



CREDIT RISK MANAGEMENT AND FIRM PROFITABILITY: EMPIRICAL EVIDENCE FROM LISTED DEPOSIT MONEY BANKS IN NIGERIA

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ABSTRACT

The study examined how credit risk management affects the profitability of Deposit Money Banks (DMBs) in Nigeria in relation to certain variables that are assumed to have impact on profitability of a bank. The study also examined the relationship between non-performing loan ratio and Return on Assets (ROA) of DMBs in Nigeria. The study made use of secondary data which were obtained from the audited financial statements of the DMBs and Nigerian Stock Exchange (NSE) from year 2014-2020. Data collected were analyzed using descriptive and inferential statistics. A sample size of 15 banks was selected out of the 25 DMBs. NPLR and ROA) of DMBs in Nigeria with a p-value of 0.000 which is significant at 1% level of significance, Banks size have significant effect on the ROA of DMBs in Nigeria with a p-value of 0.002 which is statistically significant at 5% level of significance. The study concluded that credit risk management significantly affects the profitability of (DMBs) in Nigeria.

Keywords: Deposit Money Banks, Central Bank of Nigeria, Return on Assets, Non-Performing Loan Ratio

1. INTRODUCTION

The requirement to manage and maintain credit risk exposure within proper and acceptable limitations in an industry is one of the core notions underpinning the problem of credit risk management. Credit risk refers to the possibility of losing money as a result of a borrower's failure to pay back the loan. Credit risk management can also be seen as the process of reducing losses by assessing the adequacy of a bank's capital and loan loss reserves at any one time which sometimes forms a challenging process for financial institutions to master for a



long period. Improved credit risk management by a corporate entity can also help in boosting the overall performance as well as gain a competitive edge over its competitors.

In a study carried out by Mohammed (2012), he was of the opinion that banks should diversify their risk since increasing their credit lines to other industries (portfolio management) increases the bank's possibility of credit facility default. Previous studies have found that return on asset (ROA) is an effective instrument for measuring performance. In principle, ROA measures a bank's management's ability to generate profits based on the amount of assets it has. As a result, to fill the gap in literature, the research employed non-performing loans (NPLR) as a proxy to evaluate credit risk, which was the study's independent variable. ROA was also used to quantify the profitability of Nigerian deposit money institutions.

Because of the growth of the financial security market in recent decades, the banking industry has become increasingly complicated (Rufai, 2012). As a result, banks are engaging in compound transactions without fully understanding the risk associated the risk carrying side blurs and risk exposure affects everyone (shareholders and agent); the exposed risk, which is the credit risk in the current example, is the most difficult to recognize, and the importance of this risk is amplified by the fact that it is tied to the collateral problem (Almazari, 2012).

Non-performing loans have had a substantial influence on the maximizing of shareholder value, bank profitability, and depositor savings, have led to the collapse and takeover of many banks worldwide. Non-performing loans have harmed a number of Nigerian Banks that includes; Intercontinental Bank, Oceanic Bank, Bank PHB, and Afri-Bank, to mention a few (Mohammed, 2012). According to Nafiu and Omankhanlen (2011), even among banks that have not failed, there is a negative relationship between non-performing loans and performance efficiency.

This research work comprises of 15 Deposit Money Banks (DMBs) out of the 25 deposit money banks listed on the Nigerian Stock Exchange market and having annual reports from 2014 to 2020. The choice of the selection of 15 banks was made due to fact that the study is a panel data in nature and the data of banks that must be collected most be complete and available without any gap so as to have a balanced panel data



2. LITERATURE REVIEW

Credit Risk

Credit risk is more simply defined as the potential of a bank borrower or counterparty to fail to meet its obligations in accordance with the agreed terms. In other words, Credit risk is defined as the risk that interest or principal, or both, will not be paid on time, and it is measured by examining the percentage of assets that are below standard (Soyemi, Ogunleye & Ashogbon, 2014). Credit risk is borne by all lenders, and if it is high, it can lead to serious problems for the majority of organizations, loans are the most substantial and visible source of credit risk, banks that manage and perfect the practice of generating loans with low non-performing rates make the most profit and have a better chance of long-term survival (European Central Bank, 2016).

