

## **Credit Risk Management and Profitability of Deposit Money Banks in West African Countries.**

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### **Abstract**

*This study sought to ascertain the relationship between Credit Risk Management and Profitability of Deposit Money Banks (DMBs) listed on Stock Exchange of two selected West African countries using a sample of twenty (20) Deposit Money Banks (DMBs). We covered 10 years period spanning from 2009 to 2018. Ex-Post Facto research design was employed while secondary data were collected and subjected to multiple regression and correlation analysis in order to achieve the study objectives. Three (3) specific objectives and hypotheses were tested and analyzed using descriptive statistics, Pearson correlation analysis and panel regression analysis. Our result revealed that credit risk has negative and significant effect on performance of banks in both Ghana and Nigeria using Return on Equity (ROE) as a proxy for measuring performance which was statistically significant at 1% level of significance. Based on our findings, it was recommended that banks in Nigeria and Ghana should enhance their capacity in credit analysis to reduce the risk of default in repayment. Therefore, to stem the cyclical nature of non-performing loans and increase their profits, West African banks should adopt an aggressive deposit mobilization to increase credit availability and develop a reliable credit risk management strategy with adequate punishment for loan payment defaults.*

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**Keywords:** Credit risk, capital adequacy risk, loan loss provision, ROA, West Africa

## 1 Introduction

Risks are uncertainties that are always evident in all business establishments that are in place with the sole aim of making profits. Financial institutions in their part are exposed to various kinds of risks among them credit risk, interest rate risk, liquidity risk, market risk, foreign exchange risk, currency risk, commodity risk and operational risk which are the most applicable risk to the banks (Cooperman, Mills & Gardner, 2000). Credit risk, also called default risk, is the risk associated with a borrower going into default that is not making payments as promised. There is always the possibility for the borrower to default from his or her commitments for one or the other reason resulting in crystallization of credit risk to the bank. These losses could take the form of outright default or alternatively, losses from changes in portfolio value arising from actual or perceived deterioration in credit quality that is short of default.

Credit risk is the exposure faced by banks when a borrower (customer) default in honoring debt obligations on due date at maturity (Ebrahim, Khalil, Kargbo, & Xiangpei, 2015). To this end, the need for financial risk management in the banking sector is inherent in the nature of banking business. However, in today's dynamic environment, banks are exposed to a large number of risk such as credit risk, liquidity risk, operational risk and macro economic instability, (inflation, weak growth) among others are the risks that creates some source of threat for banks survival and success. BGL Banking Report (2015) cited by Kolapo, Ayeni and Oke (2017) stressed that the Nigerian banking industry has been strained by the deteriorating quality of its credit assets as a result of the significant dip in equity market indices, global oil prices and sudden depreciation of the Naira against global currencies. The poor quality of the bank's 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 bedevilled Nigerian banks.

Financial risk is the unexpected variability or volatility of returns (Holton, 2004). It includes credit, liquidity and market risks which contribute to the volatility of financial performance (Tafri, Hamid, Meera, & Omar, 2009; Dimitropoulos, Asteriou, & Koumanakos, 2010). The hypothesis is that financial risk leads into failure of financial performance if it is not well managed. The financial crisis acquires unparalleled proportions and inflicted long-term damage on economies, countries and people. Every business decision and entrepreneurial act is connected with risk. Many risks are common to all financial institutions. From banks to microfinance institutions, these include credit risk, liquidity risk, market or pricing risk, operational risk, compliance and legal risk, and strategic risk (Tomak, 2013). In the view of Iwedi, and Onuegbu (2014), they reported that the banking industry had been hit by low quality loan assets as a result of poor economic and financial conditions in the country following the Great financial recession of 2008 and the negative oil price shock. Low debt recovery hindered banks from extending further credit into the economy which adversely affected productivity. Asset Management Corporation of Nigeria (AMCON) was then

established in 2010 as a monetary policy response to solve the aching problem of non-performing loans troubling the commercial banks. Then in 2016, Nigeria faces another economic crisis in the form of falling oil prices, poorly performing financial market and worrisome interest rate and exchange rate volatility, issues of credit defaults and non-performing loans have once again come to the forefront of economic discourse. Thus the issue of risk management is very important in any financial institution as it is because of this the financial crises that have hit financial institutions before would have been avoided if they had taken it into consideration thus risk management is considered a key factor for all companies that are in any business operation.

