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Original Research Article

Credit Risk Management and Financial Performance: An Empirical Study of Deposit Money Banks in Nigeria

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Abstract
The relevance of banks to the economy lies primarily in their ability to mobilize credit and grant credit to various economic actors. Credit risks suffered by the banking industry arising from defaults in payment of loans and advances and other credit facilities granted to borrowers by the banks are enormous. There is an increase in challenges to banks posed by incidences of bad debts and other credit risks. It is worrisome to note that the magnitude of non-performing credits is on the increase, thereby making banks lose huge sums of money. The study examines the effect of credit risk management on the financial performance of DMBs (2013-2020). Data were extracted from the annual reports of sampled DMBs. Non-performing loans, & advances revealed a positive significant effect on ROE with (co-efficient 0.0096, 0.0026 and p-values 0.001, and 0.027) respectively. The study concludes that credit risk management has a significant effect on the performance of quoted banks in Nigeria. It therefore recommends that banks should intensify their efforts in ensuring a proper match of loans and deposits to boost their financial performance.

Keywords: Risk, Credit Management, Bank Risk, Credit Management, ROE

JEL Classification Code: C21, C52, H25

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1. INTRODUCTION

Deposit money is bank an institution that provides financial services, including issuing credit facilities in various forms, receiving deposits of money, lending money processing transactions and creating credit to enhance financial performance in return (Campbell, 2007). Banks are custodians of the money they receive from customers as a deposit, interest must be paid to depositors and dividends to the investors, and these payments are made from the profits through credit facilities advanced to borrowers (Nwanna & Oguezue, 2017). Credit management can therefore be seen as an integral part of lending, as in its absence, good loans and other credits can turn bad.

Good credit management requires the establishment of and adherence to sound and efficient credit policies of the government. Credits must be made by banks to people who are capable of utilizing it well and repaying the loan at its maturity. After all, loans and advances are the largest single item in the assets structure of Nigeria's deposit money banks. It constitutes the main source of the operating income of banks and the employment of bank funds (Oduro, Asiedu, & Gadzo, 2019).

In Nigeria, it is common for bankers to overlook some risks and even ignore some regulating guidelines meant to mitigate such risks. A good number of banks had failed and some were on the verge of failing if not for the bank's recapitalization and consolidation reforms in 2004 because of poor management attitudes towards risks, particularly credit risks (Olabamiji & Michael, 2018). The intermediating role of Deposit Money Banks (DMBs) places them in the position of "trustees" of the savings of the widely dispersed surplus economic units. The rate and shape of the techniques employed by bankers in this intermediation function should provide them with perfect knowledge of the outcomes of lending, such that funds will be allocated to investments in which the probability of full payment is certain (Kargi, 2011).

The effective management of credit and liquidity risks is inextricably linked to the development of banking technology, which will enable the bank to increase its speed of decision-making and at the same time reduce the cost of controlling banking risk. The development of these banking technologies that reduce operating costs and cost of risk control will inevitably yield greater earnings and returns for the bank in terms of contribution and profitability.

The world economy was hit by financial crises, and many financial institutions, including deposit money banks, encountered myriads of problems and many banks that could not cope with the situation went under (Isiah, 2016). The impact of the global financial crisis on the banking industry was so devastating that agencies such as the World Bank and Central Banks of various countries had to develop measures to prevent a total collapse of the banking industry. However, these measures could not eliminate the activities of debtors who moved from one bank to another only to obtain loans and abandon their debt obligation (Taiwo, Ucheaga, Achugamonu, Adetiloye, Okoye & Agwu, 2017).

These debtors continue to take advantage of the fact that the core activity through which a bank generates its income is credit creation. Moreover, the greed of some bank officials aids the continuing rise in the ugly incidences of non-performance loans and bad debts (Kargi, 2011). The nature of the business of commercial banks is such that

cannot be divorced from risk, particularly the risk of default on the part of the customers of the bank. Banks maintain large portfolios of financial assets and therefore need internal models to forecast an estimate of the probability and size of the potential loss to be expected over a given period.

Therefore, it is a requirement that banks develop efficient and effective mechanisms that can be used to control the incidence of the various risks that are associated with the banking business. The lack of a well-standardized model to estimate the probability and size of the potential loss to be expected over a given period contributed largely to the financial crisis of 2008 – 2009 (Caouette, et al., 1998).

