, then the null hypothesis is dismissed and there is proof that the data being analyzed does not come from a normally distributed population. On the other side, if the p-value is higher than the alpha level selected, then it is not possible to reject the null hypothesis that the data collected originated from a normally distributed population (Razali&Wah, 2011).

Table 6: Shapiro-Wilk W Test for Normal Data

Variables	Obs	W	V	Z	Prob>z
NIM	120	0.15832	80.993	9.845	0.00000
TLDR	120	0.84030	15.368	6.121	0.00000
NPLR	120	0.95109	4.707	3.470	0.00026
CAR	120	0.87028	12.482	5.655	0.00000

Source: Stata Version 15 Output

The alpha concentration selected for this research was 5% (α=0.05). Thus, the Shapiro-Wilk test checked that NIM, TLDR, NPLR and CAR data values were normally distributed at the 5 percent significance level. As shown in table 6, NIM had a W-test of 0.15832, V-value of 80.993, Z value of 9.845, and a p-value of 0.00000. At a significant level of 5% (p<0.05), the test was statistically significant. The study, therefore, rejected the null hypothesis that all NIM data values were usually distributed and adopted the alternative hypothesis that not all NIM data values were usually distributed at a significant level of 5%. Also, TLDR had a W-test of0.84030, V-value of15.368, Z-value of6.121, and a p-value of 0.0000. At a significant level of 5% (p<0.05), the test was statistically significant. The study, therefore, dismissed the null theory that all TLDR data values were usually distributed and adopted the alternative theory that not all TLDR data values were usually distributed at a significant level of 5%.

This also applies to NPLR data values, which had a W-test coefficient of0.95109, Vvalue of 15.368, Z-value of 3.470, and a p-value of 0.00026, which indicates that the test was significant at a confidence interval of 95 percent. The study, therefore, rejected the null hypothesis that all NPLR data values were normally distributed and accepted the alternative hypothesis that all NPLR data values were not normally distributed at a significant level of 5%. Similarly, the W-test for CAR of 0.87028, V value of 12.482, Z-value of5.655, and a p-value of

0.00000, which indicates that the test was significant at a confidence interval of 95 percent. The study, therefore, rejected the null hypothesis that all CAR data values were normally distributed and accepted the alternative hypothesis that all CAR data values were not normally distributed at a significant level of 5%. Therefore, All the NIM, TLDR, NPLR and CAR data values were not normally distributed at α=5 percent (p<0.05) from the results of the test.

4.2.1   Hausman Specification Test

Hausman specification test generally compares two estimates. Under the null hypothesis, both sets of estimates are consistent but one is more efficient under the alternative hypothesis, only one set is consistent, first, Hausman test can be used to compare OLS and independent variable models.

Table 7: Hausman Specification Test Result

Test summary	Chi-Sq Statistics	Chi-Sqd.f	Prob>Chi2
Cross Section	12.16	3	0.0069

Source: Stata Version 15 Output

The result in table 7 shows the Hausman specification test with a Chi-Sq statistics 12.16, Chi-Sq D/F of 3 and a Prob> Chi2 0.0069which is less than 0.05, this indicates that the result is statistical significant. The test shows that fixed effects model gave a result of 0.0069 thus the fixed effect was used for the analysis.

Table 8: Test of Fixed Effect Estimate

Net Interest Margin	Coef.	Std. Err.	Z	P>|z|	(95% Cof.	Interval)
TLDR	1.932632	.1729833	11.17	0.000	1.589639	2.275626
NPLR	.3759507	.1874503	2.01	0.047	.0042714	.74763
CADR	-1.646493	.2155442	-7.64	0.000	-2.073877	-1.219108
Cons	-7.049682	4.218567	-1.67	0.098	-15.41432	1.314958
R-sq:						
Within	0.6073					
Between	0.8437					
Overall	0.6045					
Rho	.1685					
F(3,105)	54.12					
Prob>F	0.0000					