Deposit Money Banks play essential roles in the process of economic development. As financial intermediaries, they facilitate the mobilisation of financial resources from surplus units to deficit units, thereby ensuring efficient allocation and utilisation of funds. To play this crucial development role on a sustainable basis, commercial banks must have sound corporate risk management systems in place to forestall the possibility of insolvency, illiquidity and eventual failure. Therefore, the attempt to put an end to this economic degradation, that gave rise to the topic of this research. It is against this backdrop that this study seeks to examine the relationship between credit risk management on performance of deposit money banks across two West African Countries. Which is the main objective of this study, the specific objectives are;

- 1 To ascertain the effect of Credit Risk on performance of Deposit Money Banks of West African Countries.
2. To examine the effect of capital adequacy risk on performance of Deposit Money Banks of West African Countries.
3. To determine the effect of loan loss provision on performance of deposit money banks in West African Countries

## **2.1 Literature Review and Hypothesis Development**

### **2.2.1 Credit Risk and Banks Performance**

The issue of credit risk management and performance of financial institutions in ensuring that banks are able to achieve their set objectives has been well researched upon by numerous academics. There is an overwhelming belief that credit risk management has a strong influence on bank profitability. Shafiq and Nasr (2010) examined the key determinants of credit risk of commercial banks on emerging economies banking systems compared with the developed economies and found that the credit risk management had a significant influence on bank profitability. Kargi (2011) studied some Nigerian banks between 2004 and 2008 and found that there exists a significant relationship between banks performance and credit risk management. Das and Ghosh, (2007) revealed that credit risk management has a strong bearing on bank profitability in Kenya. Iwedi & Onuegbu, (2014)) posit that credit risk management plays a key role in bank's financial performance. Hosna and Manzura, (2009) investigated the effects of credit risk and other risk components on the banks' financial performance. They found a strong relationship between risk components and the banks' financial performance. Harvey & Merkowsky (2008) examined the relationship between credit risk and banks' profitability. They found a linear relationship between credit risk and bank profitability. Afriyie & Akotey, (2011) investigated the effect of credit risk management techniques on the banks' performance of unsecured loans. They concluded that financial risk in a banking organization might result in imposition of constraints on bank's ability to meet its business objectives.

Grace (2012) assessed the effect of credit risk management on the financial performance of commercial banks in Kenya through secondary data collected from the commercial banks annual reports for the period 2007-2011 and her result showed that there is a significant relationship between performance in terms of profitability and credit risk management in terms of loan performance and capital adequacy.

Akong'a (2014) results of the analysis indicated that non-performing loans ratio (NPLR) has a strong correlation with ROA and both cash to deposit ratio and current ratio have a weak correlation with ROA. Hence, the regression as a whole is significant meaning that NPLR, Current Ratio and Cash to deposit ratio reliably predict ROA.

Kolapo, Ayeni and Oke (2012) carried out an empirical investigation into the quantitative effect of credit risk on the performance of commercial banks in Nigeria over the period of 11 years (2000-2010) using five commercial banking firms that were selected on a cross sectional basis for eleven years. The traditional profit theory was employed to formulate profit, measured by Return on Asset (ROA), as a function of the ratio of Non-performing loan to loan & Advances (NPL/LA), ratio of Total loan & Advances to Total deposit (LA/TD) and the ratio of loan loss provision to classified loans (LLP/CL) as measures of credit risk. Panel model analysis was used to estimate the determinants of the profit function. The results showed that the effect of credit risk on bank performance measured by the Return on Assets of banks is cross-sectional invariant.

