



CREDIT RISK MANAGEMENT AND FINANCIAL PERFORMANCE OF SELECTED BANKS IN NIGERIA

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Abstract

This study examines the effect of credit risk management on the financial performance of some listed Deposit Money Banks (DMBs) in Nigeria spanning the period 2015 - 2019. The study used Ordinary Least square (OLS) regression estimation technique. Findings of the study discovered that loans and advances has significant influence on Return on Asset ($p < 0.05$). However, the study found Non-performing loans to have an insignificant association with ROA ($p > 0.05$). Consequently, this study recommends that rigorous credit risk management practice should be encouraged by the regulatory authorities in order to ensure long term survival of deposit money banks in Nigeria. Furthermore, Nigerian DMBs need to put in place modern strategies to curtail their exposition to credit risk and improve their financial performance with a view of protecting the interest of investors and other stakeholders.

Keywords: Credit Risks, Deposit Money Banks, Financial Performance, Nigeria.

JEL Classification: L4

Introduction

Risk is inherent in any business enterprise, and good risk management is an essential aspect of running a successful business (Maverick, 2021). Credit risk management has been an essential part of the loan process in banking. According to Choudhary (2021), credit risk is in fact regarded as the most important intermediating role of Deposit Money Banks' (DMBs). The success of every bank depends on how efficient they are in managing their risk assets in relation to other type of risks such as operational risk, political risk, market risk and liquidity risk (Adeusi, Akeke, Adebisi, & Oladunjoye, 2014). Banks use customers deposit to generate credit for their borrowers, which is a revenue generating activity for them. This credit creation process exposes the banks to high default risk which might lead to financial difficulties resulting in high non-performing loans and eventual bankruptcy (Maverick, 2021; Sanusi, 2012). Banks are

the most regulated sector in any economy consequent upon the risks involved in its operation (Sanusi, 2012). Therefore, credit risk management is a discipline every partaker in the industry should embrace. Hence, it is the more reason why risk management occupies a central position in the decision process of bank executives (Lyndon, Peter & Ebitare, 2016). Current and prospective investors and even the general public do approach banks for loans and overdrafts that constitute toxic assets which necessitate provisioning by the banks.

One of the indices for measuring the financial stability of any economy is the financial performance of banks. This is with regard to their ability of granting credits for productive investments so as to accelerate the speed of development and growth of the economy (Kolapo, Ayeni & Oke, 2012). Credit is the most difficult risk exposure to manage by the banks because it is not only linked to the problem of collaterals but also linked to the general

macroeconomics volatilities of nations. Thus, the survival of Deposit Money Banks (DMBs) is significantly determined by how efficiently they manage credit risks. This brings the need for bank credits to be constantly studied. With globalisation in business operations, the Nigerian banking sector has recently become more sophisticated in terms of their operations of facilitating credits (Adegbe & Adebajo, 2020). There are various regulatory frameworks instituted by the Central Bank of Nigeria and other regulatory bodies in an attempt to align with global best practices in banking operations. One of such developments is the consolidation and recapitalization banks which started in 2004. Other serious effort in Nigeria's banking reform include sanctioning erring top bank officials for violating standardized with regards to credit management (Sanusi, 2012).

Study by Osuka and Amako (2015) found very high bad and doubtful debts in the Nigerian DMBs. The scholars conclude by advising managers for prudent risk management. These according to the researchers should be done by identifying, assessing, and prioritizing risks thereby controlling unfortunate events. DMBs are saddled with various kinds of risks as their intermediating services of lending activity (Adeusi & Dada, 2017). According to the Central Bank of Nigeria, loan and other credit advances are typically the largest asset and main source of revenue to banks. It is also the greatest source of risk to a bank's safety as a going concern (CBN, 2018). Risk management is seen as the process of identifying risks, measuring their impact, deciding on a course of action, and evaluating the results. Adeusi and Dada (2017) asserted that credit risk management is important to bank management because banks are 'risk machines', they take risks and transform them to banking products and services. Hence, an effective credit risk management framework most seeks to maximize the benefits of a risky situation while minimizing the negative effect of those risks. Banks in Nigeria fail in the past due to inadequate management of their risk portfolios which affects performance leading to reduced profitability (Uwalomwa, Uwuigbe & Oyewo, 2015; Ogbulu & Eze, 2016).