Each year, banks usually set aside some money to cover the losses which may occur due to different sorts of loans such as mortgages, overdrafts, loans extended to individuals, etc. The banking sector around the world has become increasingly aware of the implicit risks of the financial sector, especially after the financial crises that occurred in various countries at different times (Auronen, 2003). In 2009, the Central Bank of Nigeria (CBN) gave a loan of $2.6 billion to five of its banks to bail them out of distress, after an audit conducted by the CBN found that many banks were prone to instability due to under-capitalization since the affected banks gave large amount of loans to speculators and risky businesses which resulted in loss of huge sums of money in bad debts. Moreover, the CBN had to sack some top officials of banks that fell short in managing the affairs of their banks (CBN Report, 2009).

According to CBN, one of the main reasons behind the recent global meltdown was the poor financial management practices which included poor credit risk management, especially by banking organizations. In most cases, the top management of some of the banks engaged in acts which either created the financial crisis or contributed to the already existing unhealthy circumstances. There were proven cases of some bank executives in Nigeria who were engaged in some unwholesome and sharp practices that led to the problems encountered by those banks among these cases are Skye Bank, Oceanic Bank, and Intercontinental Bank among others (CBN Reports, 2006).

Quite a number of the affected banks suffered very serious setbacks that left the Central Bank of Nigeria with no other option than the reforms that resulted in the eventual sacking of the management of some banks. Banks were made to recapitalize and, in some cases, their mergers, acquisitions and even takeovers. Some of the banks that have been found not healthy have been given a timeframe within which to turn things around or come to the hammer of the central bank (CBN Reports, 2009).

Research conducted shortly after the CBN ordered the merger of some banks in the year 2009 shows that one most important symptoms of bank failures in Nigeria characterized by poor credit risk management is non-performing loans (NPLs). According to Nwaze (2006) in Ugoani (2011) a total of 33 banks were liquidated in Nigeria between 1994 and 2000 due to huge non-performing loans well over N200 billion. Credit risk management has continually led to the failure of banks in Nigeria. Although First Bank of Nigeria is one of the few banks that are fairly financially healthy, it cannot be concluded that this bank (First Bank) is not faced with the issue of non-performing loans.

Owing to the trends in events as evident in the performances of banks the world over, and seemingly unending crises in the various banks in Nigeria, this research considers the various revelations about the banks a matter of serious concern and therefore a problem which emanated from poor credit risk management policies as related to deposit money banks in Nigeria for the period between 2013 - 2020.

2. LITERATURE REVIEW

Bank Risk

The nature of the banking business contains an environment of high risk. So risky in the sense that it is the only business in where proportion of borrowed funds is far higher than the owners' equity (Owojori, et al., 2011). The banking business in comparison to other types of human endeavour is entirely exposed to risks. Banks operate in a rapidly innovative sector with a lot of pressure mounted for profit which urges them for continuous product or service development to cross-sell and upsell to satisfy customers. Banking risks are classified into credit risk, market risk, and operational risk (Basel Committee on Bank Supervision, 2001). However, Santomero (1997) identified six types of risks - systematic or market risk, operational risk, and legal risk. Crouhy, et al., (2006) also made another classification of bank risk to include market risk, credit risk, liquidity risk, operational risk, legal risk, business risk, strategic risk, and reputation risk.

Credit Risk

Credit risk is a serious threat to the performance of banks which when unchecked would lead to the total collapse of banks. Credit risk arises whenever a lender is exposed to loss from a borrower, counterparty, or obligor who fails to honour their debt obligation as they have contracted (Luy, 2010). According to Colquitt (2007), this loss may derive from deterioration in the counterparty's credit quality, which consequently leads to a loss to the value of the debt or the borrower defaults when he is willing to fulfil the obligations. Credit failures in banks are not new or a rare occurrence, they affect their liquidity position as well as cash flows and profits. Hence, Greuning and Bratanovic (2009) maintain that it is the biggest threat to any bank's performance and the principal cause of bank failures.