Ogilo (2012) provided a comparative study of Credit Risk Management on Financial Performance of Commercial Banks in Kenya. The study documented that capital adequacy, asset quality, management efficiency and liquidity (CAMEL) had weak relationship with financial performance (ROE) whereas earnings had a strong relationship with financial performance. The study concluded that CAMEL model can be used as a proxy for credit risk management. Etale, Ayunku and Etale (2016) investigated the relationship between non-performing loans and bank performance in Nigeria for the period 1994-2014. The results of the study show that Bad loans (BAL) and Doubtful loans (DOL) had statistically negative significant influence on Return on capital employed (ROCE), while Sub-standard loans (SUL) had statistically negative insignificant impact on ROCE. These results show that high level of non-performing loans would reduce the performance of banks in the long run in Nigeria. Khouri (2011) studied the Risk Performance of the GCC Banking and assessed the impact of bank's specific risk characteristics, and the overall banking environment on the performance of 43 commercial banks operating in 6 of the Gulf Cooperation Council (GCC) countries over the period 1998-2008. Using fixed effect regression analysis, results showed that credit risk is a major factor that affect bank performance when profitability is measured by return on assets while the only risk that affects profitability when measured by return on equity is liquidity risk. Osuka and Amako (2015) using time series data from 2001 – 2011 appraised the impact of the credit risk management in bank's financial performance in Nepal. The result of the study indicates that credit risk management is an important predictor of banks' profitability and financial performance. Furthermore, Chen and Pan (2012) in their work examined the credit risk efficiency of Taiwanese Commercial banks over the period 2005-2008. Their study used financial ratios to assess the credit risk and was analyzed using Data Envelopment Analysis (DEA). The result of their study indicated that only one bank is efficient in all types of efficiencies over the evaluated periods. Athanasoglou, Brissimis and Delis (2005) adopted dynamic panel data models to investigate the effect of credit risk on the profitability of

Greek banks. Their findings show that credit risk is negatively and significantly related to profitability. The result implies that an increased exposure to credit risk lowers profits. Similarly, Felix and Claudine (2008) examined the influence of credit risk management on bank performance. Their findings suggest that bank profitability is inversely related to the ratio of non-performing loan to total loan of banking institution. In a study on effective credit processing and administration as a panacea for non-performing assets in the Nigerian banking system, Aremu, Suberu and Oke (2010) identifies non-performing credit as the major threat to the profitability of banks in Nigeria.

Kargi (2011) investigated the impact of credit risk on the profitability of Nigerian banks, using data on six selected banks for the periods of 2004 to 2008. The ratio of non-performing loans to total loans and advances and the ratio of total loans and advances to total deposit were used as indicators of credit risk while return on asset indicates performance. From their findings, it is established that banks profitability is inversely influenced by the levels of loans and advances, non-performing loans and deposits, thereby exposing the banks to great risk of illiquidity and distress. Also, Dietrich and Wanzenried (2011) in their study approximating credit risk by the loan loss provisions over total loans ratio, suggest a negative relationship between credit risk and banks' profitability.

Notwithstanding the general lack of consensus in the literature on the effect of credit risk on bank performance, theory suggest that an increased exposure to credit risk is often associated with decrease in bank profitability. *Hence, we expect a negative relationship between ROE and the credit risk variable.*