Examples of banks that eventually fail include Intercontinental, Oceanic, and Equatorial Trust, Bond and recently Diamond and Skye banks. These problems have continued to impact negatively on banks with serious adverse consequences. Against this background, therefore, this study set to empirically examine the impact of credit risk management on the performance of selected deposit money banks in Nigeria post consolidation. Previous empirics on the effect of credit risk management on banks' performance in Nigeria produced mixed results. This implies that credit risk management and bank performance in Nigeria is theoretically and empirically ambiguous. Hence, this study further seeks to contribute to the growing body of awareness on the subject in order to bridge the knowledge gap. Based on the foregoing therefore, the objectives of this study is to examine the impact of credit risk management on the profitability and to evaluate the effect of loans and advances on the profitability of Nigerian banking system.

Literature Review

The Nigerian banking industry has achieved great prominence recently due to the recapitalization exercise which began 2004. The influence of DMBs on the economic development of Nigeria today cannot be overemphasized due to its predominant role in granting credit facilities (Mafumbo, 2020). It is noteworthy that DMBs in Nigeria should go in-line with the global recognition of the imperative of effective risk management and control systems (Adeusi, Akeke, Adebisi & Oladunjoye, 2014). It is therefore important that banks needs to standardize their credit operating procedures, raise operating efficiency, improve credit quality and minimize credit risks (Nwanna & Oguezie, 2017). This will enable the banks to survive in today's highly competitive market and sustain its profitability for the benefit of its stakeholders. Credit risk management gives you critical information and guidance on credit portfolio, risk measurement, loan pricing and structuring, and portfolio diversification. The ultimate goal of any credit risk management is to maximize the risk adjusted rate of return of banks by maintaining credit risk exposure within acceptable limit (Alphonsus, 2019).

In order to provide a clear understanding of the impact of credit risk management on banks profitability. This chapter is divided into five sections which include; concept of credit, evaluation of credit risk, banks and credit risk management, principle of credit risk management, benefit of effective credit risk management and the theoretical framework.

Concept of Credit Risk

Risk is the possibility that the actual return of an investment will differ from the expected return (Adeusi, Akeke, Adebisi & Oladunjoye, 2014). Risk can further be defined as the possibility of losing the principal invested and the interests accrued either partially or completely. Credit risk is the risk that a borrower defaults and does not honor its obligation to service debt (Olabamiji & Michael, 2018). Risks occur when the borrower is unable to pay his debts as agreed or fails to make timely repayment of his debts. The default of a small number of customers may result in a huge loss to the bank (Alphonsus, 2019). Effective credit risk management is inseparably linked to the development of banking technology that enables high speed loan decision making and simultaneously reducing the cost of control. As earlier stated, credit risk is the most significant risks of banks by the nature of their operations (Choudhary, 2021). Through their effective management of credit risk portfolio, banks not only ensure profitability but also contribute to their quota to systemic stability and efficient allocation of capital within the economy (Iwedi, & Onuegbu, (2014).

Evaluation of Credit

The devastating effect of credit losses due to non-performing loans and advances makes sound evaluation of credit request in Nigerian banks (Alobari, Naenwi, Zukbee & Grend, 2018). Credit officers of banks need to properly evaluate and articulate every project proposal brought by customers taking cognisance of prevailing economic conditions. Mathur (2015) posits that, safety, suitability and profitability are the basic principles for evaluating credits. The safety of any loan advance is of paramount importance to the bank granting it. Banks must further the principle of honesty, integrity and

reliability otherwise known as emphasize among other things, “character principle” of borrowers before granting credits (Mathur, 2015).

