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IMPACT OF CREDIT RISK MANAGEMENT ON PROFITABILITY OF DEPOSIT MONEY BANKS IN NIGERIA

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Abstract

This paper examined the nexus between credit management and profitability (ROA) of Deposit Money Banks (DMBs) in Nigerian context for the period of 2008 to 2017. Secondary data were sourced from Central Bank of Nigeria Statistical Bulletins and the Annual Reports of some selected DMBs. The study adopted the use of both descriptive statistics and econometric analysis using the regression analysis methodology. In the case of descriptive statistics, (mean, standard deviation, minimum and maximum) of the study, variables were calculated so as to gain insight for the variables description. While in the case of regression analysis, the study found that regression coefficient of Loan and Advances and Loan Loss Provisions are positively signed, indicating that they positively influence profitability, during the period studied. However, Non-Performing Loan of deposit money banks detrimental to the profitability of banking businesses. That is to say, the credit management of deposit money banks affect and increase their profitability. Therefore, it is recommended that DMBs should put in place sound credit management policies and practice. Issue recoverable loan and advances and provide for loan losses for desired credit risk exposure and increased profitability.

Keywords: Credit risk management, banking profitability, indicators of profitability, indicators of management credit risk.

1.0 INTRODUCTION

Banks today are the largest financial institutions around the world, with branches and subsidiaries throughout the world. These banks offer different products and services to public, and because of their high liquidity, these intermediary operations are quite risky. Therefore the banks are faced with diverse risks in the course of carrying out their operations. In view of the risks inherent in bank lending and the need to minimize or contain the risk (since they cannot be avoided entirely), and in view of the need for liquidity and profitability consistence with safety and regulatory constraints, the central issue in managing the lending portfolio is balancing the potential risk with returns. This involves credit management and credit analysis. The borrower's ability to repay the loan has to be determined, the borrower capacity and capital have to be assessed [1].

Credit creation is the main income generating activity of banks [2]. Due to the increasing spate of non-performing loans, the Basel II Accord emphasized credit risk management practices. Compliance with the Accord means a sound approach to tackling credit risk has been taken and this ultimately improves bank performance. To minimize these risks, it is necessary for the financial system to have well-capitalized banks, exposure within acceptable limit in order to provide a framework for understanding the impact of credit risk management on banks profitability [3].

Deposit money banks (DMBs) create loans from deposits from customers and these loans are major income generating source for majority of the banks. However, this intermediation function of DMBs is associated with enormous risks to both the banks and the deficit units. Banks are now working hard to attract the massive number of people who are not banking

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with them. This has led to an increase in banks surplus units and deficit units as well. With the aim of increasing revenue and gaining a large portion of the market share, many banks have given out loans and advances which could not be recovered, leading to a massive growth in Non-Performing Loans (NPLs) in their accounts. This has become a worrisome situation for banks and other stakeholders. In 2015, Credit Management and Bank Performance of Listed Banks in Nigeria revealed that, ratio of non-performing loans and bad debt do not have a significant negative effect on the performance of banks in Nigeria, while secured and unsecured loan ratio and bank's performance was not significant [4].With respect to the issues raised, it can be said that the effect credit management has on a bank's financial strength (profitability) cannot be undermined. However, in the study "Loan Management and the Performance of Nigeria banks" there is no significant relationship between effective loan management and the performance of banks [5]. This implies that, banks in Nigeria experience high profit irrespective of the huge credit risk exposure, conflicting with views shared by other researchers. The prime concern of this study is to establish the effect of credit management on the profitability of deposit money banks in Nigeria using data from 2008 to 2017 which fall within the period of global economic depression.

2.1 LITERATURE REVIEW

The Concept of Risk

Financial institutions through their role as a financial intermediary help circulate funds deposited by the various surplus units to the deficit units. In the course of performing this role, they are confronted with risk which remains one of the topical issues of current financial studies that had attracted special attention from both scholars and professionals. One key factor that determines the success of any banking institution is risk management [6].The business of banking is full of risk and hence a bank's ability to generate profit and maximize the wealth of their shareholders depends on their attitude toward risk and management of the risk.

Risk is the probability that the actual will be different from the expected value. Thus, it is the possibility that the actual may be different from the expected return. In banking, "risk is defined as the sum of threats likely to occur until the money loaned and all other committed are settled by the borrower [3].