### **2.1.2: Capital Adequacy Risk and Banks' Performance**

Grace (2012) assessed the effect of financial risk management on the financial performance of commercial banks in Kenya through secondary data collected from the commercial banks annual reports for the period 2007-2011 and her result showed that there is a significant relationship between performance in terms of profitability and credit risk management in terms of loan performance and capital adequacy. Ogilo (2012) provided a comparative study of Risk Management on Financial Performance of Commercial Banks in Kenya. The study documented that capital adequacy had weak relationship with financial performance (ROE). Khouri (2011) studied the Risk Performance of the GCC Banking and showed that capital adequacy risk is the major factors that affect bank performance when profitability is measured by return on assets. Li yuqi (2007) examined the determinants of banks profitability and its implications on risk management practices in the United Kingdom. The study employed regression analysis on a time series data between 1999 and 2006. Six measures of determinants of bank's profitability were employed. They indicated Liquidity, credit and capital as internal determinants of banks' performance. GDP growth rate, interest rate and inflation rate were used as external determinants of banks profitability. The six variables were combined into one overall composite index of bank's profitability. Return on Asset (ROA) was used as an indicator of bank's performance. Ogilo (2012) provided a comparative study of credit risk management on financial performance of commercial Banks in Kenya. The study established that capital adequacy, asset quality, management efficiency and liquidity (CAMEL) had weak relationship with financial performance (ROE) whereas earnings had a strong relationship with financial performance. Nevertheless, considering the contradicting theoretical argument, this paper does not predict any sign for the capital adequacy ratio but propose



that *there is a significant relation between capital adequacy and performance of banks (Hypothesis 2)*

### **2.1.3: Loan Loss Provision and Banks' Performance**

Kolapo (2012) on his study on credit risk and commercial banks' performance in Nigeria carried out an empirical investigation into the quantitative effect of credit risk on the performance of commercial banks in Nigeria over the period of 11 years (2000 - 2010). Five Commercial banking firms were selected on a cross sectional basis for eleven years. The traditional profit theory was employed to 24 formulate profit, measured by Return on Asset (ROA), as a function of the ratio of Non - performing loan to loan & Advances (NPL/LA), ratio of Total loan & Advances to Total deposit (LA/TD) and the ratio of loan loss provision to classified loans (LLP/CL) as measures of credit risk. Kolapo, Ayeni and Oke (2012) carried out an empirical investigation into the quantitative effect of credit risk on the performance of commercial banks in Nigeria over the period of 11 years (2000-2010). The traditional profit theory was employed to formulate profit, measured by Return on Asset (ROA), as a function of the ratio of Non-performing loan to loan & Advances (NPL/LA), ratio of Total loan & Advances to Total deposit (LA/TD) and the ratio of loan loss provision to classified loans (LLP/CL) as measures of credit risk. A 100 percent increase in loan loss provision also reduces profitability by about 0.65 percent while a 100 percent increase in total loan and advances increase profitability by about 9.6 percent.

As a matter of fact, drawing on the above discussion and prior studies' findings, this study does not wish to predict any sign for loan loss provision, instead we hypothesize that *there is a significant relationship between loan loss provision and performance of banks (Hypothesis 3)*

### **2.2: Theoretical framework:**

There are numerous theories developed to guard against banks operation and its associated risk. Such theories include modern portfolio theory, anticipated income theory, moral hazard theory, Commercial loan theory, the shiftability theory, the liability management theory, financial economic theory etc. This current paper was anchored on the anticipated income theory.

#### **2.2.1: The Anticipated Income Theory**

Out of a comprehensive study in 1949, Prochnow formulated a new loan theory which he called "the Anticipated Income Theory". According to Afriyie and Akotey, (2011), they found in their study that: In every instance, regardless of the nature and character of the borrower's business, the bank planned liquidation of term loans from anticipated earnings of the borrower. liquidation is not by sales of assets of the borrower as in commercial or traditional theory of liquidity or by shifting the term loan to some other lenders as in the shiftability theory of liquidity but by anticipating income of the borrower. In effect, this theory assumes that banks should make loans on the basis of the anticipated income of the borrower and not on his present value. In the words of Kolapo, Ayeni, and Oke, (2012), one striking thing with this theory is its future-oriented approach to bank loans and advances. It is also generally known as "cash flow approach" to lending. Properly understood, this theory was a rival only to the commercial loan theory, not the shift ability theory. It does not question the shiftability view that a bank's most fundamental source of liquidity is its secondary reserves. Rather, it again focused attention on the types of loans appropriate for a bank to make but came to quite a different conclusion than that reached by the advocates of the commercial loan theory (Moti, Masinde, & Mugenda, (2012). We therefore

anchored our paper on this anticipated income theory because when the income of a borrower is anticipated and known, the risk associated with such loan can be averted and other necessary adjustments can be made to reduce its future occurrence.

