

## **Risk MANAGEMENT, RISK CONCENTRATION AND THE PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA**

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**ABSTRACT:** *This study investigated the effect of risk management and risk concentration on the performance of Deposit Money banks in Nigeria for the period 1997 to 2016. The study adopted credit risk, liquidity risk and capital adequacy risk as proxies for risk management/concentration, and return on assets as the measure for performance of Deposit Money banks. Secondary data was collected from the annual financial statements of listed banks and the Nigerian Stock Exchange fact book. The study employed multiple regression technique based on the E-views 7 software for analysis of data. The results of the analysis indicated that credit risk and liquidity risk had positive and significant effect on return on asset, while capital adequacy risk had negative and insignificant effect on return on asset. The study concluded that risk management/concentration affected the performance of banks in Nigeria. Based on the findings, the study recommended that the management of banks should establish sound lending policies, adequate credit administration procedure, and effective and efficient machinery to monitor the lending function in line with established guidelines. Also, the character and financial statement of the borrower must be properly scrutinized and a careful evaluation of the customer's credit worthiness be carried out before extending loan facilities to potential borrowers.*

**KEYWORDS;** Risk Management, Credit, Liquidity, Capital Adequacy, Performance, Returns on Assets

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## **INTRODUCTION**

Banks in every country play an important role in economic development through their market position as financial intermediaries and because of the financial services they provide. Their intermediation role can be said to be a catalyst for economic growth. The efficient and effective performance of the banking industry over time is an index of financial stability in any nation. The extent to which a bank extends their operation to the public for productive activities accelerates the pace of a nation's economic growth and its long-term sustainability (Kolapo, Ayeni & Oke, 2012).

The business environment in the 21st century has become multifaceted and intricate than ever. The majority of businesses have to trade with uncertainties and qualms in every dimension of their operations. The risks that are faced by businesses can be categorized into financial and non-financial risks. Both of these types of risks are very vital in order to safely run any business. Sadaqat, Akhtar, & Ali, (2011) scrutinized credit risk having its financial nature and operational risk with its non-financial nature in context to Nigerian Deposit Money Banks, as

financial market of Nigeria is among the most volatile markets of the world which is filled with anonymity and escapade performances. Without doubt, in the present-day's unpredictable and explosive atmosphere all the banks are in front of a hefty risks like: credit risk, liquidity risk, operational risk, market risk, foreign exchange risk, and interest rate risk, along with others risks, which may possibly intimidate the survival and success of the bank's corporate performance. The Nigerian banking industry has been strained by the deteriorating quality of its risk related assets as a result of the significant dip in equity market indices, global oil prices and sudden depreciation of the naira against global currencies (BGL Banking Report, 2010). The poor quality of the banks' loan assets hindered banks to extend more credit to the domestic economy, thereby adversely affecting economic performance. This prompted the Federal Government of Nigeria through the instrumentality of an Act of the National Assembly to establish the Asset Management Corporation of Nigeria (AMCON) in July, 2010 to provide a lasting solution to the recurring problems of non-performing loans that bedeviled Nigerian banks (Kolapo, et al, 2012).

In the last few years, Nigerian banking industry suffered an historic retrogressive trend in both profitability and capitalization. Just 3 out of 24 banks declared profit, 8 banks were said to be in 'grave' situation due to capital inadequacy and risk asset depletion; the capital market slumped by about 70 percent and most banks had to recapitalize to meet the regulatory directive (CBN, 2010). This drama in the banking sector eroded public confidence in banking and depositors funds aggregately dropped by 41% in the period. Possibly due to financial liberalization and globalization, the fact is there has been a reckless abandonment of the essentials of managing risk in times of economic boom and recession; the volatility of bank earnings has been under-rated by bank managements. The central monetary authorities also impacted negatively on stability of the sector. The auditing exercise was a very good one but the sanctity and policy implementation mode was bad considering the nature of the Nigerian economy.

Basically, bank objectives revolve around 3 directions: profitability, growth in asset and customers base. Aremu, Suberu, & Oke (2010) pointed out that the major problem of bank management is the error of prioritizing short term goals over its long term objectives. While profitability is centered on the quality of short term reprievable assets and liabilities, net worth expansion which is the equity capital, is a function of total asset and liability. In Nigeria, it has been observed that most bank managers have focused more on profitability (which usually is a short term objective), with little attention on risk managing the quality of assets which has better impact on the long term sustainability of a financial institution.