Source: Stata Version 15 Output

Table 8 shows the panel regression results of fixed effect model. The table present values for variable coefficients, standard error, t-values and probability values for the independent variables. Furthermore, R-squared, adjusted R-squared, Root MSE statistics and number of observations were presented. The value of R-squared is 0.6045 which shows that 61% of variability in Net Interest Margin (NIM) can be explained by the explanatory variables. The value of R-squared is considerably high and has a significant proportion of the dependent variable. It can be said that 61% variability in dependent variable (NIM) is predicted by independent variables while the remaining 39% variation in the NIM is predicted by some other variables which have not been considered in this study. Thus, such significant value of R^2 shows that the prediction level of dependent

variable by explanatory variables is reasonable enough. Just below the R^2 the value of adjusted R^2 0.6073 in the table provides a more accurate picture of overall explanatory power of independent variables by omitting the overestimation effect of the addition of more variables in the model. The value of adjusted R-squared is showing that almost 60% of the NIM is explained by the independent variables, which is a significant level. The random effect regression model of net interest margin is generally significant at 5 percent levels as shown by the F-statistics (60.19) and p-value (0.000) with a Root Mean Square Error (FMSE = 9.6193).

The probability value (P-value) of independent variables explains how reliably a dependent variable is being predicted by the independent variable. The probability values of independent variables are compared 5% level of significance an independent variable will be said influencing significantly to the dependent variable if the p-value of that particular variable is less than 5% otherwise its influence upon dependent variable will be considered insignificant.

Table 9: Test of Random Effect Estimate

Net Interest Margin	Coef.	Std. Err.	Z	P>|z|	(95% Cof.	Interval)
TLDR	1.630535	.1239655	13.15	0.000	1.387567	1.873503
NPLR	.326638	.1506857	2.17	0.030	.0312994	.6219766
CADR	-1.555606	.1763313	-8.82	0.000	-1.901209	-2.21003
_Cons	-3.364198	3.327881	-1.01	0.312	-9.886725	3.158328
R-sq:						
Within	0.6044					
Between	0.8404					
Overall	0.6089					
Rho	.000					
Wald chi2	180.57					
Prob> chi2	0.0000					

Source: Stata Version 15 Output

Table 8 shows that the Wald chi2is 180.57 and is greater than the critical value at 5% level of significance. Therefore, the variables which are the credit risk components are jointly significant in explaining the variations in net interest margin. The interclass correlation (rho) is 0.000implying that the variations in net interest margin are due to differences across the banks. The within and between R-square is 60% and 84% respectively. Thus, 61per cent of variations in the return on equity are due to differences within individual banks and 84per cent of the variations are due to differences between the banks. The overall R^2 is 60%, indicating that the variables considered in the model account for about 60% change in the dependent variables, while about 40% change may be as a result of other variables not addressed by this model. The p-value is 0.000 which is less than 0.05 level of significance.

4.2.2 Test of Hypothesis

H_{o1}Total loans to deposit ratio has no significant effect on net interest margin of listed deposit money banks in Nigeria.

To achieve this objective, the first hypothesis determined the effect of total loans to deposit ratio on the net interest margin of listed deposit money banks in Nigeria. The result of panel regression analysis presented in Table 8 demonstrated that total loans to deposit ratio has positive significant effect on the net interest margin of

listed deposit money banks in Nigeria with a coefficient value = 1.93(p-value = 0.000< 0.05). The null hypothesis which states that total loans to deposit ratio has no significant effect on net interest margin of listed deposit money banks in Nigeria was rejected and the alternative accepted

H$_{02}$Nonperforming loan ratio has no significant effect on net interest margin of listed deposit   money banks in Nigeria.

To achieve this objective, the second hypothesis determined the effect of nonperforming loans ratio on the net interest margin of listed deposit money banks in Nigeria. The result of panel regression analysis presented in Table 9 revealed that nonperforming loans ratio has positive significant effect on the net interest margin of listed deposit money banks in Nigeria with a coefficient value = 0.38(p-value = 0.038< 0.05). The null hypothesis which states that nonperforming loans ratio has no significant effect on net interest margin of listed deposit money banks in Nigeria was rejected and the alternative accepted

H$_{03}$Capital adequacy ratio has no significant effect on net interest margin of listed deposit money banks   in Nigeria.