Credit evaluation is the final stage of the consumer credit process. It is the stage where decision is made to either approve or reject the credit. Credit evaluation is not based on a single cause but on how an applicant matches up to a set of lending policy framework of the bank. These lending criteria inherently reflect the risk attitudes and risk tolerance levels of the bank concerned. The criteria further reflect the business policies, strategies, and risk propensity of the bank in doing business. The risk attitudes, tolerance, business philosophy, policies and strategies however vary from one bank to the next. Ultimately however, banks will only assume risks that they find comfortable and acceptable within the limits set by their organizational framework. Normally banks rely on simple financial performance models. These model is the 5 `C`s, of lending (Mathur, 2015. This 5 `C`s are: character, capital, cash, collateral and condition. Although subjective in approach, every bank credit risk manager is expected to address these models in varying degrees. The 5 `C`s of lending can briefly be explained as follows:

i **Character:** - These refer to the customer’s willingness and ability to honor his obligations (Kurfi, 2003). To lenders, this is the most important requisite and the most difficult to measure precisely. The factors normally considered in examining a character are: Past records of the client or credit history, Stability and the duration of his business or employment, his experience, qualification; and personal reputation.

ii **Capacity:** -looks into the client’s ability to handle the proposed new level of debt. Things to look into include income, net monthly flow and his ability to repay credit and meet up with other obligations. The client ability to change new job which is determined by past earnings, future earnings and past records of meeting obligations must also be evaluated by the credit officer.

iii **Capital:** - This measures the net value of a client’s assets that form his back up liquidity to meet his repayment obligations. The higher the client’s margin

capital contribution, the higher is his psychological commitment to pay the loan.

iv. **Conditions:** Can the client's employment or business withstand the vagaries of globalisation,

government regulations, competition or changes in the bank's policies?. A client's future prospects may be bleak if his skills are not in demand locally. As an example, a client who is employed in a manufacturing company which is shifting its operations to china may soon find himself without job.

v. **Collateral:** - Collateral is listed as the last because it is considered only as a cushion for the financier to rely on when the primary source of repayment does not come in. Collateral is examined on its easy disposability and whether it is adequate as security. If a banker considered loan purely on the comfort of the collateral, he is considered to be doing banking but pawn broking.

Banks and Credit Risk Management

Credit risk management is continually gaining prominence due globalization of the financial markets and other business (Muskan, 2021). The narrowing of risk premier in many markets is as a result of integration in credit risk management because banks now measure credit risk by combining market exposures with default probability and recovery analysis (Maverick, 2021).

If the asset portfolio of bank is deemed too risky or its capital inadequate, the regulatory authorities will camp a charge in the banks' balance sheet (CBN, 2018). However, regulators pay more attention to capital adequacy because it is seen as the most important single indicator of banking distress. Bad debts in banks resulted from mismanagement, adverse ownership influences and other form of insider's abuse coupled with political considerations and prolonged court process (Sanusi, 2012). Under the existing arrangement, non-performing assets are dying because they do not yield any income but administrative expenses are paid on them.

Principle of Credit Risk Management

Prior studies observed that exposure to credit risk continue to be the leading source of problems in banks

world-wide (Nwanna & Oguezie, 2017). Therefore, banks are advised to have a keen awareness of the need to identify measures, monitor and control credit risk as well as holding adequate capital against these risks. To reduce the effect of credit risk on banks the Basel Committee of Banking Supervision "principle for the management of credit risk" (BCBS, 1999) specifically addresses the following areas:

- i Establish an appropriate credit risk environment;
- ii. Operate under a sound credit-granting process;
- iii. Maintain an appropriate credit administration, measurement and monitoring process and
- iv. Ensure adequate controls over credit risk.

Benefits of Effective Credit Risk Management

The benefits for effective credit management include the following:

- a) Improved origination activities
- b) Enhanced underwriting analysis
- c) Effective credit approval process; and
- d) Efficient portfolio and risk Management framework

Empirical Review

Afolabi, Olabisi, Kajola, and Asaolu (2021) evaluated the effect of credit risk on the performance of Nigerian banks. The study used panel research design and panel data from 2009 to 2018 obtained from bank annual reports of the sampled banks for the empirical analysis. The study discovered that a percentage change in equity increase profitability (ROA) by about 19%. It was also revealed that a percentage change in loan to deposit ratio reduces profitability by 3% while a percentage change in non-performing loan increases profitability by 7%. The study therefore recommends that banks in Nigeria should monitor their loans and advances and avoid mismatch between its assets and liabilities to safeguard their banks from poor CAMEL rating and bank failure.