The Nigerian banking industry has experienced series of problems right from the early 30s down to the middle of the first decade of the new millennium. In 1930 for instance, 21 banks failed. In 1958 when the Central Bank of Nigeria (CBN) was founded, about 9 banks failed. Still in 1989, about 7 banks failed. In 2006, the numbers of banks in the country were reduced to 24 from 87. The recent record of banks failure in Nigeria was 2011 when 3 banks were acquired by AMCON. But the latest occurred in 2018 when the CBN revoked the operating license of Skye Bank, a public limited company for AMCON to take over the sale process of the bank. As a result of the sales process the new bank is now known as Polaris Bank (Business News, 2018). The bank was liquidated because its capital had slide to a negative position due to non-performing loans; forcing the CBN to invest about 800 billion Naira in the bank (Business News, 2018). The consequences of bank failures are numerous and very unpalatable, not only to the depositors but also the investors, the general banking public and indeed, the

entire economy. The regulators and operators have also not had it easy when financial institutions collapse. Bank failures, in general, impair financial intermediation and efficient allocation of resources. They retard individual well-being and economic progress. But perhaps the problem of bank failure in Nigeria is subject to recurrence. The question is: does it mean that these banks are not managing their risks at all or is it that they are managing them poorly? Another question that comes to mind is: why it is difficult for these Banks to find a lasting solution to this seeming customary problem in the industry?

The review of past empirical literature indicated a lack of consensus in the findings of most researchers. This lack of consensus points to the existence of a research gap and therefore the need for further research on this subject. The problems of bank failures and its consequences already highlighted in earlier paragraphs, and the lack of consensus in the findings of previous studies which in fact is a research gap acted as a motivation for this study to order to fill that gap. The aim of this study therefore was to investigate the link between risk management/concentration, and the performance of Deposit Money Banks in Nigeria. The specific objectives were to establish an explanatory causality link between credit risk, liquidity risk and capital adequacy risk on one hand; and return on assets as proxy for bank performance. The specific objectives formed the rationale for the underlying research questions and the study hypotheses.

The dominant role banks play as catalysts for economic development underpins the significance of this study. Apart from accepting deposits, lending is the primary business of banks and the loan assets created generates the highest income. However loans expose banks to a high degree of risk which if not well managed could lead to the general failure of banks due to heavy loan losses and high provisioning with a negative impact on profitability and overall consequence to an economy. It is for this reason that this study would be of immense benefit to so many interest party such as bankers, analysts, top bank management, auditors, investors, regulators, and researchers alike.

The rest of this paper is organized in four sections. Section two which immediately follows this introduction covers the review of related literature. Section three deals with the study methodology, in section four we presented the results of analysis and discussion, while the paper was concluded with recommendations in section five.

## **REVIEW OF RELATED LITERATURE**

### **Conceptual clarifications**

This study on risk management and the performance of banks in Nigeria adopted credit risk, liquidity risk and capital adequacy risk (measures of risk management/concentration); and return on assets (the measure of performance of banks) as the variables. Some clarifications on these concepts are provided in this section as to the context they are used.

### **Compliance to Basel Accord**

The purpose of risk management is to insure against unexpected developments which can cause financial instability or insolvency in a bank, so as to put banks on a sound footing in line with the Basel Accord. The Basel Accord provides international principles and regulations guiding the operations of banks to ensure soundness and stability. The Accord was introduced in 1988

in Switzerland. Compliance with the Accord means being able to identify, generate, track and report on risk-related data in an integrated manner, with full audit ability and transparency and creates the opportunity to improve the risk management processes of banks. The New Basel Capital Accord places explicitly the onus on banks to adopt sound internal credit risk management practices to assess their capital adequacy requirements (Chen and Pan, 2012).

### **Credit Risk**

Credit risk also known as default risk is the incidence of failure on the part of a borrower to repay loaned amount granted by a bank and interest based on the terms of the loan agreement. Banks give loans as part their financial services with the expectation that the borrowing customer would repay both principal and interest as at when due (Tochukwu, 2016). The incidence of default is regarded as credit risk which threatens the bank's liquidity and solvency. It is the risk involved when the borrower fails to repay a loan granted by a bank (Konovalova, Kristovska & Kudinska, 2016). The default in the repayment of a bank loan by a customer may lead to classification of such loans as substandard, doubtful or lost; as a result of which a loan loss provision would be made in the accounts of the bank. Credit risk ratio is computed as loan loss provision scaled by total loans.