To achieve this objective, the third hypothesis determined the effect of capital adequacy ratio on the net interest margin of listed deposit money banks in Nigeria. The result of panel regression analysis presented in Table 8 revealed that Capital adequacy ratio has significant effect on the net interest margin of listed deposit money banks in Nigeria with a coefficient value = -1.65(p-value = 0.000< 0.05). The null hypothesis which states that capital adequacy ratio has no significant effect on net interest margin of listed deposit money banks in Nigeria was rejected and the alternative accepted. The regression coefficient for capital adequacy ratio carries negative sign, it can be concluded that capital adequacy ratio has a negative significant effect on the net interest margin of listed deposit money banks in Nigeria.

4.3   Discussion of Findings

This study examines the effect of credit risk management on profitability of deposit money banks in Nigeria. The study used total loans to deposit ratio, nonperforming loans ratio and capital adequacy ratio as explanatory variables of credit risk management. In order to achieve the study objective, three hypotheses were formulated and tested. This section discussed the results of the hypotheses tested.

4.3.1   Effect of Total Loans to Deposit Ratio on the Net Interest Margin of listed   deposit money banks in Nigeria.

To achieve this objective, the first hypothesis determined the effect of total loans to deposit ratio on the net interest margin of listed deposit money banks in Nigeria. The result of panel regression analysis presented in Table 8 demonstrated that total loans to deposit ratio has positive significant effect on the net interest margin of listed deposit money banks in Nigeria with a coefficient value = 1.93(p-value = 0.000< 0.05). This result is consistent with the study done by Kafle (2023) who carried out a study on the impact of credit risk management on profitability of Nepalese commercial banks. The study used return on assets as profitability measurement and capital adequacy ratio, non-performing loan ratio, loan to deposit ratio, cash reserve ratio, and bank size as credit risk indicators. The study result revealed that, capital adequacy ratio, loan to deposit ratio, cash reserve ratio, and bank size have a positive significant effect on banks' profitability.

Also, the finding agrees with that of Butola *et al.* (2022) who carried out a study to investigate the statistical association between credit risk management and profitability within Indian banks. The findings of this study disagreed with that of Adamu (2022) who carried out a study to *assess the effect of credit risk management on profitability of deposit money banks in Nigeria. The study measured credit risk management using non-performing loan, loan to deposit ratio, loan loss provision and capital adequacy ratio while profitability was measured by return on asset. From his analysis, the study found that non-performing loan has negative*

significant effect on profitability, loan to deposit ratio has negative insignificant on profitability while loan loss provision has positive significant effect on profitability and capital adequacy ratio has negative insignificant effect on profitability of deposit money bank in Nigeria

4.3.2 Effect of Nonperforming Loans Ratio on the Net Interest Margin of Listed Deposit Money Banks in Nigeria

To achieve this objective, the second hypothesis determined the effect of nonperforming loans ratio on the net interest margin of listed deposit money banks in Nigeria. The result of panel regression analysis presented in Table 8 revealed that nonperforming loans ratio has positive significant effect on the net interest margin of listed deposit money banks in Nigeria with a coefficient value $= 0.38$(p-value $= 0.047 < 0.05$). This result agreed with that of Lydnon, Peter and Ebitare (2016) who investigated the relationship between non-performing loans and bank performance in Nigeria. The results show that high level of non-performing loans would reduce the performance of banks in the long run in Nigeria.

The findings disagreed with that of Ekinci and Poyraz (2019) who carried out an investigation to assess the effect of credit risk on financial performance of deposit banks in Turkey. More so, the findings disagreed with that of Rozina and Kumar (2018) who analyzed the impact of non-performing loan (NPL) on profitability. They found that non- performing loan is one of the major factors of influencing banks profitability and it has statistical significant negative impact on net profit margin (NIM) of listed banks.