Mafumbo (2020) analyses the effects of credit management on the financial performance of commercial banks in Uganda. Specifically, the study sought to

establish whether there is a relationship between credit policy and performance, Capital Adequacy and performance and credit risk control and performance. In achieving the objectives assigned by the study, a causal research design were undertaken and that was facilitated by the use of secondary data which was obtained from published audited financial statements of commercial banks and the BOU annual supervision reports. The study used universal sampling techniques, where all banks licensed and operational in Uganda were selected, multiple regression was used. The findings indicated a significant relationship ($r = 0.639$) between credit management and the financial performance of commercial banks in Uganda. The results from the coefficients summary in the regression model indicate that the significance of coefficients of credit policy (LR), capital adequacy (CAR) and Credit Risk Control (NPL/TL) are -0.031, -0.555 and -1.005 respectively. It was therefore found that both the CAR and the NPL/TL are significant though have an impact at different significance i.e. capital adequacy and Credit Risk control have a greater impact compared to Credit policy (LR) on the financial performance of commercial banks in Uganda. It was established that there is no significant relationship between credit policy and performance of banks in Uganda, however, a significant relationship between the credit risk control, capital adequacy and the performance of commercial banks was established. It was recommended that should use a moderate credit policy as a stringent credit will undermine the financial performance. Moreover, commercial banks should seek to adequately control their credit risk by keeping lower their ratio of nonperforming loans which is the major determinant of commercial banks' financial performance as shown in the study. The bank of Uganda should encourage banks in Uganda to use credit metrics model in controlling its risks.

Alphonsus (2019) critically analyze the importance of credit management by the banks, and carefully scrutinize its positive and negative impacts on the financial position of the banks and the economy as a whole. And recommend major steps to be deployed by the banks to ensure good credit management that will usher in confidence in the lending policy of the banks, by

enunciating steps to be taken in the administration of credits to eliminate the possibilities of the loans crystalizing into bad debts. Government should establish special bank tribunal, for quick dispensation of court cases related to frauds in the banking sector. The Central Bank of Nigeria should ensure effective and consistent regulation and supervision of the banks to maintain stability in the banking industry in line with one of its core mandates "to promote a sound financial system in Nigeria. The CBN should equip the newly established credit bureau to track down defaulters of bank credits. The credit bureau data base should be electronically available to all who need the information. This would enable the banks to avoid lending to those habitual defaulters.

Alobari, Naenwi, Zukbee and Grend (2018) examined the impact of credit management and bank performance in Nigeria. The study adopted cross sectional survey design. The population of the study consisted of all management staffs of commercial banks operating in Nigeria. The sample sizes of eleven (11) select commercial banks were considered by systematic technique. The Purposive sampling technique was adopted; hence six respondents were administered questionnaire (Bank Manager and five senior staff) from each bank to make up a 66 respondents for the study. Multiple regression analysis was adopted for the study to determine the influence of credit management variables on financial performance. The study revealed that credit management has a significant impact on bank performance in Nigeria. The study also revealed that among the credit management variables considered, credit risk control has the highest driving force for bring about an effect financial performance of bank in Nigeria. It was recommended that financial institution should not only take credit management serious, but should recognise the role of credit risk section if they aim at increasing profitability.

Olabamiji and Michael (2018) examined the influence of credit management practices on financial performance of Nigerian banks with specific reference to First bank Plc. Data was collected using Purposive sampling technique from thirty (30) respondents as a sample size used to collect data from the respondents. Both descriptive and

inferential statistics were used to analyze data, such as Frequency, percentage, weighted mean score, and multiple regression. The result revealed that credit management practices have a significant positive influence on the financial performance of First bank. The result concluded that client appraisal, credit risk control, and collection policy are major predictors of financial performance of First bank. Subsequently, the study recommended that management of other banks should learn from First bank by enhancing their client appraisal techniques, credit risk control and adopting a more stringent policy to improve their financial performance.

Nwanna and Oguezie (2017) examined the nexus between credit management and profitability (ROA) of Deposit Money Banks (DMBs) in Nigeria context for the period of 2006 to 2015. Secondary data were sourced from Central Bank of Nigeria Statistical Bulletins and the Annual Reports of all the existing DMBs studied. The study employed multiple regression technique in analyzing the data that gathered, the analysis was done using ordinary least square with E-View 9 Econometric tool. The study found that loans and advances and loan loss provision have positive and insignificant effect on profitability, while non-performing loan has a negative and insignificant effect on profitability. The study concluded that sound credit management heightens profitability and holds the financial strength of the DMBs.