According to Owojori et al., (2011), available statistics from liquidated banks clearly showed that the inability to collect loans and advances extended to customers and creditors or companies related to directors or managers was a major contributor to the distress of liquidated banks in Nigeria. When this occurred, several banking licenses were revoked by the CBN. As NDIC reports of various years indicate, many banks had ratios of performing credits that were less than 10% of loan portfolios.

Credit risk, as defined by the Basel Committee on Banking Supervision (2001), is also the possibility of losing the outstanding loan partially or totally, due to credit events (default risk). It can also be defined as the potential that a contractual party will fail to meet its obligations following the agreed terms. Credit risk is also variously referred to as default risk, performance risk or counterparty risk (Brown & Moles, 2012).

Credit Management

Credit management policy is a comprehensive process that deals with identifying the target markets, credit extension; credit monitoring and identifying the proceeds. Credit management policy entails the mechanisms, standards and parameters that guide the bank officers in granting loans and managing the loan portfolio under the banking discipline. It is a set of guidelines designed to maximize the cost associated with credit while maximizing benefits from it (McNaughton, 2006). Marsh (2008) further added that credit management policy assists financial institutions' credit departments in the extension of credit privileges governed by rules and guidelines established by top management.

According to Jhingan (2010), a bank needs a high degree of liquidity in its assets portfolio the liquidity of assets refers to the ease and certainty with which it can be turned into cash. The bank must hold a sufficiently large proportion of its assets in the form of cash and liquid assets for profitability. If the bank keeps liquidity at the uppermost, its profit will be low. On the other hand, if it ignores liquidity and aims at earning more, it will be disastrous for it. In managing its investment portfolio a bank must strike a balance between the objectives of liquidity and profitability.

This balance must be achieved with a relatively high degree of safety. According to Graham (2000), profitability is always associated with performance and productivity, therefore true pure profit is the increase in wealth that an investor gets out of making an investment taking into consideration all costs associated with it including the opportunity cost of capital. In the banking industry, every credit granted attracts an interest to the bank. Hence bank lending operations are risky but very profitable. To minimize these risks inherent in banking activities, there is a need for efficient, effective and strategic credit and liquidity management, which will in turn accelerate the tempo of profits.

Credit Risk Management

Credit risk management is a process whereby a bank employs various tools to eliminate or minimize the probability of losing money by inadvertently lending to a person with little ability to repay the loan on time or in full in whatever circumstances they operate in. Credit risk is the biggest risk any bank faces as compared to other risks like interest rate risk, foreign exchange risk and liquidity risk. It is therefore imperative that the bank puts in place a comprehensive process that will make the lending process smooth while effective as far as risk mitigation is concerned. According to Hosna et al (2009), credit risk can be divided into three risks: default risk, exposure risk and recovery risk. Early (1996) and Coyle (2000) defined credit risk management as involving the identification, measurement, monitoring and control of risk arising from the possibility of default in loan repayments.

For most banks, credit risk management starts at the point of first contact with the potential borrowing customer. The loan officer has to listen to the customer carefully, read the body language and ask critical questions to gain a full understanding of the business of the customer. Then a visit to the potential customer is conducted while documents and data analysis follow. Security has to be perfected before a loan is advanced. Thereafter periodic follow-up and business site visit continues throughout the credit period. When this process is well adhered

to, credit risk will be minimised, but when there is pressure to grow the loan book, some of these steps are overlooked and that is when the skyrocketing of the non-performing loans is experienced. A good example is the US financial crisis of 2007.

Credit Risk Management Indicators

According to Ara, Bakaeva and Sun (2009), as cited by Li and Zou (2014), the Basel Accord links the minimum regulatory capital to the underlying risk exposure of banks. It refers to the fact that the greater the risk a bank is exposed to relates to the higher the amount of capital it needs. This regulation indicates the importance of capital management in risk management. Compliance with the regulatory requirements can be expressed as risk management indicators (Li & Zou, 2014). The Basel Accord puts in place some regulations that help to safeguard the deposits from the public by linking the amount of credit portfolio with the amount of capital invested, the capital adequacy ratio (CAR).