Credit Risk

Lending involves a number of risks. Among these risks, credit risk plays the major role since by far the largest asset item for banks is loans, which generally accounts for half to almost three-quarters of the total value of all bank assets. Credit risk has long been an important and widely studied topic in bank lending decisions and profitability. In[7], credit risk means, payment may be delayed or ultimately not paid at all which can in turn cause cash flow problems and affect a bank's liquidity. From these researchers' point of view, credit risk is the risk of loss that might occur if one party to an exchange fails to honour the terms under which the exchange was to take place. Credit risk comes up from uncertainty in a given counterparty to meet up with the obligation of honoring the terms and conditions of the credit arrangement [8].

Credit Risk Management

Many researchers offer reasons backing bank failures [9] and[10]. Glitches associated with loan specifically, porous credit risk management policies, have been identified as the major explanations behind banking problems. In[11], majority of bank's equity is made up of Loans. This means any decline in the quality of loans can bring serious problems in the banking business. One factor that exists between financial institutions and borrowers is information asymmetry. This phenomenon makes it difficult for banks to identify creditable borrowers from bad ones. Therefore banks must put systems in place in order to analyze and evaluate the creditworthiness of borrowers to avoid adverse selection and moral hazard (products of information asymmetry) which cause enormous accumulation of nonperforming loans in their records. Emphatically, the attributes of borrowers gained two main models. They are qualitative and the quantitative. The qualitative is known as credit scoring models [12]. If this model is applied effectively, it signals variations in predictable level losses [10]. The quantitative model on the other hand, helps numerically to bring to bear the factors which contribute to credit risk, assess the strength of these factors.

Credit Risk Management Strategies

The credit risk management strategies are procedures banks adopted in the mitigation or for reducing the negative effect of credit risk. A comprehensive credit risk management structure is vital as stated, because it helps increase revenue and survival. In[13], the main ideologies in credit risk management strategies take the following form. They include formation of a clear structure, delegation of powers, discipline, and communication at all level and holding people accountable.

2.2 Empirical Review

Proper management of credit risk is a significant element of an all-inclusive method to risk management as a whole and vital to the future progress of any financial institution. Banks play a major role in the credit market because they assemble deposits from the various surplus units and make them available to the deficit unit for development activities. This implies that banks give out loan to borrowers from deposits made by the public with the objective of increasing their profitability. Now, since banks make huge profit through their role as financial intermediaries, it beholds on them to find pragmatic ways of managing credit risk and thereby guarding and enhancing their profitability [14].

In [15], non-performing loans is a major credit risk indicator and therefore a bank can lower its credit risk exposure by reducing it. Over the years, many researchers have tried to scrutinize the influence of credit risk on banks profitability and if really nonperforming loans play in major role in depleting profitability.

In [16], discovered that, loan loss, which is the last aspect of non- performing loans has a strong impact on profitability because, a rise in loan loss suggests an elevation in credit risk and therefore affecting the bank's financial standings negatively. Another study conducted by [17], revealed that, a dominant element of credit risk in commercial banks is loan loss provision so that any jump in the level of loan loss has a direct relationship with credit risk. They again stressed on the fact that, credit risk in developing countries supersedes that of developed economies.

In [18] unbalanced panel regression was employed in studying the impact bank regulations, financial and institutional development have on profitability in the Middle East and North Africa from 1989 to 2005, shown that, there is a positive relationship between credit risk bank capitalization and banks' profitability. In [19] a project which looked at the impact of CRM and profitability carried out. Their study observed that, there is a substantial correlation between bank performance (in the field of profitability) and credit risk management (in terms of loan performance). Effective credit risk management results in better banking performance. This implies that, it is of vital significance that banks practice prudent credit risk management in order to protect banks' assets and the investments of shareholders.

In [2] the effect of credit risk on the profitability of Nigerian banks estimated. Data on credit risk and profitability ratios were collected from 2004 to2008.The analysis of this data involved descriptive, correlation and regression techniques. The result was that CRM has a substantial influence on the profitability of Nigerian banks. Other findings on the study showed that, a rise in nonperforming loans negatively affect profitability and liquidity.