Olawale, Tomola, James and Felix (2017) examined the effect of credit risk on banks' performance in Nigeria using panel estimation from 2000 to 2015; the result of their study reveals that credit risk has a negative and significant impact on bank performance. Their study also reveals that total loan has a positive and significant impact on bank performance and recommends that the volume of non-performing loans and profits can be improved upon through aggressive deposit mobilization and by putting in place a sound credit risk management strategy with adequate punishment for loan payment defaults.

Taiwo and Agwu (2017) carried out a research on the impact of credit risk management on the performance of Nigeria's Deposit Money Banks (DMBs) and Bank lending growth over the period of 17 years (1998- 2014) using secondary data obtained from CBN Statistical bulletin 2014 and World Bank (WDI) 2015. The study used multiple linear regression models to analyze the time series data. The result reveals that sound credit management strategies can improve investors and savers confidence in banks and enhance growth in funds for loans and advances which lead to increased bank profitability. The study further shows that credit risk management has an insignificant effect on the growth of total loans and advances by Nigerian Deposit money banks and suggests that DMBs in Nigeria should strictly abide by credit appraisal policies which ensure that only credit worthy borrowers are granted credit facilities.

Yinka, Taofeek, Abimbola and Olusegun (2015) investigate the role of credit risk management in value creation process among commercial banks in Nigeria. The study reviews the concepts, theories, legal acts and standards relating to the credit risk management and then come up with a conceptual model with four antecedents to credit risk. The study examines the impact of loan and advance, loss provision, total loan and advances, non-performing loan and total asset on accounting Return on Equity (ROE) and Return on Asset (ROA) using panel data for a sample of 10 commercial banks listed on Nigeria Stock Exchange (NSE) between 2006 and 2010. Their findings revealed that credit risk management has significant impact on financial performance of commercial banks and further suggested that maintaining minimum level of non-performing loans vis-à-vis provision for loans and advances will improve financial performance.

Theoretical framework

The underpinning theories for this study are the Enterprise Risk Management Theory (ERM) and the Modern Portfolio Theory (MPT)

Enterprise Risk Management Theory

There are two fundamental ways of managing risks in corporations according to Eyigege (2013). These are holistic or individual management. The former approach

is often called enterprise risk management (ERM). ERM is a framework that focuses on adopting a consistent and systematic approach to managing holistic risks threatening an organization. According to the Committee of Sponsoring Organizations of the Tread way Commission (COSO, 2004), ERM is a process, effected by the company's board of directors, management and other affected staff used in strategy setting across the enterprise. It is designed to identify potential events that may affect the entity and ensure that risks are managed within the firms risk appetite and to provide reasonable assurance regarding the achievement of entity's objective. ERM is a process of managing an organization's exposure to uncertainty with particular emphasis on identifying the events that could potentially prevent the firm from achieving its desired objective.

Modern Portfolio Theory:

The Modern Portfolio Theory (MPT) was propounded in 1952 by Harry M. Markowitz when he applies mathematical concepts to finance. MPT deals with the selection of portfolios that maximizes shareholder returns consistent with individual acceptable levels of risk. Using quantitative models and historical data, MPT defines "expected portfolio returns" and "acceptable levels of portfolio risk," and show how to construct an "optimal portfolio."

MPT is an investment theory based on the idea that risk-averse investors can construct portfolios to maximize expected returns based on a given level of market risk because risk is an inherent part of higher reward. MPT is one of the most important and influential economic theories dealing with modern finance and investment. MPT assumes that investors are risk adverse, meaning that given two portfolios that offer the same expected return, investors will prefer the less risky one. Thus, an investor will take on increased risk only if compensated by higher expected returns. Conversely, an investor who wants higher expected returns must accept more risk. The exact trade-off will be the same for all investors, but different investors will evaluate the trade-off differently based on individual risk aversion characteristics.

Research Gap

There are many empirical studies on the association between credit risk management and bank performance in Nigeria. However, majority of those scholarships have concentrated on describing the impact of credit risk management on bank performance using descriptive statistical data and empirical evidence from the regression analysis. None of the academic work reviewed employed further diagnostic tests to look at the nature of the existing relationships between the dependent and the independent variables in the long run highlighting the need for this study.