CAR measures the amount of the bank’s capital which is related to the amount of risk-weighted credit exposure. However, CAR alone does not tell the whole story. If one wants to know the credit risk status of a bank, he or she also looks at Non-Performing Loans Ratio (NPL/TL), Loans to Deposits Ratio (LD/TD) and Loans Loss Provisions ratio (LLP/NPL). As for NPL/TL, it is relevant to bank loans. Thus, it was considered reasonable to use CAR and NPL/TL in this research, and further discussion of these two variables will be presented in the following sections (Li & Zou, 2014). Conclusively, the choice of CAR, TL/TD, LLP/NPL and NPL/TL is based not only on their properties and frequency of occurrences in previous studies but also on their capability to bring out a more reliable result. Although there could be many indicators for credit risk management, this study will focus mainly on the four; CAR, TL/TD, LLP/NPL and NPL/TL. These four ratios are more comprehensive, direct and easy to interpret.

Non-Performing Loans: Caprio and Klingebiel (1996), suggest that non-performing loans are those loans that do not generate income for a relatively long time that is, the principal and or interest on these loans have been left unpaid after the due date of repayment. The non-performing loans have been a subject of concern in the Nigerian financial system for about a decade now. The excessively high level of non-performing loans in the banks can also be attributed to poor corporate governance practices, lax credit administration processes and the absence or non-adherence to credit risk management practices (Kargi 2011).

Most of the non-performing loans are caused by unprofessional ways the Nigerian bank managements disburse loans influenced by personal affiliations with the customers. Rather than follow the standard procedure of granting loans as provided by the bank, they grant loans based on personal relationships with customers who have not met the bank's requirements for granting such loans. Most of these loans turn out to be non-performing loans in the future. There are also circumstances where banks grant additional loan facilities to defaulting borrowers. As a proactive measure to avert the menace of the resurgence of non-performing loans and to ensure a safe and sound financial system the CBN in June 2014 directed that no financial institutions shall without the prior written approval of the CBN grant a credit facility to a potential

borrower who is in default of any existing credit facility to the tune of N500Million and above in the case of deposit banks and N250Million and above in the case of development banks and banks in liquidation.

Unsecured Loan: These are loans granted to customers of the bank without any right on the property (collateral) of the borrower to ensure repayments. In this case, the lender is relying upon the creditworthiness and reputation of the borrower to repay the debt. This is mostly in situations of short-term debt like bank overdrafts where the amount involved is not much.

Partly Secured Loan: This is a combination of both secured and unsecured features. A secured debt is a loan in which the borrower pledges some asset as collateral for the loan. However, a partially secured debt is a debt that is secured by collateral that is worth less than the debt.

The best form of loan is the secured loan because it provides a backup that allows the bank to recoup the money if the customer defaults in paying back the funds. However, despite all these measures (requesting for collateral) to control the loss of funds/income by the bank we still have cases of non-performing loans.

Review of Empirical Studies

Adegbie and Otitolaiye (2020) examined the effect of credit risk on the financial performance of money deposit banks in Nigeria. A sample of 13 MDB was chosen on purpose, based mainly on the availability of complete data within the study period under consideration. The study found that credit management had a positive significant effect on the financial performance of the MDB while with the control variable of bank size (BSZ), a stronger effect was exhibited, The study found that credit risk with bank size had a stronger significant effect on the financial performance of MDB in Nigeria. The study concluded that credit management influences the financial performance of Deposit Money Banks in Nigeria.

Ndyagyenda (2020) examined the relationship between credit risk management and the financial performance of the Bank of Africa. The study established that the bank has tried to diversify geographically not only within the country even though the majority of loans are granted to different regions within the country but also into neighboring countries like Tanzania. The study concluded that credit appraisal defines a bank's survival and profitability.

Habitegeko, (2018) examined the impact of credit risk management on the financial performance of banking institutions in Rwanda. The study found a significant improvement of bad loans during the period under study, the default rate declined from 8.3% in 2011 to 5.6% in 2017. The study revealed that credit risk management practices like client appraisal, credit risk analysis, credit risk monitoring and control, and lending policies are mostly used by BK to a very or great extent. The study found a positive relationship between credit risk management and financial performance.

Alexis (2017) examined the credit risk management procedures and their influence on the financial performance of micro-finance institutions in Kisii County. The study concluded that the MFIs have put in place mechanisms in place aimed to identify risks and these include the use of risk trigger questions, documented data and interviews

to a great extent while they use risk lists as risk identification methods.