A study by [6] used regression analysis (both fixed and random effect models) in bringing to bear the linkage between credit risk and profitability of some selected banks in Ghana. It came out that, the credit risk constituents rather have a positive relationship with bank profitability. This implies that, banks in Ghana experience high profitability irrespective of the huge credit risk exposure. This is similar to the research by [20] and contrary to other studies which projected that credit risk indicators have negative effect on profitability. In a diverse dimension, in [21] used panel data analysis in studying the effect of credit risk on banks' performance using ROA as a measure for performance. The result was that an increase in nonperforming loans or loan losses provision diminishes profitability (ROA), while an increase in total loan and advances enhance profitability.

The impact of credit risk on the profitability of commercial banks in Ethiopia was examined by [22]. They retrieved data from 8 sample commercial banks for a period of 12 years from annual reports of these banks. In analyzing the data, a STATA software version 11 was used to compute the descriptive statics and panel data regression model and the outcome was that credit risk determinants; nonperforming loans, loan loss provisions and capital adequacy have a significant impact on the profitability of commercial banks in Ethiopia. Therefore the researchers stressed on the need to strengthen the credit risk management policies to gain better financial standing for commercial banks in Ethiopia.

In [23], they stress that Nigerian banks in their quest to maximize profit are channeling chunk of their scarce financial resources in provision for loan loss. Time series and cross sectional data were obtained from the annual report and accounts of selected banks from 2004-2009. The researchers used Panel data analysis to estimate the linkage among loan loss provisions (LLP), loans and advances (LA), nonperforming loans (NPL), capital adequacy (CA) and return on asset (ROA). It came out that, comprehensive credit risk management and capital adequacy had a positive effect on profitability whilst loans and advances rather had an inverse relationship with financial performance in the period under study.

2.3 Theoretical Review

This research work was anchored on the following theories:

Anticipated Income Theory

Under this theory, bank's management can plan its liquidity based on the expected income of the borrower and this enables the bank to grant a medium and long term loans, in addition to short-term loans as long as the repayment of these loans are linked by the borrowers expected income liquidity, when the cash inflows are regular and can be expected. Deposit money banks can manage its liquidity through appropriate credit management that is directing of granted loans, and ensuring that

these loans are collected as at when due in a timely manner and to minimize the possibility of delays in repayment at the maturity date [24].

Shiftability Theory
Shiftability is the approach to keep the banks liquid by supporting the shifting of assets. When a bank is short of ready money, it is able to sell its assets to a more liquid bank. The approach allows the banking system run more efficiently: with fewer reserves or investing in long-term assets. Under shiftability, the banking system tries to avoid liquidity crises by enabling banks to always sell or report good prices [24].

3.0 METHODOLOGY

3.1 Method of Data Collection

In this study we employed document analysis in accessing aggregated data for the research and used this technique to obtain data from the central bank statistical bulletin, annual reports and audited financial accounts of all the existing deposit money banks from 2008 to 2017. These banks were selected because they are listed on the Nigeria Stock Exchange (NSE) and again, they are a blend of old and young generation banks. This will help in gaining correct result and leverage.

3.2 Technique of Data Analysis

In analyzing the research hypotheses, the study adopted the use of both descriptive statistics and econometric analysis using the regression analysis methodology. In the case of descriptive statistics, (mean, standard deviation, minimum and maximum) of the study variables were calculated so as to gain insight for the variables description. While in the case of regression analysis, this technique enables us to study the individual influence or impact of the independent variables on the performance of dependent variable (profitability). Hence, SPSS software and R statistical package were used in carrying out the analysis.

3.3 Variable Measurement and Model Specification

The model adopted for this study was multiple linear regressions. Multiple regression analysis is a powerful technique used for describing the effect or impact of predictors (independent variables) over the dependent variable. Therefore, evidence from Nigeria Banking Sector" which measured profitability with Return on Asset (ROA) and Return on Equity (ROE) for models 1 and 2 respectively as a function of Loan and Advances to Total deposit, Non-performing Loan to Total loan and Loan Loss Provision to classified loan used as credit management indicators. Therefore, ROA and ROE are Dependent Variables while LA, NPL, LLP are Independent Variables. Hence the model functional form becomes;

ROA= f (LA, NPL, LLP) (3.1)

ROE= f (LA, NPL, LLP) (3.2)