4.3.3 Effect of Capital Adequacy Ration the Net Interest Margin of Listed Deposit Money Banks in Nigeria

To achieve this objective, the third hypothesis determined the effect of capital adequacy ratio on the net interest margin of listed deposit money banks in Nigeria. The result of panel regression analysis presented in Table 8 revealed that Capital adequacy ratio has significant effect on the net interest margin of listed deposit money banks in Nigeria with a coefficient value $= -1.65$(p-value $= 0.000 < 0.05$). The regression coefficient for capital adequacy ratio carries negative sign, it can be concluded that capital adequacy ratio has a negative significant effect on the net interest margin of listed deposit money banks in Nigeria. This finding supported that of Ali and Dhiman (2019) who explored an empirical association between the credit risk management and banks' financial performance.

Also, the finding agreed with that of Al Zaidanin and Al Zaidanin (2021) who examined the extent to which capital adequacy ratio, non-performing loans ratio, cost-income ratio, liquidity ratio, and loans-to-deposits ratio impact the financial performance of sixteen commercial banks operating in the United Arab Emirates. The findings are consistent with that of Munangi and Bongani (2020) who examined the credit risk impact on the financial performance of eighteen banks of South Africa. The study considered non-performing loans (NPLs) and capital adequacy (CAs) as an indicator of credit risk and return on equity (ROE) and return on assets (ROA) as variables for the financial measurement of the banks under study.

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study examined the effect of credit risk management on profitability of deposit money banks in Nigeria. The study adopted ex-post factor research design using audited annual reports of sampled deposit money banks under review. Data was analyzed using panel regression analysis; the analysis was run using STATA version 15. The study found that:

1. Total loans to deposit ratio has positive significant effect on the net interest margin of listed deposit money banks in Nigeria

2.	Nonperforming loans ratio has positive significant effect on the net interest margin of listed deposit money banks in Nigeria

3.	Capital adequacy ratio has negative significant effect on the net interest margin of listed deposit money banks in Nigeria

## 5.2	Conclusion

This study aimed to determine how credit risk management affected banks' profitability in Nigeria. Twelve (12) deposit money banks listed on the Nigerian stock exchange were used to achieve the objective, and panel data was collected. The study utilizes panel regression to establish the link between the dependent and independent variables. Based on the summary of findings in this study and the banks investigated, it has been concluded that banks that comply with credit risk policies have a minimum risk exposure since their credit quality is high.

## 5.3	Recommendations

Based on the findings and conclusion from the empirical analysis of this research work, the following recommendations through which they can work to improve credit risk management and to have an effective role in achieving Banks profitability in Nigerian Banking system are put forward.

1.	From a regulatory point of view and according to the study findings, it is recommended that the regulatory policy requirements on non-performing loan should be maintained and deposit money banks should constantly review the credit risk control policies to ensure that every credit granted has a minimum risk on default.

2.	This study recommends that given the importance of capital adequacy ratio to solvency, listed deposit money banks in Nigeria should sustain the current capital base. This will enable them to continue to be solvent and at same time reduced the chances of failure of the financial sector.That capital adequacy of the various banks should be closely monitored in such a way that it will not be less than the minimum deposit of CBN provision. With this the financial health and strength will not be jeopardized.

3.	According to the study findings, which shows that total loans to deposit ratio has positive significant effect on the net interest margin it is recommended that management of listed deposit money banks in Nigeria should enhance their ability in loan analysis appraisal and loan administration. The banks should clearly state their credit policies and lending guidelines and well established. Management also is required to make sure that the terms and conditions are adhered to in loans approval.

The bank management should endeavor to develop rigorous and robust credit policies that will prevent the effect in the non-performing loans

REFERENCES

Abata, M. (2014). Assets quality and bank performance: A study of commercial banks in Nigeria. *Research Journal of Finance and Accounting,* 5(18), 39 – 44.

Abba, G., Zachariah, P. &Iyang, E. (2013). Capital adequacy ratio and banking risks in the Nigeria money deposit banks. *Research Journal of Finance and Accounting,* 4(17), 222-267.