### **Liquidity Risk**

Liquidity risk in a bank is the inability to meet current obligations to depositors or to fund increases in assets as at when due without incurring unacceptable costs or losses (Kumar & Yadav, 2013). A bank that is able to meet depositors' withdrawals and is willing to meet loan demands as well as being able to take advantage of new investment opportunities would be considered to have no liquidity problems. The Basel Committee on Banking Supervision (1997) also stated that liquidity risk is the inability of a bank to accommodate increases in liabilities or to fund increases in assets (Shen et al, (2009). Bank liquidity can be viewed from two perspectives; cash liquidity (the ability to obtain funds from the market); and asset liquidity (the possibility to convert or realize assets to obtain funds). The weakness a bank would undergo to do both leads to liquidity risk. Banks by their operation are statutorily required to meet a certain liquidity reserve ratio, consistent failure to meet it would also threaten the bank's existence. The liquidity risk ratio for a bank can be computed either as total loans portfolio scaled by total assets or liquidity reserve scaled by total assets.

### **Capital adequacy risk**

Capital adequacy risk according Tochukwu (2016) describes the measure of a bank against excess leverage and insolvency to hedge against business difficulty. It relates the bank's capital to its liabilities and risk weighted assets. Adequate capital ensures that a bank has sufficient capital to expand its business and its net worth is enough to absorb any financial losses without going insolvent. Capital adequacy ratio for a bank is calculated as equity capital scaled by total assets (loans and investments) or it can also be viewed as a measure of the amount of a bank's capital expressed as a per cent of its risk weighted exposure. This means capital adequacy stipulates that a bank's capital must match its risks (Tochukwu, 2016). Capital adequacy requirement guarantees stability and efficiency in the banking system to make banks sound and stronger.

## Measures of bank performance

The most common measure of bank performance is profitability. Profitability is measured using the following criteria: Return on Assets (ROA) = a net profit/total asset which shows the ability of management to acquire deposits at a reasonable cost and invest them in profitable investments (Ahmed, 2009). This ratio indicates how much net income is generated per Naira value of assets. The higher the ROA, the more the profitable the bank is. Another measure of a bank's performance is ROE. Return on Equity (ROE) = net profit/ total equity. ROE is the most important indicator of a bank's profitability and growth potential. It is the rate of return to shareholders or the percentage return on each Naira amount of equity invested in the bank. Also useful to be considered as a measure of a bank's performance is the CIR. Cost to Income Ratio (CIR) = total cost /total income measures the income generated per Naira cost of the economic activities utilized in generating the income.. That is, how expensive it is for the bank to produce a unit of output: the lower the CIR ratio, the better the performance of the bank. However, this study adopted ROA as the measure of a bank's performance as this measure best takes into account the interest of all stakeholders, while at the same time it indicates management quality and efficiency in managing the assets of the bank.

## Review of past empirical studies

Several empirical studies have been conducted in the past to investigate the link between risk management and the performance of banks. This section covered a review of some past empirical literature on the topic to provide a basis for this study.

First, Shen et al (2009) investigated the effect of liquidity risk on the profitability of commercial banks for the period 1994 to 2006. The study which involved macroeconomic control variables, adopted ROA, ROE and net interest margin to proxy banks' profitability; while the ratio of less risky liquid assets to total assets and the ratio of risky liquid assets to total assets were used to represent liquidity risk. Data for the was collected from commercial banks of 12 developed countries such as Australia, Canada, Germany, France, Japan, UK, USA, Taiwan, Switzerland, Netherlands, Luxemburg and Italy. The study found that liquidity risk was negatively related to bank performance in market-based financial systems, but had no effect on bank performance in bank-based financial systems. Also, Li, Zou & Lions (2014) investigated the relationship between credit risk management and profitability of commercial banks in Europe, using secondary data from 47 commercial banks covering the period 2007 to 2012. The findings revealed that credit risk management had positive effect on profitability; but more specifically, between the two proxies for credit risk management, non-performing loans ratio had significant effect on both ROE and ROA, while capital adequacy ratio had an insignificant effect on ROE and ROA.