Isiah (2016) examined a comparison of credit risk management in private and public banks in India. The findings revealed that private banks are more capitalized and more profitable than public banks. In addition, in both cases, asset quality measured using non-performing assets with negative coefficients significantly influenced bank profitability. The study extrapolates the importance of regulatory capital and the importance of risk management in ensuring stability in the financial industry.

Ali and Stanley (2016) examined the effect of liquidity management on the financial performance of commercial banks in Somalia. A sample size of 87 respondents was selected using Slogvan's formula. The key findings were liquidity management drivers individually had a positive influence on the financial performance of commercial banks in Mogadishu-Somalia. The overall results indicated that there was a significant linear relationship between account receivable management, account payable and cash management on the financial performance of commercial banks in Mogadishu.

Theoretical Framework: The Credit Risk Theory

Credit risk according to Anderson and Sidenius (2004) refers to the risk that a borrower will default on any type of debt by failing to make required payments. The risk is primarily that of the lender and includes lost principal and interest, disrupt loss may be complete or partial and can arise in several circumstances, such as an insolvent bank unable to return funds to a depositor. To reduce the lender's risk, the lender may perform a credit check on the prospective borrower and may require the borrower to take appropriate insurance, such as mortgage insurance or seek security or guarantees from third parties. In general, the higher the risk, the higher will be the interest rate that the debtors will be asked to pay on the debt (Vasicek, 2002).

3. METHODOLOGY

The research design employed in this study is longitudinal; the choice of the design is informed by the effectiveness of the design in revealing the effect of two or more variables and the effect of one variable on another. It is, therefore, most appropriate for this study because it allows for testing of expected relations between variables and the making of predictions regarding these relationships. This study involved the measurement of three (3) independent variables (loan and advances, secured loan, and non-performing loan) to one dependent variable (return on equity).

Population, Sample Size and Sampling Techniques

The population of the study comprised all twenty-four (24) listed Deposit Money Banks in the Nigerian Stock Exchange as of 31st December 2020. The choice of the banking sector is informed by the fact that the sector is one of the oldest and biggest sectors in the Nigerian economy that is involved in lending money and provides a logical basis for assessing the effect of credit risk management on firm financial performance.

For any deposit money banks to be included as a sample of the study, they must be quoted on the Nigerian Stock Exchange on or 31st December, 2013, It must be a public limited liability bank, and it must be licensed by CBN to operate at national and international levels. Therefore, using the

objective sampling techniques method, in this case, twelve (12) DMBs were selected as the sample for this study.

The study used the result of the Ordinary Least Square (OLS) multiple regression technique of data analysis, as the result from the Hausman was insignificant. In addition, various tests were conducted, ranging from multi-collinearity test, normality test, and heteroscedasticity test. The data analysis was done using Statistics/Data Analysis Software (STATA 13).

The model used to test the hypothesis formulated for this study is presented below.

$ROE_{it} = \beta_0 + \beta_1 LA_{it} + \beta_2 NPLR_{it} + \varepsilon\ it$

Where:

β0 = intercept

β1- β2= Coefficient of the independent variables

NPLR = Non-Performing Loan Ratio

LA= Loans and Advances

εit = Residual or error term of firm "i" in period „t"

ROE = Return on Equity

A priori expectation is that $\beta_1 - \beta_2 > 0$

4. DATA PRESENTATION AND ANALYSES

This section shows the pre-hypotheses testing for descriptive statistic test, multi-collinearity test for pairwise correlation, and heteroskedasticity test using Breusch-Pagan/ cook-Weisberg.

Table 1: Multi-collinearity test -Pairwise Correlation

	NPLR	LA
NPLR	1	
LA	-0.0902	1

Source: Author's Computations (2023)

Table 1 shows the relationship between the independent variables (Multi-collinearity) with the use of pairwise correlation of the independent variables, The result shows that there is an absence of multi-collinearity among the variables because none of the coefficients of the variable is more than 0.5.