The Model becomes;

$$ROA = \beta_0 + \beta_1 LA + \beta_2 NPL + \beta_3 LLP + \varepsilon \quad (3.3)$$

$$ROE = \beta_0 + \beta_1 LA + \beta_2 NPL + \beta_3 LLP + \varepsilon \quad (3.4)$$

Where;
ROA is the Return on Assets
ROE is the Return on Equity
LA is the Loan and Advances
NPL is the Non-Performing Loan
LLP is the Loan loss provision
β_0 is the constant or intercept
ε is the Error Term.
$\beta_1, \beta_2,$ and β_3 are the coefficients to be estimated or the coefficients of slopes parameters

4.0 RESULTS AND DISCUSSION

4.1 Descriptive Statistics

Table 4.1: Descriptive Statistics: ROA, ROE, LA, NPL, and LLP.

Variable	Count	Mean	Std. Dev	Minimum	Maximum
ROA	10	2.987	2.511	0.04	4.29
ROE	10	37.08	14.48	4.12	53.78
LA	10	8192	3066	2524	13223
NPL	10	494	861	124	2923
LLP	10	514	557	161	1978

Table 4.1 shows a comprehensible image of profitability performance and credit risk indicators by employing the descriptive statistics. The main statistics are mean, standard deviation, maximum and minimum values of the variables over the selected number of years. This study considered both return on asset (ROA) and (ROE) as a measure of profitability performance and the result on the table showed that on the average the banks used in the study earned a 2.99% return on asset with 2.51% standard deviation. In the case of ROE, the table 4.1 displayed that equity shareholders earned an average of 37.08% with 14.48% of standard deviation. This is above the industry average return of 23.8%. Even though this can be considered as good, some banks performed poorly with a minimum value as low as 4.12%. With regard to credit risk measures, the average NPL among the selected banks for the study in the period of ten years was 494 with a standard deviation of 861. The difference between the minimum value of 124 and the maximum of 2923 and the standard deviations showed there was a high variability in terms of NPLR.

There is no internationally accepted limit for loan loss provision ratio, nevertheless some countries have provided benchmarks or parameters to guide the activities of banks in these countries. This is one of the measures of credit risk and it shows the level of default risk the bank is ready to absorb. As per the result, the banks under study had an average of 514 loan loss provision with a standard deviation of 557. The minimum and maximum values are 161 and 1978 respectively. The ratio of loan and advance to deposit is used as a measure of credit risk. It shows the extent to which funds deposited in the banks are used in generating loans which is capitalized by default risk. On the descriptive table, the LAR of the banks under study had an average of 8192 with a standard deviation of 3066. The maximum and minimum values were 2524 and 13223 respectively, suggesting that the banks pay more attention to the granting of loan facilities which is more risky. The maximum value depicted how banks give out loans facilities in excess of the total deposits.

4.2 Inferential Statistic and Hypothesis Testing

Table 4.2: Regression Results of Model One

Dependent Variable: ROA

Method: Least Squares

Variable	Coefficients	Std. Error	t-Statistic	P-value
(Intercept)	2.4232608	1.0881428	2.227	0.067547
LA	0.0002354	0.0001301	-1.809	0.01203
NPL	-0.0054431	0.0010560	-5.154	0.00210
LLP	0.0100850	0.0016511	6.108	0.00878
Residual standard error: 1.132 on 6 degrees of freedom				
Multiple R-squared: 0.8645				
Adjusted R-squared: 0.7968				
F-statistic: 12.76 on 3 and 6 DF				
P-value: 0.005156				

From the result of the analysis presented in Table 4.2, Loan and Advances (LA) has a positive effect on Profitability (ROA). This is shown by a regression coefficient of 0.0002354 statistical significant at 5%. This shows that the management of Loan and advance by deposit money banks helps to increase the profitability of DMBs. Also, Non-Performing Loan (NPL) has a negative effect on Profitability (ROA) as indicated by a coefficient of-0.0054431 statistically significant at 1% level. This implies that increase in Non-Performing Loan is detrimental to DMBs Profitability (ROA).

Thus, Loan Loss Provisions (LLP) has a positive effect on Profitability (ROA). This is indicated by a regression coefficient of 0.0100850. The effect is statistically significant at 1%. This means that the increase in Loan Loss Provisions brings about increased profitability. Thus, there is enough provision made against DMBs‟ loan losses.