Akwam, P. O., & Yua, H. (2021). Effect of Financial Products on the Performance of Selected Deposit Money Banks in Nigeria: 2005-2019. *European Journal of Accounting, Auditing and Finance Research,* 9, 124-143.

Abdul-Maliq, Y. O., Henry, Y., & Oje, T. A. (2024). Bank Recapitalization in Nigeria: Why

Adamu, E. (2022). Effect of credit risk management on profitability of deposit money banks in Nigeria. *TSU-International Journal of Accounting and Finance*, 1(2), 12–24. Retrieved from http://tsuijaf.com/index.php/tsuijaf/article/view/28

Adegbie, F. & Dada O. (2018). Risk assets management liquidity management and sustainable performance in Nigeria deposit money banks. *International Journal of Finance Studies,* 2(2), 34-45.

Adegbie, F., Asaolu, T. &Enyi, E. (2013). Distress resolution in Nigerian banking sector: The role of assets and liabilities management. *International Journal ofFinancial Research,* 4: 70-82.

Adekunle, A., Ishola R. & Felix A. (2011). The challenge of risk management in Nigerian banks in the post consolidation era. *Journal of Accounting and Taxation*, 3(2), 23-31.

Adeusi, S., Akeke, N., Obawale, S. &Oladunjoye, O. (2013). Risk management and financial performance of banks in Nigeria. *Journal of Business and Management,* 14(6), 29-40.

Agbakoba, O. (2005). *Issues on bank consolidation and recapitalization.* CALAD National Lagos.

Akani, H. & Lucky, A. (2014). Money supply and aggregate stock prices in Nigeria: An analysis of co-integration and causality tests. *Research Journal of Finance,* 2(10), 1 – 24.

Akindele, R. (2012). Risk management and cooperate governance performance: Empirical evidence from Nigerian banking sector. *International Journal of Finance and Economics,* 6(5), 72-78.

Ali, R. &Dhiman, S. (2019). The impact of credit risk management on profitability of public sector commercial banks in India. *Journal of Commerce & Accounting Research,* 8(2), 86-92.

Al-Tamimi, H. & Hassan, A. (2010). Factors influencing performance of the UAE Islamic and conventional national banks. Department of Accounting, Finance and Economics, College of Business Administration, University of Sharjah.

Ani, W., Ugwunta, O. & Imo, G. (2012). Determinants of banking industry profitability in Nigeria: A bank-Specific and macroeconomic characteristics analysis. *Elixir Finance,* 45(1), 7714-7719.

Apere, T. (2016). Return on assets and capital adequacy of banks in Nigeria. *Advances inSocial Sciences Research Journal,* 3(12)139-149.

Bank of International Settlements (2010). Implementation of Basel II: Practical Consideration on the Basel Accord Framework. East Africa Research Papers in Business.

Banu, H., Sayaduzzaman, M. &Sil, S. (2021). The impact of credit risk management indicators on profitability attributes: Evidence from the state-owned commercial banks in Bangladesh. *American Journal of Trade and Policy*, 8(3), 215-225.

BASEL (BCBS, 2010). Basel Committee Reaches Agreement on new capital Issue, Business releases 10. Business Economics and Tourism.

Ben-Naceur, S. &Omran, M. (2008). The effects of bank regulations, competition and financial reforms on MENA banks' profitability. *Economic Research Forum Working Paper No. 44.*

Butola, P., Dube, P. & Jain, V. (2022). A study on impact of credit risk management on the profitability of Indian banks. *International Journal of Management and Sustainability,* 11(3), 103-114.

Choi, S. (2011). Towards an operational model of corporate governance. *International Journal of Technology Management and Sustainable Development, 168.*

Chude. N. &Izuchukwu C. (2014). The relationship between regulatory inconsistencies and Nigerian banking industry. *Global Journal of Management and Business Research,* 14:45-72.

Chuke, E. &Chinedu, O. (2018). Impact of credit risk management on the performance of selected Nigerian banks. *International Journal of Economics and Financial Issues,*8(2), 287-297.