Table 2: Multi-collinearity Test - Variance Inflation Factors

Variable	VIF	1/VIF
Non-performing loan ratio (NPLR)	1.14	0.8809
Loan and advances (LA)	1.10	0.9065
Mean VIF	1.08	

Source: Author's Computations (2023)

Table 2 presents the result of pairwise correlation with the use of variance inflation factors (VIF) of the independent variables, the result also shows that there is an absent of multi-collinearity among the variables as indicated by VIF for each variable less than 10, and the average VIF is also less than 10.

Regression Results

Table 3: Hypothesis Testing – Credit Risk Management and Return on Equity (ROE)

Variables	Pool OLS Model	Fixed-effects Model	Random-effects Model
Constant	0.0255	0.0162	0.0252

	(0.055)	(0.256)	(0.056)
Non-performing loan ratio (NPLR)	-0.0111	-0.0096***	0.0111***
	(0.000)	(0.001)	(0.000)
Loan and advances (LA)	-0.0009	0.0028**	-0.0008
	(0.562)	(0.027)	(0.607)
F-stat	4.54***	6.18***	
	(0.0021)	(0.001)	
Wald X^2			17.95***
			(0.001)
Hausman Test		10.34**	
		(0.035)	

*, **, *** : denotes Significant at 10%, 5% and 1% level respectively.
() : denotes P-value, while the value denotes Coefficients

Source: Author's Computations (2023)

Table 3 shows the linear relationship between credit risk management and financial performance as measured by the return on equity (ROE) of quoted banks in Nigeria, with the use of panel regression analysis. The Table shows the result of the pool OLS, fixed-effects and random-effects of the model. Hausman test was conducted to check which model is appropriate between fixed-effects and random-effects; the result shows that the fixed-effects model is appropriate as indicated by a P-value (0.035) less than 0.05 level of significance.
In terms of the sign of the coefficient that signifies the effect of credit risk management on return on equity (ROE) of quoted deposit money banks in Nigeria, it can be seen that two variables loan and advances (LA), and non-performing loan concur with *a priori* expectation with positive sign, this implies that loan and advances (LA) has positive significant impact return on equity (ROE), while non-performing loan ratio (NPLR) does not concur with *a priori* expectation with negative sign, this mean that there is inverse relation between variables non-performing loan ratio (NPLR) and return on equity (ROE).

The first hypothesis of the study was achieved with the magnitude coefficient of variables non-performing loan ratio (NPLR) which has a significant effect on return on equity (ROE) as indicated by a coefficient (0.0096) with P-value (0.001) at a 5% significance level. The null hypothesis was rejected, which means that a 1% increase in non-performing loan ratio (NPLR), will induce a 0.09% increase in ROE of selected deposit money banks in Nigeria. This is in line with the work of Epure and Lafuente (2012); Ali and Stanley (2016) and Das Ghosh (2007).

The second hypothesis of the study was achieved with the magnitude coefficient of variables loan and advances (LA) which also has a significant effect on return on equity (ROE) as indicated by a coefficient (0.0028) with a P-value (0.027) at 5% significance level. The null hypothesis was rejected, this means that a 1% increase in loan and advances (LA) will induce a 0.03% increase in ROE of selected deposit money banks in Nigeria. This is in line with the work of Osuka and Jonathan (2015) but contradicts the result of Kithinji (2010).

Overall, the result of the F-stat (6.18) with a P-value (0.001) at 5% level of significance. This shows that credit risk management has a significant effect on the return on equity of quoted deposit money banks in Nigeria. This implies that if the credit risks of banks are well managed, it will lead to improvement in their financial performance as measured by return on equity. This is consistence with the results of Epure and Lafuente (2012), Juanjuan (2009), Osuka & Jonathan (2015), Ejoh et al., (2014) and Sulaiman & Abdullahi (2014), but against the findings of Kithinji (2010).

5. CONCLUSION AND RECOMMENDATIONS

The study concluded that credit risk management has a significant effect on the financial performance of listed banks in Nigeria, but when individual variables of credit risk are considered, non-performing loan ratio and loan and advances were significant while secured loans were not significant. Based on the conclusion of this study, the following recommends that banks should reduce their non-performing loan to increase their asset quality by identifying various loan risks and device qualitative approaches in controlling for such risks. Banks and bank officials should intensify more efforts in complying with these rules and regulations to minimise credit risk. Banks should intensify their efforts in ensuring a proper match of loans and deposits to boost their financial performance.

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