Moreso, as observed from the table of the Model one, the Multiple R-squared: 0.8645 which means that credit risk pointers and the other variables in the model explained about 86% of the variance in profitability performance of the some selected banks in Nigeria measured by ROA.

Table 4.3: Regression Results of Model Two

Dependent Variable: ROE

Method: Least Squares

Variable	Coefficients	Std. Error	t-Statistic	P-value
(Intercept)	9.808819	12.159389	0.807	0.4506
LA	0.003067	0.001454	2.110	0.0494
NPL	-0.003103	0.011800	-0.263	0.0014
LLP	0.007152	0.018450	0.388	0.7117
Residual standard error: 12.65 on 6 degrees of freedom				
Multiple R-squared: 0.4916				
Adjusted R-squared: 0.2375				
F-statistic: 1.934 on 3 and 6 DF				
P-value: 0.2254				

From the result of the analysis presented in Table 4.3, Loan and Advances (LA) has a positive effect on Profitability (ROA). This is shown by a regression coefficient of 0.003067 statistical insignificant at 5%. This shows that the management of Loan and advance by deposit money banks helps to increase the profitability of DMBs.
Thus, Non-Performing Loan (NPL) has a negative effect on Profitability (ROA) as indicated by a coefficient of -0.003103 statistically insignificant at 1%. This implies that increase in Non-Performing Loan is highly detrimental to DMBs Profitability (ROA).
Also, Loan Loss Provisions (LLP) has a positive effect on Profitability (ROA). This is indicated by a regression coefficient of 0.007152. The effect is statistically insignificant at 71%. This means that the increase in Loan Loss Provisions brings about increased profitability. Thus, there is enough provision made against DMBs‟ loan losses.
As observed from the table of the Model two, the Multiple R-squared: 0.4916 which means that credit risk pointers and the other variables in the model explained about 49% of the variance in profitability performance of the some selected banks in Nigeria measured by ROE.
Conclusively, Table 4.2 and 4.3 both shows that the relationship existing between the dependent and independent variables are stated thus:
ROA= 2.4232608 +0.0002354LA -0.0054431NPL +0.0100850LLP
ROE= 9.808819 +0.003067LA -0.003103NPL+0.007152LLP
From the two results, this means that Loan and Advances and Loan Loss Provisions variables conform to a priori expectation. In first and second model, their coefficients of 0.0002354; 0.003067; and 0.0100850; 0.007152 indicates that DMBs‟ Profitability (ROA & ROE) will rise by 0.0002354; 0.003067 units and 0.0100850; 0.007152 units if proper credit management of DMBs increases by 1 unit respectively, ceteris paribus. On the contrary, Non-Performing Loan variable of both equation coefficients of -0.0054431; -0.003103 indicates that DMBs‟ Profitability will dwindle by -0.0054431; -0.003103 units if DMBs‟ Non Performing Loan increases by 1 unit.

Table 4.4: Summary of Model One Regression result

Variables	Coefficients	P-value	Decision Rule	Conclusion
Loan and Advance	0.0002354	0.01203	P-value < 0.05	Significant
Non-Performing Loan	-0.0054431	0.00210	P-value < 0.01	Significant
Loan Loss Provision	0.0100850	0.00878	P-value < 0.01	Significant

Source: Extract from Regression Estimation Result (table 4.2)

From table 4.4, Loan and Advances has a positive coefficient of 0.0002354 and the p-value is 0.01203, it is statistically significance at 5% level. Thus we reject the null hypothesis and accept the alternative and conclude that, Loan and Advances has a positive and significant effect on ROA of banks in Nigeria. Non-performing Loan has a negative coefficient of -0.0054431 with p-value of 0.00210 which is statistically significant at 1% level. Thus, we accept the null hypothesis and reject the alternative. Therefore, Non-performing Loan has a negative and significant effect on the ROA of banks in Nigeria. Loan Loss Provisions has a positive coefficient of 0.0100850 and p-value of 0.00878 which is statistically significant at 1% level. We therefore reject the null hypothesis and accept the alternative. Thus, Loan Loss Provisions has a positive and significant effect on ROA of banks in Nigeria.