### 2.3 Webometric Review of Prior Studies

*Below are some details of earlier researchers which establish and revealed the under listed theories*

#### 3.1 METHODOLOGY

| Authors /Year               | Country / Period           | Title                                                                                                        | Methodology                   | Variables                                                                                | Findings                                                                                                                                                                                                                                                  | Recommendation                                                                                                                                                                                                                                  |
|-----------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Li yuqi (2007)              | United Kingdom (1999-2006) | Determinants of banks profitability and its implications on risk management practices in the United Kingdom. | Ex-post facto research        | Liquidity risk, credit risk, capital, GDP growth rate, interest rate and inflation rate. | The six variables were combined into one overall composite index of bank's profitability. Return on Asset (ROA) was used as an indicator of bank's performance. It was found that liquidity and credit risk have negative impact on bank's profitability. | The study recommends that banks should manage risks involved during their operations to minimize potential risks and losses involved. It also recommends that banks should develop strategies to manage risks involved during their operations. |
| Harvey and Merkwosky (2008) | Nigeria (2004 – 2008)      | The Role of Credit Ratings in Managing Credit Risk in Federal Treasury Activities                            | Descriptive statistics        | Credit risk, profitability                                                               | They found out that credit risk management has a significant impact on profitability of Nigerian banks.                                                                                                                                                   | They recommended that credit risk management should be the priority of every banks.                                                                                                                                                             |
| Githinji (2010)             | Kenya (2004-2008)          | Credit Risk Management and Profitability of Commercial Banks in Kenya                                        | Ex-post facto research design | Profits, amount of credit and the level of non-performing loans.                         | The results of the study showed that, there was no relationship between profits, amount of credit and the level of                                                                                                                                        | He recommended that commercial banks that are keen on making high profits should concentrate on other                                                                                                                                           |

|               |                                                       |                                                                                            |                               |                                                                                            |                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                         |
|---------------|-------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
|               |                                                       |                                                                                            |                               |                                                                                            | nonperforming loans. The results further revealed that there was no significance relationship between the banks profit and credit risk management proxy by level of Non-performing Loans and Loans and Advances/Total Assets.                                                                                      | factors other than focusing more on amount of credit and nonperforming loans.                                                                           |
| Khoury (2011) | Gulf Cooperation Council (GCC) countries (1998-2008). | Risk Performance of the GCC Banking and the impact on bank's specific risk characteristics | Ex-post facto research design | Roa, Credit Risk, Liquidity Risk And Capital Risk                                          | Using fixed effect regression analysis, results showed that credit risk, liquidity risk and capital risk are the major factors that affect bank performance when profitability is measured by return on assets while the only risk that affects profitability when measured by return on equity is liquidity risk. | It was recommended that banks that are keen on making high profits should concentrate on other factors other than bank's specific risk characteristics. |
| Boland (2012) | Costa-Rica (1998-2007)                                | Managing Risk on Global basis.                                                             | Ex-post facto research design | non-performing loans, return on assets (ROA), capital adequacy ratio, net interest margin. | The result of their study 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 (ROA) while the capital adequacy ratio has a positive impact                                       | He recommended that performance improvements should follow regulatory changes.                                                                          |