Al-Khouri (2011) assessed the impact of bank's specific risk characteristics, and the overall banks liquidity on the performance of 43 commercial banks operating in 6 of the Gulf Cooperation Council (GCC) countries over the period 1998-2008. The results showed that credit risk, liquidity ratio and capital risk are the major factors that affect bank performance when profitability is measured by return on assets. Poudel (2012) examined the effect of credit risk management on financial performance of banks in Nepal using data for 11 years from 2001 to 2011. The study adopted ROA as the measure of profitability and the dependent variable, while loan default rate, cost per loan assets and capital adequacy were used as proxies for credit risk management (the explanatory variables). Secondary data was collected from 31 banks operating in Nepal. Descriptive statistics and regression techniques based on SPSS 20 version

were employed to analyze data. The results revealed that credit risk management by all parameters used had inverse impact on the financial performance of banks. Epure and Lafuente (2012) examined bank performance in the presence of risk management for Costa-Rican banking industry during 1998-2007. The results showed that performance improvements follow regulatory changes and that risk explains differences in banks and non-performing loans negatively affect efficiency and return on assets while the capital adequacy ratio has a positive impact on the net interest margin.

Mohammad (2015) examined the relationship between banking risk and banks' performance using a set of panel data concerning banks in a developing economy (Pakistan) and a developed economy (the USA). The study adopted return on assets as proxy for efficiency and financial performance; while capital adequacy ratio, bank size, liquidity risk, leverage and management quality as proxies for risk management. Time series panel data obtained from banks in Pakistan (LDC) and USA for the period 2004 to 2014, were analyzed using descriptive statistics and pooled linear regression models. The results showed that banking risk management had positive impact on banks' performance. Abdrahamane, et al (2017) examined the effect of government regulation and bank risk on bank performance in Mali using data from 1998 to 2013. The model adopted captured return on assets as the dependent variable and the indicator of bank performance; the ratio of non-performing loans to total loans (credit risk), ratio of total assets to total deposits (liquidity risk) and inflation represented bank risk; and bank guarantee scheme and capital adequacy requirement stood for government regulation. They used descriptive statistics and simple least squares regression technique to analyze data. The study concluded that banks' appetite for risk is higher leading to better performance under government guarantee schemes and lower capital adequacy requirement. Chenyam and Abderaman (2017) examined the impact of credit risk management on the financial performance of banks in Eritrea using panel data for 18 years from 1998 to 2015. The study variables included ROA (proxy for financial performance), non-performing loans ratio, capital adequacy ratio, loans and advances ratio and loan loss provision ratio (the predictive variables). They employed descriptive statistics, Pearson correlation analysis and multiple regression technique for analyzing data. The findings showed that credit risk management was inversely linked to banks' financial performance.

Kithinji (2010) assessed the effect of credit risk management on the profitability of commercial banks in Kenya. Data on the amount of credit, level of non-performing loans and profits were collected for the period 2004 to 2008. The findings revealed that the bulk of the profits of commercial banks are not influenced by the amount of credit and non-performing loans, therefore suggesting that other variables other than credit and non-performing loans impact on profits. Karugu & Ntoiti (2015) investigated the effect of credit risk management on profitability of commercial banks listed on the Nairobi Securities Exchange. The predictor variables used include credit risk governance, credit appraisal, credit monitoring, and debt collection practices. The study utilized primary data generated through a structured questionnaire involving 55 employees from 11 listed banks. They made use of descriptive statistics and multiple linear regression models in analyzing the study data. The study found that all the predictor variables had significant positive effect on the profitability of banks in Kenya. Kobia & Baimwera (2018) examined the influence of credit risk management on the financial performance of commercial banks in Kenya for the period 2007 to 2017. The study adopted ROA (proxy for financial performance and dependent variable), and capital adequacy, cost to loans ratio, non-performing loans and loans to assets ratio as proxies for credit risk management and explanatory variables. Secondary data was collected from the financial

reports of banks and the annual reports of the Central Bank of Kenya. Data analysis methods used include descriptive statistics, Pearson correlation model and multiple linear regression tools. The findings revealed mixed results even though credit risk management had significant influence on the profitability of banks: loans to assets ratio and capital adequacy had positive impact on financial performance; while non-performing loans ratio and cost to loans ratio exerted negative influence on financial performance.