Profitability

Profit generation remains a primary objective of all businesses Danjuma, Kola, Magaji and Kumshe (2016), a company that can't make enough money to cover its expenses and reward its owners won't last long. As a result, business managers must consider determining current and previous profitability, as well as anticipating future profitability. Profitability is the most crucial measure of a business's success, whether you're recording profitability from the previous period or projecting profitability for the future. A company that is not profitable will not be able to continue to exist. One of the most crucial jobs for corporate executives is to boost profitability (Berger & Christa, 2009).

Accounting Profit

This is defined as the excess of revenue over related costs for a single transaction, group of transactions, or transactions connected to an operational period. However, in accounting terms, it is defined as the excess of revenue over expenditure for the time under consideration (Gupta, 1989). Generally, accounting profit literally means difference between the sales price and the cost of producing and selling a specific product. Accounting profit can be classified into three categories namely; Gross profit: This is the difference between total gross revenue earned and total gross expenditure expended. Operating profit: This is defined as the excess of total operating revenue over total operating costs.

Economic Profit

Economists believe that profit can only be calculated after deducting the period's hidden and explicit costs from the period's income, they also describe implicit costs as the reward for factors of production held by the entrepreneur, but explicit costs

are those related to the better alternative foregone, often known as Opportunity Cost (Pânzaru, 2011).

Business Profit

Businessmen and some accountants typically see the full return created by stock trading as shareholder profit or income, failing to recognize that some portion of the return might also contribute to the cost calculation (Abiola and Olausi, 2014). Business profit may be defined as the sum of pure profit and the usual return on investment, which is also the difference between end-of-period wealth and starting investment.

Empirical Review

Financial performance is defined by Maniagi (2016) and Shrivastave, Kumar, and Kumar (2018) as an organization's capacity to create income from its assets. Muriithi and Waweru (2017) investigated the impact of financial risk on DMB performance in Kenya prior to the research across Africa. A qualitative study and an ordered logistic model were used to collect data from Kenyan DMBs over a five-year period (2012-2016). Financial risk and financial success, according to the research, are mutually incompatible. Internal and external fraud has less of an impact on DMB financial performance in Kenya, according to the research. In Kenya, smaller banks have less of an influence on DMB's financial success. The CBK's financial risk management standards must be followed while administering DMBs. Muriithi (2016) investigated how financial risk impacts the financial performance of Kenyan DMBs. CBK approved 43 DMBs in December 2014 after a quantitative examination. A supplementary panel with an uneven time series cross section was employed. Data was collected from all 43 DMBs in Kenya, the CBK, and the Banking Survey between 2005 and 2014. To clean time-invariant unobserved firm specific components and reduce endogeneity concerns, the research employed financial ratio analysis, panel data techniques of random effects, fixed effects estimation, and generalized method of moments (GMM). Credit, market, liquidity, and operational risks all have a negative impact on return on equity, according to the study.

In Nigeria, Olalere and Wan (2013) investigated the impact of credit risk on DMB profitability. The goal of the research was to see how credit risk and its indicators affected bank profitability. The study covered four-years and include eight DMBs (2011-2014). Panel data analysis was used to develop the analytical model and test its validity and reliability. Throughout the research period, there was a link between non-performing loans and profitability, as well as a link between debt-to-total-



assets and profitability. In summary, effective risk management is critical to a bank's profitability and long-term financial viability. As a result, credit risk had a negative influence on DMB's profitability in Nigeria. Soyemi, Ogunleye, and Ashogbon (2014) examined the influence of risk management practices on financial performance across Nigerian DMBs using secondary data from selected listed banks' Financial Statements and Accounts. Financial performance was measured using return on assets and return on equity, while risk management was measured using non-performing loans and liquidity. To demonstrate trends, a mix of descriptive statistics and multiple regressions was utilized. After that, a robust OLS regression was utilized to see whether there was any link between risk management and financial performance.