|                             |                     |                                                                                                      |                                          |                                                                                   |                                                                                                                                                                                                                                                                |                                                                                                                                                                               |
|-----------------------------|---------------------|------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             |                     |                                                                                                      |                                          |                                                                                   | on the net interest margin.                                                                                                                                                                                                                                    |                                                                                                                                                                               |
| Boahene et al., (2012)      | Ghana               | The relationship between credit risk and profitability of Ghanaian banks.                            | Ex-post facto design                     | Return on Equity, a ratio of non-performing loans to total asset                  | They found empirically that there is an effect of credit risk management on profitability level of Ghanaian banks.                                                                                                                                             | The study also suggests that higher capital requirement contributes positively to bank's profitability.                                                                       |
| Kolapo, Ayeni, Oke, (2012)  | Nigeria (2000-2010) | Effect of credit risk on the performance of commercial banks in Nigeria                              | Regression model analysis                | Credit risk, return on asset.                                                     | Credit risk has a significant effect on Return on Asset,                                                                                                                                                                                                       | Regulatory authority should pay more attention to banks' compliance to relevant provisions of the Bank and other Financial Institutions Act (1999) and prudential guidelines. |
| Kuan-Chung, Chung-Yu (2012) | Taiwan (2005-2008)  | Credit risk and performance of commercial banks                                                      | Data envelopment analysis (DEA) approach | Credit risk cost, return on asset.                                                | Credit risk allocative efficiency (CR-AE) and credit risk cost efficiency (CR-CE) are inefficient over our observational periods.                                                                                                                              | Banks should have different strategies of credit risk management to survive in this changing environment.                                                                     |
| Ogilo (2012)                | Kenya               | A comparative study of Credit Risk Management on Financial Performance of Commercial Banks in Kenya. | A causal research design                 | Capital adequacy, asset quality, management efficiency and liquidity (CAMEL), ROE | The study found out that there was a strong impact between the CAMEL components on the financial performance of commercial banks. The study also established that (CAMEL) had weak relationship with financial performance (ROE) whereas earnings had a strong | The study concluded that CAMEL model can be used as a proxy for credit risk management.                                                                                       |

|                                              |                     |                                                                                                      |                                                 |                                                    |                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------|---------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Grace (2012)                                 | Kenya (2007-2011)   | Effect of credit risk management on the financial performance of commercial banks in Kenya           | Ex-post facto design                            | Credit risk, loan performance and capital adequacy | relationship with financial performance.<br>The study showed that there is a significant relationship between performance in terms of profitability and credit risk management in terms of loan performance and capital adequacy.                                                                     | Kenyan banks should ensure transparency of banking activities and the risks inherent in those activities, including credit risk.                                                                                                                                                                                                                                                               |
| William (2012)                               | Kenya (2008-2012)   | The influence of financial risk management on the financial performance of commercial banks in Kenya | Descriptive Survey design                       | Credit risk, Roa                                   | The study found that most commercial banks had highly adopted financial risk management practices to manage financial and credit risk and as a result the financial risk management practices mentioned herein have a positive correlation to the financial performance of commercial banks of Kenya. | The study recommends that commercial banks should seek and obtain information consistently so as to permit them to detect potential problems at an early stage and identify trends not only for particular institutions, but also for the banking system as a whole, while also ensuring transparency of banking activities and the risks inherent in those activities, including credit risk. |
| Adeusi, Akeke, Adebisi and Oladunjoye (2013) | Nigeria (2009-2-13) | Risk management practices and bank financial performance                                             | Correlation and Panel data estimation technique | Doubt loans and capital asset ratio                | The result implied an inverse relationship between financial performance of banks and doubt loans, and capital asset ratio was found to be positive and significant.                                                                                                                                  | There is need for banks to practice prudent risks management in order to protect the interests of investors.                                                                                                                                                                                                                                                                                   |

|                             |                     |                                                                                                                               |                               |                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                          |
|-----------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Onyefulu, Okoye and Orjinta | Nigeria (2009-2018) | Financial Risk and Performance of Deposit Money Banks (DMBs) listed on Stock Exchange of two selected West African countries. | Ex-post facto research design | Operational risk, Liquidity Risk, operational risk and interest rate risk, | Their result revealed that Liquidity risk has negative and significant effect on performance of banks in both Ghana and Nigeria using ROA model while using ROE the negative effect of credit risk on banks performance was found to be statistically insignificant. Operational risk was discovered to have positive and significant effect on performance while Liquidity risk was found to have insignificant effect in both Ghana and Nigeria banks. | They recommend that deposit money banks should be well capitalized according to the size of their loan portfolio and regulatory requirement in order to cushion the loan loss from non-performing loans. |
|-----------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