METHODOLOGY

Research Design

The study adopted the expo-facto survey design as it is focused on a statistical relationship between variables without manipulating the independent variable.

Population and Sample Size of the Study

The population consists of all the twenty-two (22) DMBs currently quoted in the official daily lists of the Nigerian Stock Exchange (NSE) capital market (NSE, 2020). The choice for this selection was due to the focus of this study being on the Nigerian banking industry. To ensure a thorough and in-depth analysis of this research work, this study chose five (5) Tier one banks as the sample size. This includes Zenith Bank, Guaranty Trust Bank, First Bank, Access Bank and United Bank for Africa. The choice of these banks is based on their strong capital base as stated by the regulatory authorities in Nigeria (CBN, 2018).

Methods of Data Collection

Secondary data sourced from annual reports of the listed banks from the NSE Fact year book was used for this study. Other relevant information was sourced from Journals, Internet, Text books and previous research works.

Method, Technique for Data Analysis and Model Specification

This study employs the Ordinary Least Square (OLS) method of Regression Analysis. The OLS method helps in estimating the relationships among the variables and also assists towards understanding how the typical value

of the dependent variable changes when any one of the Independent variables is varied, while the other independent variables are held constant. Descriptive statistics was used to define the salient features of the data. Further diagnostic tests such as normality, multicollinearity and heteroscedasticity tests were carried out to ensure that the data meets the assumptions of the OLS Regression criteria. These analysis was carried out using the E-VIEWS 10.0. The multiple regression model adopted in this study uses OLS method in estimating the parameters of the model and it is expressed as;

$$\Pi = \alpha_0 + \alpha_1 LA + \alpha_2 NPL + e \dots\dots\dots(1)$$

Where; Π = Level of Commercial bank profitability within the study period.

α_0 = Intercept.

LA = Rate of loan and Advances.

NPL = Rate of Non-performing loan.

e = error term.

RESULTS AND DISCUSSION

Descriptive statistics

The summary of the statistics for all the variables used in the study is presented in Table 1. For each variable, the table reports the mean, median, standard deviation, minimum and maximum values.

Table 1: Descriptive statistics

Variables	Obs	Mean	Std. Dev.	Min.	Max.
ROA	25	0.0159	0.0092	0.0041	0.0344
LA	25	0.4321	0.875	0.2941	0.5631
NPL	25	0.0536	0.0373	0.016	0.1978

Source: *E-Views 10 Output*

The data set indicated above contained a total of 25 observations for five Deposit Money Banks listed on the Nigeria Stock Exchange from 2015 - 2019. Two independent variables were measured against one dependent variable. The table reports that the average value of DMBs performance (ROA) is 1.59% during the period under consideration. This means that on average, the total return generated by the sampled DMBs in Nigeria is 1.59%. The standard deviation of ROA is 0.92%, which reveals minor variation in the performance of sampled DMBs. LA has a mean of 43.21% with standard deviation of 8.75%, implying that less credit facilities were given to borrowers with non-significant variation among the banks with minimum and maximum values of 29.41% and 56.31% respectively. The Non-performing loan ratio among the selected Nigeria DMBs ranges between 1.6% and

19.78% with the mean and standard deviation of 5.36% and 3.73% respectively. This suggest that on average 5.36% of the total loans and advances granted by banks to customers was bad, while some banks have as low as 1.6%, others had as high as 19.78%. This indicates that credit risk in the sampled banks is relatively low perhaps because of high level of volatility among the banks' in managing credit risk.

Multicollinearity Test

The variance inflation factor (VIF) approach was adopted to test for multicollinearity among the explanatory factors. Gujaraji (2003) and Rumsey (2007) suggested that 10.0 is the cut-off value for VIF. As shown in the table below, the average VIF of the variables is 1.01. This shows that multicollinearity among the variables is not present

Table 2: Multicollinearity Test

Variables	VIF
LA	1.01
NPL	1.01
Average	1.01

Source: *E-Views 10 Output*

Correlation Analysis

The Pearson correlation coefficient analysis for this study's variables using E-Views 10 is as depicted below.