The impact of operational and financial risk management on Nigerian banks was investigated by Osadahun (2014). The study used a qualitative approach, interviewing executives from a variety of Nigerian banks. The most common kinds of bank fraud in Nigeria are listed below. To enhance service delivery, the governing system should include modern technologies. The government, on the other hand, has yet to establish a unified financial risk loss database for its DMBs.

Gap in the Literature

The gap identified in the review of various literatures revealed that majority of researcher made use of nonperforming loan, high interest rate as a proxy to measure credit risk. For purpose of this study the researcher went further to make use of other proxies such as bank size as a moderating variable on the profitability of Nigerian listed banks and profitability was also measured using ROA so as to capture the average amount of asset generated by Deposit Money Bank during this period.

3. METHODOLOGY

The population of this study includes all the twenty-five (25) Deposit Money Banks (DMBs) existing in Nigeria (CBN, 2020). The researcher chose 15 banks out of 25 for the study based on banks listed on the Nigerian stock exchange market and with annual reports from 2014 to 2020 in order to have a balanced panel data.

Measurement of Variables

Table 1
Measurement of Dependent and Independent Variables

S/N	Variables Type	Variable Name	Acronyms	Measurement	Sources
1	<i>Dependent</i>	Return on Assets	<i>ROA</i>	Return on Assets = Net Income / Total Assets	Epetimehin and Obafemi 2015
2	<i>Independent</i>	Non-Performing Loans Ratio to Total Loans and Advances	<i>NPLR</i>	Non- Performing Loans / Total Loans and Advances	Christos & Geoffrey 2011

Source: Authors' compilation

Model Specification

The model employed by Idowu and Awoyemi (2014) was adopted for this study's criteria. However, Idowu and Awoyemi's model is shown below.

$$ROA_{it} = \alpha_0 + \alpha_1 NPL_{it}, e_o \dots\dots\dots(3.1)$$

The equation can be expressed in econometric as specified below:

$$ROA = f(NPLR, SIZE) \dots\dots\dots (3.2)$$

Where;

NPLR = Non-performing Loan Ratio

ROA = Return on Asset

Firm size = moderating variable

α = coefficient estimates

e = time-varying error term

i = subscript i (stands for the entity)

t = Time t

4. RESULTS AND DISCUSSION

Due to the nature of the data for the study, panel regression techniques were used to assess the influence of Credit Risk Management indicators and Bank profitability indicators. To prevent biased results (Christos & Geoffrey 2011), the study data made use of Fixed Effect Model. The Hausman Test was used to determine the optimal model for hypothesis ratio robustness and generalization (s).

The Hausman test was carried out in accordance with the following decision rule: H0 = when $p(\chi^2) > 0.05$, reject fixed effect; H1 = when $p(\chi^2) < 0.05$, reject random effect; H2 = when $p(\chi^2) > 0.05$, reject random effect; H3 = when $p(\chi^2) < 0.05$, reject random effect; H4 = when $p(\chi^2) > 0.05$, reject random effect; H5 = when $p(\chi^2) < 0.05$, reject random effect; H6 = when $p(\chi^2) > 0.05$, reject random effect. This can only be done if the regression analysis found heteroscedasticity, and if there is no heteroscedasticity or auto correlation, the alternative hypothesis must be adopted.

Table 2
Descriptive statistics

Variable	Obs	Mean	Std. Dev	Min	Max
NPLR	165	.1887449	.3410953	.0016104	3.030601
ROA	165	.0276029	.1435647	-.9269	.046262
BANK SIZE	165	19.43856	2.464398	13.15689	22.55678

Source: Researchers' computation

Table 2 shows that the NPLR of the chosen DMBs averaged 0.18 percent from 2014 to 2020, ranging from a low of 0.001 percent to a maximum of 3.03 percent. Similarly, the average asset return was 0.027, with a negative low of -0.9269 and a maximum of 0.46262. This means that on average, the DMBs under review produced 0.3 percent returns on their assets.