This study adopted *Ex-Post Facto* research design in conducting and covered all the selected listed banks in West Africa within the period of ten years from 2009 to 2018. The investigation period ends at December 2018 due to lack of data availability in 2019 as the most recent year during the time of this study. West African countries covered include Nigeria and Ghana. These two West African countries were selected because they have the largest and most active stock markets in West Africa. Deposit money banks were chosen because of their uniqueness in financial reporting disclosure requirements. The start of 2009 is chosen because this period is generally considered as the start of the financial crisis in which the first severe sub-prime losses were realized. Purposive sampling technique was employed to arrive at ten (10) banks each from the two countries and this was considered as sample size for this study based on the availability and completeness of data set for the studied period (2009-2018). Ten banks each from Nigeria and Ghana were chosen for easy comparison to give us a total of twenty banks for the two countries.

#### 4.1 Test of Hypotheses

The study investigated the relationship that exists between financial risk and performance of listed deposit money banks in two West African countries between 2009 and 2018. The study carried out some preliminary tests like descriptive statistics (See table 1 under appendix) and correlations analysis (See table 2 under appendix). The descriptive statistics was used to analyse the data in order to ascertain the normality and nature of the data. Correlation analysis was used to ascertain

the association between the variables and to test for the presence of multi-colinearity. To further check for the case of perfect correlation among variables, Variable inflation factor (VIF) was conducted. Finally, the study used panel regression analysis in obtaining functional causal effect relationship between Credit Risk management and Bank profitability.

**Table 4.1.1 Descriptive Analysis:**

|              | ROE       | CRSK      | CARSK    | LLPV      |
|--------------|-----------|-----------|----------|-----------|
| Mean         | 11.20801  | 0.564188  | 16.01921 | -25.19522 |
| Median       | 10.98000  | 0.540000  | 14.40000 | -19.82800 |
| Maximum      | 91.95000  | 2.100000  | 70.89000 | -1.329000 |
| Minimum      | -14.97000 | -0.020000 | 0.520000 | -99.48000 |
| Jarque-Bera  | 3078.680  | 197.5860  | 5665.876 | 61.77407  |
| Probability  | 0.000000  | 0.000000  | 0.000000 | 0.000000  |
| Observations | 200       | 200       | 200      | 200       |

*Source: Researchers Summary of Descriptive result (2020)*

*Note: \*1% level of significance, \*\*5% level of significance, \*\*\*10% level of significance.*

The descriptive statistics result in Table 4.1.1 above shows the mean values for each of the variables, their maximum values, minimum values, standard deviation and Jarque-Bera values which show the normality of the data. The result provides some insight into the nature of the selected listed deposit money banks from two West African countries that were used in the study. Firstly, it was observed that over the period under review, the sampled banks have average positive return on equity. Within the period under review, the firms have maximum value of return on equity of 91.95 while the minimum value of return on equity was -14.97. The large difference between the maximum and minimum values of return on equity indicates that the performance of the deposit money banks differs greatly among the banks selected and over the period under review, this shows that the banks are not heterogeneous in nature. This extreme large value of ROE implies that some banks in the sample performed poorly while some had very good ROE when compared to the average value. This therefore means that banks with mean value higher or equal to 11.2 are high profitable banks while banks with the value below 11.2 are low profitable banks. This therefore means that banks with ROE of 11.2 and above are classified as above average performing banks while those with their ROE values below 11.2 were classified as below average in their performance. Hence, it can be argued that West African banks had been efficient enough to generate a higher rate of return out of their equity. The researchers need to identify whether the source of their profitability attributes to real productivity and effectiveness or just aggressive risk-taking behaviour so as to maintain it in the future.