Chuke, E. &Chinedu, O. (2018). Impact of credit risk management on the performance of selected Nigerian banks: Evidence from national and international licensed banks in Nigeria. *CBN Journal of Applied Statistics,* 9(2), 23-33.

Edwin, J. & Martin, J. (1997). Modern portfolio theory, 1950 to date. *Journal of Banking and Finance,* 21, 1743-1759.

Ekinci, R. &Poyraz, G. (2019). The effect of credit risk on financial performance of deposit banks in Turkey. *Procedia Computer Science*, 158(2019), 979–987.

Grace, N. (2012). The effect of credit risk management on the financial performance of Commercial banks in Kenya; unpublished MBA project, School of Business, University of Nairobi.

Harish, A. (2011). Potentials of derivatives markets in India. *The ICFAL Journal of Applied Finance,* 7(5), 1-24.

Jalloh, M. (2017). Impact of capital adequacy on the performance of Nigerian banks. *Journal of Banking and Finance,* 21, 1743-1759.

Jensen, M. &Meckling W. (1976). Theory of the firm managerial behavior agency costs and ownership structure. *Journal of Financial Economics* 3(7), 55-87.

Jianhua, C. &Katler, J. (2013). Is the Risk-Return Trade-off Hypothesis valid: A Portfolio Performance Evaluation Study of the Swedish Stock Market. Department of Economics-University-of-Gothenburg (Thesis):

John, N. (2016). Nonperforming loans portfolio and their effect on bank profitability in Nigeria. *Independent Journal of Management & Production,* 7(2), 22-36.

Kafle, R. (2023). Impact of credit risk management on profitability of Nepalese commercial banks. *International Journal of Finance and Commerce,* 5(1), 32-39.

Kolapo T., Ayeni, R. &Oke, M. (2012). Credit risk and commercial banks performance in Nigeria: A panel model approach. *Australian Journal of Business and Management Research,* 2, 31-38.

Krantz, J. & Zhang, J. (2013). *The risk return hypothesis and financing decision; Lessons Banks executive.* 2nd edition, New York publication.

Kwashie, A., Baidoo, S. &Ayesu, E. (2022). Investigating the impact of credit risk on financial performance of commercial banks in Ghana. *Cogent Economics & Finance,* 10:1, 2109281.

Lenee, T. & Oki, J. (2016). Financial derivatives and firm performance: Empirical evidence from financial and non-financial firms. *British Journal of Economics, Management and Trade,* 16(4), 1-36.

LI Xiaodong Y. & Zhang R. (2014). Determinants of corporate risk taking and risk-return relationship. *Canadian Journal of Social Science*, 10(2), 24-39.

Luyali, N. &Mouni, G. (2014). Effects of use of derivatives on financial performance of listed firms in Nairobi Security Exchange. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 4(4), 27-43.

Lydnon, M., Peter, E. &Ebitare, L. (2016). The impact of non-performing loans and bank performance in Nigeria. *International Journal of Humanities and Social Science Invention,* 5(4), 89-101.

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

Markowitz, H. (March 1952). Portfolio Selection. *Wiley for the American Finance Association, The Journal of Finance,* 7 (1), 77–91.

Modigliani, F. & Miller, M. (1958). The cost of capital corporation finance and the theory of investment. *The American Economic Review,* 48(3), 261–297.

Munangi, E. &Bongani, A. (2020). An empirical analysis of the impact of credit risk on the financial performance of South African banks. *Academy of Accounting and Financial Studies Journal, 24*(3), 1-15.

Namasake, W. K. (2019). The effect of market risk on the financial performance of commercial banks in Kenya. A Research Project Submitted to the School of Business, University of Nairobi.

Nguyen, H. & Faff, R. (2003). Can the use of foreign currency derivatives explain variation in foreign exchange exposure? Evidence from Australian companies. *Journal of Multinational Financial Management,* 13, 193-215.