Kolapo, et al (2012) investigated the effect of credit risk on the performance of banks in Nigeria between 2000 and 2010. ROA was used as the measure of banks' performance, while non-performing loans to loans ratio, loans to deposit ratio and loan loss provision to classified loans ratio represented credit risk. Secondary data obtained from the annual reports of sampled 5 banks were analyzed using panel data estimation techniques. The results showed that credit risk had an inverse relationship with banks' financial performance. Based on the findings they recommended that banks should enhance their capacity in credit analysis and loans administration, while the regulatory authorities enforce banks compliance to statutes. Adeusi, et al (2013) investigated the association between risk management and financial performance of banks in Nigeria for the period 2006 to 2009. They adopted return on equity and return on assets as proxies for financial performance and the dependent variables while the proxies for risk management (liquidity risk, credit risk and capital risk) were the independent variables. Secondary data on the variables were compiled from the annual reports of sampled 10 quoted banks were analyzed using panel data estimation techniques. The results of their analysis revealed that risk management had positive link with the financial performance of banks in Nigeria. Yimka, et al (2015) examined the impact of credit risk management on financial performance in Nigeria using data covering a period of 4 years from 2006 to 2010. They adopted loan loss provisions, total loans and non-performing loans as measures of credit risk management and predictive variables; while return on equity, proxy for financial performance was used as the response variable. Panel data for the study variables was collected from financial statements of 10 banks listed on the Nigerian Stock Exchange. The study employed multiple regression tools based on the E-views software for the analysis of data. The results of the study revealed that the measures of credit risk management adopted had significant effect on financial performance.

Olamide, et al (2015) examined the effect of risk management on financial performance of banks in Nigeria using data from 2006 to 2012. They adopted return on equity as proxy for financial performance (the dependent variable); and non-performing loans ratio, capital ratio, loan/deposit ratio and risk disclosure as proxies for risk management and the explanatory variables. Time series secondary data was obtained from the annual reports of sampled 14 quoted banks. The study employed the ordinary least squares regression technique for the analysis of data. The results showed that risk management had no causality link with financial performance of banks. Etale, Ayunku & Etale (2016) investigated the link between non-performing loans and the performance of banks in Nigeria for the period 1994 to 2014. The study adopted substandard loans, doubtful loans and bad loans to represent non-performing loans, while return on capital employed (ROCE) was used as proxy for performance. Using descriptive statistics, ADF unit root test and multiple regression statistics to analyze data obtained from the annual reports of banks, the study found that high level of non-performing loans reduced banks' performance.

Also, Etale and Bingilar (2016) examined the impact of corporate governance on financial performance of banks in Nigeria. They adopted capital adequacy, asset base and liquidity ratio

as the predictor variables representing corporate governance, while return on total assets was used as proxy for financial performance. Secondary time series data was collected from the annual reports of listed banks obtained from the Nigerian Stock Exchange (NSE) for the period covering 1995 to 2014. The study employed multiple regression analysis technique based on the windows SPSS 20 version to analyze data. The results of the analysis revealed a significant positive relationship between capital adequacy, asset base and return on total assets, while liquidity ratio showed significant negative effect on return on total assets. In another study Etale and Ayunku (2016) examined the relationship between the profitability of banks and non-performing loans in Nigeria for the period 1989 to 2013. This study used ROE and ROA as proxy for profitability and maximum lending rate (a control variable) as the predictor variables; while non-performing loans as responsive variable. The results of analysis showed ROE and MLR had significant negative link with non-performing loans, while ROA had negative but insignificant link with non-performing loans.

The findings of previous studies lacked consensus. This shows a research gap which calls for further researches on this topic, which prompted this study.

## METHODOLOGY

This section deals with the methods adopted in this study, which covers the design, source of data, analysis techniques and tools, and of course the regression model adopted to aid the analysis of data. The study adopt an ex-post facto research design because the data for the study are secondary data that already existed in the audited and published annual reports of sampled listed banks and the Nigerian Stock Exchange fact book for the period covering 1997 to 2016.

Data for the study variables credit risk, liquidity risk, capital adequacy risk and return on assets were compiled from audited and published annual financial statements of banks listed on the NSE as well as the NSE fact book. This source for the type of data used in the study is considered most reliable, as there was no room for the researchers to further manipulate the data. The proxies for risk management; credit risk, liquidity risk, capital adequacy risk are the predictor variables. While the proxy for banks' performance, return on assets (ROA) was used as the response variable.