Table 4.5: Summary of Model Two Regression result

Variables	Coefficients	P-value	Decision Rule	Conclusion
Loan and Advance	0.003067	0.0494	P-value ≤ 0.05	Significant
Non-Performing Loan	-0.003103	0.0014	P-value < 0.01	Significant
Loan Loss Provision	0.007152	0.7117	P-value > 0.05	Insignificant

Source: Extract from Regression Estimation Result (table 4.3)

From table 4.5, Loan and Advances has a positive coefficient of 0.003067 and the p-value is 0.0494, it is statistically significance at 5% level. Thus we reject the null hypothesis and accept the alternative and conclude that, Loan and Advances has a positive and significant effect on ROE of banks in Nigeria. Non-performing Loan has a negative coefficient of -0.003103 with p-value of 0.0014 which is statistically significant at 1% level. Thus, we accept the null hypothesis and reject the alternative. Therefore, Non-performing Loan has a negative and significant effect on the ROE of banks in Nigeria. Loan Loss Provisions has a positive coefficient of 0.007152 and p-value of 0.7117 which is statistically

insignificant at 5% level. We therefore reject the null hypothesis and accept the alternative. Thus, Loan Loss Provisions has a positive and insignificant effect on ROE of banks in Nigeria.

4.3 Discussion of Findings

The result obtained shows that of the coefficient of the model: β_1, $\beta_3 > 0$ and $\beta_2 < 0$ and our personal contribution are stated.

For model one:

Loan and Advances has a positive coefficient of 0.0002354 showing a positive effect on profitability (ROA), which is in conformity with the a priori expectation of loan and advances. Hence, the result showed consistency.

Non-performing Loan has a negative coefficient of -0.0054431 indicating a negative relationship with profitability; this is in agreement with the a priori expectation of non-performing loan.

Loan Loss Provisions has a positive coefficient of 0.0100850 showing a positive effect on profitability, which is in agreement with the a priori expectation of loan loss a provision. The finding is in consistence with result of the earlier reviewed researches.

For model two:

Loan and Advances has a positive coefficient of 0.003067 showing a positive effect on profitability (ROE), which is in conformity with the a priori expectation of loan and advances. The result also showed consistency with the earlier findings.

Non-performing Loan has a negative coefficient of -0.003103 indicating a negative relationship with profitability; this is in agreement with the a priori expectation of non-performing loan.

Loan Loss Provisions has a positive coefficient of 0.007152 showing a positive effect on profitability, which is in agreement with the a priori expectation of loan loss a provision. The finding is in consistence with result of the earlier reviewed researches.

4.4 Implications of Findings:

1. Loan and Advances is positively signed in both model indicating that it positively influences profitability (ROA and ROE). With the higher interest rate charged on the loan facilities, banks can give out more loans without fear because they know that income earned or paid on recovered loan would be enough to cancel that which went bad.
2. Non-Performing Loan is negatively significant in models one and two showing that it dwindles profitability (ROA and ROE) and has not enhanced DMBs" profitability. This may be as a result of poor credit management.
3. The loan loss provision had a positive influence on profitability in both equations because the presence of LLP served as a shield or/and financial backup for the banks to absorb losses. This protects the banks" profit from any unforeseen credit default.

5.1 Summary of Findings

The roles of deposit money banks in financial sector and in Nigeria economy cannot be undermined. They engage in serious financial intermediation where funds are taken from the surplus units and made available to the deficit units. This role exposes them to various types of risks and one of which is credit risk. Sound credit management is requisite for banks to overcome the risk associated with credit management. It is therefore essential to identify the effect of credit management on the profitability of deposit money banks in Nigeria. The purpose of this research work is to identify the prevailing relationship between Credit management and Profitability of deposit money banks in Nigeria.

The measures of profitability are Return on asset (ROA and ROE) which we used as the dependent variables for this study. The explanatory variables employed in the model were the measures for credit management. This included loan and advances, non-performing loan and loan loss provision. The OLS estimation is obtained from R package software used for the purpose of analysis and the data were accessed from the CBN statistical bulletins and the annual reports of all the existing selected deposit money banks in Nigeria for a period of 10 years (2008-2017).