Table 3: Correlation Analysis

Variables	ROA	LA	NPL
ROA	1.0000		
LA	-0.3713	0.0677	
NPL	-0.3207	-0.0856	1.0000

Source: *E-Views 10 Output*

To analyze the nature of relationship between the dependent and the explanatory variables and also to confirm whether or not multicollinearity exists due to correlation among variables, the correlation analysis was computed as shown in Table 3 above. The results show that DMBs performance (ROA) is negatively correlated with all the explanatory variables. The probability values indicate that the correlation between ROA and all the explanatory variables are insignificant. As all the correlation coefficients among the independent variables are greater than 0.5, there is need for multicollinearity test in the regression estimates.

Table 4: Regression Analysis

ROA	Coef	Std. Err	T-Stat	P>t (95% Conf. int.)
LA	-0.0422	0.0193	-2.1900	0.0400
NPL	-0.0877	0.0454	-1.9300	0.0660
cons	0.0389	0.0091	4.3000	0.0000
Obs.	25			
F,Stat	3.9300			
Prob>F	0.0348			
R-Squard.	0.2630			

Source: *E-Views 10 Output*

Table 4 above confirms that, the functional relationship between the dependent and independent variables is as depicted below:

$$ROA = 0.0389 - 0.0422LA - 0.0877NPL + e \dots(2)$$

Furthermore, Table 4 clearly showed that, the R^2 which is the multiple co-efficient of determination gives the proportion of total variation in the dependent variable measured by Return on Assets (ROA) explained jointly by the independent variables of the study. Hence, the result of R^2 value of 26.3% signifies that the total

Regression Analysis

The results of Ordinary Least Square regression analysis earlier shown in Table 3 have been further applied to test the significance of the model and the explanatory power of the independent variables. The regression of the dependent variable (ROA) and the independent variables (Loans & Advances, and Non-performing Loan) are further depicted in Table 4 below.

variation in ROA was caused by Loans and Advances and Non-performing Loans of sampled listed Deposit Money Banks in Nigeria, while the remaining 73.7% was caused by other factors other than the variables captured in the model. The F-statistics value of 3.93 revealed that the model is statistically significant as the probability value is less than 0.05 (0.0348), showing the applicability of the overall model. From the above statistically significant result of the F-statistics, there is possibility that the relationship amongst the variables was not due to mere coincidence.

In line with table 4 above, Total loans and advances is negatively and significantly related to profitability of Deposit Money Banks in Nigeria. The result show that a 100% increase in total loans and advances decreases profitability by about 4.22%. This finding corroborates with that of Adeusi et al., (2014) who found a negative relationship between total loans and bank profitability. However, it contradicts Boahene, Dasah and Agyei (2012) and Kolapo, Ayeni and Oke (2012), who found an inverse relationship between total loans and bank profitability. However, Non-performing loan has insignificant negative impact on profitability of sampled Nigeria's DMBs, Therefore, the study provides evidence that credit risk management practices have a significant effect on the profitability of banks. This finding is consistent with the enterprise risk management theory and it is in accordance with some previous empirical studies by other scholars (Lata, 2014; Lotto, 2018; Ogbulu & Eze, 2016 and Ugoani, 2016).

CONCLUSION AND RECOMMENDATIONS

This study apply mathematical concept in line with modern portfolio theory to investigate the impact of

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- credit risk management on the financial performance of Deposit Money Banks (DMBs) in Nigeria. The study employs the panel data methodology of five first tier deposit money banks for the period from 2015 to 2019. The results revealed that loans and advances (LA) has a negative and statistically significant impact on the profitability of banks. The result of this study shows the level of exposure of the sampled Nigerian DMBs due to risks and illiquidity which leads to distress. This further implies that Nigerian banks increased exposure to credit risk reduces their profit level. However, non-performing loan has a negative but statistically insignificant impact on bank performance.
- Consequently, it is recommended that rigorous credit risk management practice be encouraged by the monetary authorities (CBN and NDIC) to ensure long term survival of banks in this globalised and dynamic operating environment. On their part, Nigeria DMBs need to devise strategies that will reduce their excessive exposures to the adverse effect of credit risk and strive for continuous improvement of their financial performance for the overall benefit of their stake holders.
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