### Model specification

To facilitate the analysis of data the study modified and adopted a regression model which has been widely used by most researchers such Olamide et al (2015), Etale & Bingilar (2016) to mention a few.

The regression model is stated thus:

$$ROA = f(CRR, LQR, CAR,)$$

The above regression model in translated into an econometric equation as stated below:

$$ROA = \beta_0 + \beta_1 CRR + \beta_2 LQR + \beta_3 CAR + \mu \quad (1)$$

Where:

ROA = Return on assets the response variable and proxy for bank performance.

CRR = Credit risk one of the three independent variables and proxy for risk management.

LQR = Liquidity risk the second independent variable another proxy for risk management.

CAR = Capital adequacy risk the third predictor variable also proxy for risk management.

$\beta_0$  and  $\mu$  are the constant and error term respectively of the equation; while  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$ , are the coefficient of determination of the predictors variables; credit risk, liquidity risk capital adequacy risk.

### Techniques of analysis

The study employed multiple regression analysis based on the E-views 7 software which aided the computation of the coefficient of determination, the F-value, t-test and the Durbin-Watson statistics. The multiple regression technique possesses the unique property of best linear unbiased estimator and the desirable qualities of consistency and efficiency.

## RESULTS OF ANALYSIS AND DISCUSSIONS

**Table 4.1: Multiple regression results**

**Dependent Variable (ROA)**

**Number of Observations (20)**

| Variable           | Coefficient | Std. Error | t-Statistic           | Prob     |
|--------------------|-------------|------------|-----------------------|----------|
| C                  | 15.73211    | 5.435635   | 2.543973              | 0.0003   |
| CRR                | 1.669852    | 0.991508   | 2.683245              | 0.0001   |
| LQR                | 2.145270    | 0.695746   | 2.283798              | 0.0004   |
| CAR                | -0.537317   | -0.785673  | -1.274907             | 0.6573   |
| R-squared          |             | 0.910132   | Mean dependent var    | 6.789719 |
| Adjusted R-squared |             | 0.897455   | S.D. dependent var    | 1.094669 |
| S.E. of regression |             | 0.610223   | Akaike info criterion | 2.096940 |
| Sum squared resid  |             | 4.334834   | Schwarz criterion     | 2.444891 |
| Log likelihood     |             | -12.82093  | F-statistic           | 7.951898 |
| Durbin-Watson stat |             | 2.16817    | Prob(F-statistic)     | 0.001241 |

Computed by the Authors with E-View 7 Software

From the above regression coefficients in Table 4.1 above, we can express the model as follows:

$$\text{ROA} = 15.73211, \text{CRR} = 1.669852, \text{LQR} = 2.145270 + \text{CAR} - 0.537317 + 0.610223$$

From the results of the regression, it is obvious that the constant parameter ( $\beta_0$ ) is positive at +15.73211. This means that if all the independent variables are held constant, ROA as a dependent variable will grow by 15.73211 units in annual-wide basis.

**Credit risk:** For credit risk the coefficient of (CRR) is positive at 1.669852 with the probability value of 0.0001 which means that credit risk have positive and significant effect on return on asset (ROA), a unit increase in credit risk will cause return on asset (ROA) to increase by 1.669852 units.

**Liquidity risk:** The coefficient of liquidity risk (LQR) is positive at 2.145270 with the probability value of 0.0004 which means that liquidity risk (LQR) has positive and significant effect on the return on asset (ROA). A unit increase in liquidity risk (LQR) will cause return on asset (ROA) to increase by 2.145270 units.

**Capital adequacy risk:** The coefficient of capital adequacy risk (CAR) is negative at 0.537317 with probability value of 0.6573 which means that capital adequacy risk (CAR) has negative and insignificant effect on return on asset (ROA). A unit increase in capital adequacy risk (CAR) will cause return on asset (ROA) to decrease by 0.537317 units.

Above all, the Adjusted  $R^2$  is 0.897455. This means that 90% of total variation in Deposit Money banks return on asset can be explained by the variables, namely CRR, LQR and CAR while the remaining 10% is due to other variables outside the model. The Durbin-Watson statistics at (2.16817) is within the critical threshold; this means that the model is free from autocorrelation.