Based on the hypotheses tested in the research the summary of the two results are as follows:

1. Loan and Advances (LA) has a positive effect on Profitability (ROA and ROE) as well as, showing significant effect of Loan and Advances on Profitability.
2. Non-Performing Loan (NPL) has a negative effect on Profitability (ROA and ROE), with significant effect of Non-Performing Loan on Profitability.
3. Loan Loss Provisions (LLP) has a positive effect on Profitability (ROA and ROE) as well as, significant effect of Loan Loss Provisions on Profitability (ROA) but with insignificant effect on Profitability (ROE).

5.2 Conclusion

The estimated result on the effect of credit management on the profitability of deposit money banks in Nigeria with focus on the selected DMBs; we found that the regression coefficient of Loan and Advances and Loan Loss Provisions are positively signed indicating that they positively influence profitability, during the period studied. However, Non-Performing Loan of deposit money banks detrimental to the profitability of banking businesses. Based on the findings, the study concluded that credit management of deposit money banks affect and increase their profitability. Although, most DMBs could not grow or perform as expected due to high rate of non-performing loan, strong DMBs still generates loans from the customers‟ deposits, and with the higher interest rate charged on the loan facilities, banks can give out more loans without fear because they know that income earned or paid on recovered loan would be enough to cancel that which went bad. They also make provisions for loan loss but DMBs should carefully evaluate credit request before granting to customer(s) to circumvent high rate of non-performing loan.

5.3 Recommendations

In line with the findings of the study, the study portrays the urgent need for deposit money banks in Nigeria to intensify their capacity in credit analysis and loan administration while the regulatory authority should pay more attention to banks compliance to relevant provisions of the Bank and other Financial Institutions Act (1999) as emended and other prudential guidelines.

1. The management of banks especially credit officers must do diligence by adhering to prudential guidelines when given out credit facilities.
2. Banks must put in place sound credit-granting process, strictly hold fast to the Know-Your-Customer (KYC) policy, applying effective measures in measuring and monitoring of credit and ensure effective controls over credit risk.
3. The DMBs should ensure guarantee of credits which would serve as a shield against credit loss of customer’s fund. Small DMBs which are poorly capitalized should not offer certain categories of credit facilities. Thus, the worth of capital for a bank serves as a shield against loss of depositors’ funds. Nigerian deposit money banks should be well capitalized even without the “regulatory eyes” of the authority.

5.4 Contribution to Knowledge

This study has contributed to knowledge in the following directions:

1. The study has contributed to the management of credit by Deposit Money Banks. It therefore shows the possible combination of credit management indicators.
2. The work provides additional literature for further research in credit management and profitability.
3. The study covered knowledge gap by extending the period of studies captured up to 2017 and has put the research in the Nigerian context using all the deposit money banks and covering all geographical gap. The study also extended the knowledge from the findings of [21], [23], [26] and [27] and also validated the study of [23].

References

[1] Nwankwo, G. O. (1991). Prudential Regulation of Nigerian Banking. Institute of European Finance, Lagos: University of Lagos Publication.

[2] Kargi, H.S. (2014). Credit Risk and the Performance of Nigeria Banks. *Acme Journal of Accounting, Economics and Finance.*1(1), 007-014.

[3] Central Bank of Nigeria. (2015). Statistical Bulletin (vol. 26).Retrieved from http://statistics.cbn.gov.ng/cbn-onlinestats

[4] Uwalomwa, U., Uwuigbe, O. R., & Oyewo, B. (2015).Credit Management and Bank Performance of Listed Banks in Nigeria. *Journal of Economics and Sustainable Development*. 6(2), 27-32.

[5] Lawrence, H.S. (2013). Determinants of Bank Profitability: An Empirical Study on Ethiopian Private Commercial Banks. Addis Ababa University.

[6] Boahene, S. H., Dasah, J., & Agyei, S. K. (2012).Credit Risk and Profitability of Selected Banks in Ghana. *Research Journal of Finance and Accounting.*3(7), 6-14.

[7] Greuning, H., & Bratanovic, S.B. (2000).*Analyzing and Managing Banking Risk: A Framework for Assessing Corporate Governance and Financial Risk.* 2nd ed. The World Bank, Washington, DC.

[8] Fatemi, A., & Fooladi, I. (2006).Credit Risk Management: A Survey of Practices. Managerial Finance. 32, 227 – 233.