Njogo, B. (2012). Risk management in the Nigerian banking industry. *Kuwait Chapter of Arabian Journal of Business Management*, 1(3), 327-332.

Ogilo, F. (2012). The impact of credit risk management on financial performance of commercial banks in Kenya. *DBA Africa Management Review,* 2012, 22-37.

Olawale, L. (2015). The effect of credit risk on the performance of commercial banks in Nigeria. *African Journal of Accounting, Auditing and Finance,* 4(1), 10-22.

Olusanmi, O., Uwuigbe, U. &Uwuigbe, O. (2015). The effect of risk management on bank's financial performance in Nigeria. *Journal of Accounting and Auditing: Research & Practice,* 1(1), 1-7.

Regina, G. (2012). Performance evaluation of Nigerian commercial banks: Before and after consolidation. *IJERMR,* 2(3), 55-67.

Robert, O. (1974). An evaluation of the risk-return hypothesis: A study of security market performance. A dissertation in business administration submitted to the Graduate Faculty of Texas Tech University.

Saleem, Q. &Reheman, R. (2011). Impact of liquidity ratios on profitability. *Interdisciplinary Journal of Research in Business,* 1(7), 95-98.

Saunders, S. & Cornett, T. (2007). *Financial markets and institutions: An Introduction to the Risk Management Approach.* New York: McGraw Hill Pub.

Shanker, L. (1996). Derivatives use and interest rate risk of large banking firms. *The Journal of Futures Markets,* 16(4), 459-474.

Sokefun, A. O. (2015). Liquidity risk and profitability: An assessment on Basel Committee on Bank Supervision. BIS Publication.

Somoye, R. (2010). The variation of risks on non-performing loans on banks performance. *Indian Journal of Economic and Business,* 9(2), 123-129.

Tijani, O. & Mathias, G. (2013). Derivatives and financial risk management in Nigeria: Evidence from non-financial firms. *African Journal of Scientific Research,* 11(1), 622-640.

Soomiyol, M.T, Teryima, A.J., Yua, H. & Temitope, A.O. (2024). Mediating Effect of Investors on the Relationship between Sustainability Disclosure and Market Value of Deposit Money Banks in Nigeria. Scholarly Journal of Management Sciences Research, 3(8), 43-64. DOI: 10.5281/zenodo.13923369

Soomiyol, M., Bwuese, B. & Yua,H. (2023). Effect of Prudential Guidelines on the Financial Performance of Deposit Money Banksin Nigeria, Journal of Global Accounting, 9(4),118-146

Timothy, A. (2018). Effect of non-performing loans on bank performance of some selected commercial bank in the Nigerian banking sector. *International Journal of New Technology and Research* 4(4), 34-50.

Ugwuanyi, G. &Ewah, E. (2015). Bank capital requirement as regulatory tool in Nigeria: A critique approach. *International Journal of Economics Commerce and Management,* 3(2), 55-67.

Wuave, T., Yua, H., and Yua, P.M. (2020). Effect of Liquidity Management on The Financial

 Performance Of Banks in Nigeria, *European Journal of Business and Innovation Research*, 2(1)33-51

Yimka, W. (2015). Credit risk policy and its impact on deposit money banks in Nigeria: A critical assessment on regulatory framework. *Journal of Finance and Accounting,* 7(12), 342-453.

Yua, H., Ogohi, D.C. and Epor, S.O. (2022). Testing the Nexus between Financial Inclusion and

 Banks' Performance in Nigeria: The Role of Financial Technology. *World Scientific News,* 175(12), 37-52.

Yua H, Yua P, Ogbonna, KS. (2021). Deposit money bank's credit and industrial output in Nigeria *International Journal of Economics, Business and Management Research*. 5(2):147-156.

Yua, H., & Temitope, A. O. (2024). Effect Of Risk Management on Financial Institutions In

Sub-Saharan Africa: A Critical Review of Nigeria and Mozambique. *British International Journal of Applied Economics, Finance and Accounting*, *8*(3), 59–79. Retrieved from https://aspjournals.org/Journals/index.php/bijaefa/article/view/673