## DISCUSSION OF FINDINGS

**Credit risk:** The result of the regression indicates that credit risk (CRR) has positive and significant effect on return on asset (ROA), the results of our findings are not consistent with the work of Etale & Ayunku (2016) in terms of non-performing loans (NPL), it was discovered that NPL had negative and significant effect on return on asset (ROA)

**Liquidity risk:** The result indicates that liquidity risk (LQR) has positive and significant effect on return on asset (ROA). The result of our findings are not consistent with the work of Etale & Binglar (2016), they found that liquidity ratio had negative and significant effect on return on asset (ROA).

**Capital adequacy risk:** the result indicates that, capital adequacy risk (CAR) has negative and insignificant effect on return on asset (ROA). The result of our findings are not consistent with the of Etale & Binglar (2016), Kobia & Baimwera (2018) in terms of capital adequacy risk, it was discovered that capital risk has positive and insignificant effect on return on asset (ROA).

In line with the research objectives and hypotheses, the result of the study indicates that credit risk and liquidity risk have positive and significant effect on return on asset (ROA), while capital adequacy risk has negative and insignificant effect on return on asset (ROA). Above all, the value of the coefficient of determinations, denoted by ( $R^2$ ) is 0.910132 or approximately 91%. This means that 91% of total variation in the profitability of Deposit Money banks can be explained by the variables, namely CRR, LQR and CAR while the remaining 10% is due to

other variables outside the model. Also, the adjusted  $R^2$  value of 0.897455 means that the regression model is a proper and good fit (at 90 per cent confidence level), in explaining the causality link between the response variable and the predictor variables. The Durbin-Watson statistics at (2.16817) is within the critical threshold; this means that the variables used in the model are free from autocorrelation.

The implications of these findings is that efficient risk management will lead to reduction in non-performing loans and advances which consequently will result to a reduction in bad debts and loans losses thereby enhancing the performance of deposit money banks through increased return on assets. However, poor management of bank risks would lead to higher loan losses and provisioning which reduces performance of deposit money banks with dwindling return on assets.

## CONCLUSION AND RECOMMENDATIONS

### Conclusion

This study investigated the effect of risk management on the performance of Deposit Money banks in Nigeria for the period 1997 to 2016. The three components of risk management adopted as the explanatory variables include credit risk, liquidity risk and capital adequacy risk. The response variable in the study model is return on assets, used as proxy for performance of Deposit Money banks. Secondary data was collected from the annual financial statements of listed banks and the Nigerian Stock Exchange fact book. The study employed multiple regression technique based on the E-views 7 software for analysis of data. This technique possesses the desired qualities of non-biasness, consistency and efficiency.

The results of the analysis indicates that credit risk (CRR) and liquidity risk (LQR) have positive and significant effect on return on asset (ROA) while capital adequacy risk (CAR) has negative and insignificant effect on return on asset (ROA). The study thus concludes that risk management/concentration has positive effect on the performance of Deposit Money banks in Nigeria; and this conclusion support the results of Yimka et al (2015), Karugu & Ntoiti (2018) and Adeusi et al (2013), but are not consistent with the findings of Olamide et al (2015) and Kolapo et al (2012).

### Recommendation

Based on the findings, the study made the following recommendations:

1. Bank management should establish sound lending policies, adequate credit administration procedure and an effective and efficient machinery to monitor the lending function in line with established guidelines.
2. The character and financial statement of the borrower must be properly scrutinized and a careful evaluation of the customer's credit worthiness be carried out before extending loan facilities to potential borrowers.
3. Banks in close collaboration with the Central Bank of Nigeria and Nigeria Deposit Insurance Corporation should publish the names of bad and doubtful debtors for update into the Credit Bureau databank.

4. Financial institutions should come together, set up Credit Bureau and establish a form of databank where every bank will submit the names of its defaulting customers for references by lending institutions. This will equally frustrate multiple borrowing from banks for the same purpose by dubious customers.
5. Bank managers should regard risk management as an integral element of corporate strategy and seek the support of top management on one hand. Also, top management of banks on the other hand should support managers in implementing strategies for risk reduction.
6. The risk factors involved in the lending process should be assessed from time to time and appropriate strategies embarked upon to reduce the risk so identified for effective, efficient and profitable performance of Deposit Money banks in Nigeria.

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