[9] Chijoriga M. M. (1997). An Application of Credit Scoring and Financial Distress prediction Models to commercial Bank Lending: The Case of Tanzania. (Ph.D Dissertation Wirtschafts Universitatwien (WU)Vienna).

[10] Santomero M. A. (1997). Commercial Bank Risk Management: An Analysis of the Process, Wharton, (1997), pg. 1 -29,<http://fic.wharton.upenn.e du/fic/papers/ 95/9511.pdf. Retrieved on 20th October, 2019.

[11] Kitua. D. Y. (1996). Application of Multiple Discriminant Analysis in Developing a Commercial Banks Loan Classification Model and Assessment of Significance of Contributing Variables: A Case of National Banking of Commerce. MBA Thesis, UDSM, Dar es Salaam.

[12] Hefferman, I. (1996). Credit Risk and Banks in Tanzania. *Research Journal of Finance and Accounting*.4(16).

[13] Lindgren, H. (1987). Banks, Investment Company, Banking Firms, Stockholm Enskilda Bank (1924-1945). Institute for Research in Economic History, Stockholm School of Economics, Stockholm.

[14] Muhammed, A. O., Musa, F. K.,&Fahad, A. A. (2014).Bank-specific, Industry-specific and Macroeconomic Determinants of Bank Profitability. *European Scientific Journal.*10(25), 408-423.

[15] Hempel, G.H., & Simonson, D. G. (1999).*Bank Management. Text and Cases.* John Wiley, New York. http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=990859. Retrieved20th October, 2019.

[16] Ahmed, A. S., Takeda, C., & Shawn, T. (1998). Bank Loan Loss Provision: A Re-examination of Capital Management and Signaling Effects. Working Paper, Department of Accounting, Syracuse University.1-37.

[17] Ahmad, N. H., & Ariff, M. (2007).Multi-country Study of Bank Credit Risk Determinants. *International Journal of Banking and Finance.*5(1), 135-152.

[18] Naceur, B.S., & Omran, M. (2008).The Effects of Bank Regulations, Competition, and Financial Reforms on MENA Banks' Profitability. Economic Research Forum Working Paper No. 44.

[19] Achou, T. F., & Tenguh, N. C. (2008).Bank Performance and Credit Risk Management. Master Degree Project. University of Skovde. Available at http://his.diva-portal, org/smash/get/diva2:2459/Fulltext01.PDF

[20] Kithinji, A. M. (2010). Credit Risk Management and Profitability of Commercial Banks in Kenya (School of Business, University of Nairobi, Nairobi).

[21] Kolapo, T. F., Ayeni, R. K., & Oke, M. O.(2012).Credit Risk and Commercial Banks Performance in Nigeria. *Australia Journal of Business and Management Research.*2(02), 31-38. 80.

[22] Gizaw, M., Kebede, M., & Selvaraj, S. (2013).The Impact of Credit Risk on Profitability Performance of Commercial Banks in Ethiopia. *African Journal of Business Management.*9(2), 59-69.

[23] Ogboi, C., & Unuafe, O. (2013).Impact of Credit Risk Management and Capital Adequacy on the Financial Performance on Commercial Banks in Nigeria. *Journal of Emerging Issues in Economics, Finance and Banking*.2(3).

[24] Okoh, J. I., Nkechukwu, G. C., & Ezu, G. K. (2016). Liquidity Management and Performance of Banks in Nigeria: Investigation the Nexus. In I. Okoye, K.C. Onyima & K. Ezu (Ed.), *Managing diversification for sustainable development in Sub-Saharan Africa.* Proceedings of Faculty of Management Sciences‟ Nnamdi Azikiwe University, Awka, 2016 International Conference, 8th – 10th November, 761-783.Anambra, Nigeria.

[25] Muhammed, J. K., & Garba, S. (2014). An Evaluation of the Effects of CRM on the Profitability of Nigerian Banks. *Journal of Modern Accounting and Auditing.*10(1), 104-115.

[26] Taiwo, A. M., & Abayomi, S. T. (2013).Credit Management Spur High Profitability? Evidence from Nigerian Banking Sector. *Journal of Applied Economics and Business.* 1(1), 46-53.

[27] Saeed, M., & Zahid, N. (2016).The Impact of Credit Risk on Profitability of the Commercial Banks. *Journal of Business and Financial Affairs*, 5(2), 1-7.