Correlation Analysis among the variables

Table 3
Correlation Matrix for the variables

Variables	ROA	NPLR	BANKSIZE
ROA	1.0000		
NPLR	-0.3431	1.0000	
BANKSIZE	0.3862	-0.3408	1.000

Source: Researchers' computation

The correlation matrix presented in Table 3 reveals which independent factors are connected to the dependent variable. The values on the diagonal in Table 3 are all 1.000, suggesting that each variable is fully associated with itself. The biggest link exists between the NPLR. With correlation of 0.5951 which is less than 0.7 as proposed by Tabachnick and Fidell (1996), this implies an absence of multi-collinearity between all the variables.

Table 4
Breusch Pagan Test for Heteroscedasticity among the variables

Breusch-Pagan Test for Heteroscedasticity

Chi ²	20.09
Probability (Chi ²)	0.1343

Since the p-value of (chi²) is 0.1343 which is more than 0.05 this shows the absence Heteroscedasticity and therefore recognizes the presence of homoscedasticity

Source: Researchers' computation

Presentation of the Regression Result

Table 5
Fixed Effect Regression

Independent variable	Dependent variable (ROA: Fixed Effect Regression)			
	Coefficient	Std. Err.	t-Stat	P> t
NPLR	-0.2494	0.0540	-4.62	0.000
BANKSIZE	0.0411	0.0131	3.15	0.002
_cons	-0.7738	0.2605	-2.97	0.003
F Statistics	7.18			
Prob > F	0.0000			
R-Squared	0.6169			

Source: Researchers' computation



The study employed fixed effect regression as indicated by the Hausman test. Considering the Regression result, R-Square reveals approximately 62% indicating that the explanatory variables considered in the model account for about 62% of the total variation in ROA, while the remaining 38% variation may be as a result of other variables not addressed by this model. F-statistics was significant at 5% evident by its p-value of 0.0000 which implies that independent variables are jointly significant in explaining ROA.

A consideration of the strength of relationships, using the t-statistic shows that the explanatory variables relate significantly with explained variable (Return on Asset) at 5% level except capital adequacy ratio and ratio of loan loss reserve to non-performing loan that relate insignificantly with selected deposit money banks ROA. CR which is proxy by NPLR shows a negative coefficient of -0.2494 and significant at 5% level implying that where other predictor variables are held constant, a unit increase in CR will result to about 0.24 units decrease in ROA. Also, bank size also has a significant positive coefficient of 0.0411 implying that an increase in selected DMBs bank size will result to about 0.041 units increase in ROA.

5. CONCLUSION

The study employed fixed effect regression for each of the models as indicated by the Hausman test. In order to provide answers to the research questions, the regression result R-Square was approximately 62% indicating that the explanatory variables considered in the model account for about 62% of the total variation in ROA, while the remaining 38% variation may be as a result of other variables not addressed by this model. F-statistics was significant at 5% evident by its p-value of 0.0000 which implies that independent variables are jointly significant in explaining ROA.

A consideration of the strength of relationships, using the t-statistic shows that the explanatory variables relate significantly with explained variable (Return on Asset) at 5% CR which is proxied by Non-Performing Loans / Total Loans and Advances shows a negative coefficient of -0.2494 and significant at 5% level implying that where other predictor variables are held constant, a unit increase in credit risk will result to about 0.24 units decrease in Return on Asset. Also, bank size also has a significant positive coefficient of 0.0411 implying that an increase of one unit in selected DMBs bank size will result to about 0.041 units increase in Return on Asset (ROA).



6. RECOMMENDATION

Base on the results of the research, the following recommendations are hereby put forward. Banks need to place and devise strategies that will not only limit the banks exposition to credit risk but will develop performance and competitiveness of the banks, and banks should establish a proper credit risk management strategy by conducting sound credit evaluation before granting loans to customers.

Bank capital must be linked to the total risk exposure of the banks, and new capital requirements must be imposed if there is a gap. Similarly, in other to guarantee that the credit facility operates successfully, regulators should keep a close eye on insider trading interests as well as on loan disbursement. The mandate of the regulatory agency should be re-evaluated so that it can take a more active role in commencing recovery operations for insider-related transactions without fear of retaliation.

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