The mean log value of credit risk which proxy non-performing loans (CRSK) of the selected banks was 0.564 while its median value was 0.540. The maximum value of credit risk was 2.10 while the minimum value was -0.020. This means that it was only banks that adopted an aggressive deposit mobilization to increase credit availability and develop a reliable credit risk management strategy with adequate punishment for loan payment defaults was chosen. The average non-

performing loans (NPL) in the deposit money banks for the last 10 years was 56.4% with standard deviations of 34.8%. The NPL of the deposit money banks are high when compared to the world average (2-3%). The result, in general, implies that the accumulation of non-performing loan which was claimed as the critical problem of the banking sector. Banks are required to have adequate capital to avoid future unexpected losses incurred through NPL.

Capital adequacy risk has a minimum value of 52% and a maximum of 14.4%; an average (mean) of 16.01% with a standard deviation of 7.66%. The average amount of CARSK is higher than the minimum capital requirement of the BASEL and Central Bank of Nigeria (15%) showing that the banks have the ability to bear loss results from a loan default.

The loan loss provision (LLPV) ratio shows the default risk that the bank expects to sustain from the lending business. For example, while some banks are making provision for non-performing loans and expected loss amount more, some are not making provision for it at all or making less provision. Also, while some of the banks are profitable and having large return on their asset, others are not. This shows that our samples were not skewed to any particular direction.

Also, the JB Probability shows that all the variables are normally distributed at 1% level of significance. This means that no variables with outlier, even if there are, they are not likely to distort the conclusion and are therefore reliable for drawing generalization. This also justifies the use of panel least square estimation techniques. Hence, any recommendations made to a very large extent would represent the characteristics of the true population of study.

#### 4.1.2

#### **Table 3: REGRESSION RESULT**

Dependent Variable: ROE

Method: Panel Least Squares

Date: 01/11/20 Time: 08:17

Sample: 2009 2018

Periods included: 10

Cross-sections included: 20

Total panel (balanced) observations: 200

| Variable           | Coefficient | Std. Error            | t-Statistic | Prob.  |
|--------------------|-------------|-----------------------|-------------|--------|
| C                  | 13.03190    | 2.542558              | 5.125506    | 0.0000 |
| CRSK               | -0.322760   | 2.150216              | -0.150106   | 0.0038 |
| CARSK              | -0.075659   | 0.100375              | -0.753762   | 0.4519 |
| LLPV               | 0.017058    | 0.037783              | 0.451482    | 0.6522 |
| R-squared          | 0.403528    | Mean dependent var    | 11.20801    |        |
| Adjusted R-squared | 0.372458    | S.D. dependent var    | 10.25190    |        |
| S.E. of regression | 10.31556    | Akaike info criterion | 7.525905    |        |
| Sum squared resid  | 19898.83    | Schwarz criterion     | 7.594015    |        |
| Log likelihood     | -714.7239   | Hannan-Quinn criter.  | 7.553493    |        |
| F-statistic        | 63.20689    | Durbin-Watson stat    | 1.735035    |        |
| Prob(F-statistic)  | 0.001949    |                       |             |        |

### **Source: Researchers Summary of Regression result (2020)**

The table 4.1.2 above shows the panel least square regression analysis of selected deposit money banks in Nigeria and Ghana using return on equity as proxy for performance. As shown in table 4.1.2 above, the F-statistics of 63.20 and their P-value of 0.000 showed that all our regression models are generally significant at 1% level of significance and the model is well specified. This model implies that credit risk, capital adequacy risk and loan loss provision were very crucial and relevant for cautioning performance measures among selected banks.

In the table above, we observed from the Panel Least Square regression that the R-squared adjusted value was 37.24 which mean that about 37.24% of the predictive power in the dependent variable (ROE) was jointly explained by the independent variables. This implies that dependent variable in Nigeria and Ghana cannot be 100 percent explained by all the variables used in this study. The unexplained part of the dependent variable can be attributed to exclusion of very important independent variables that can explain the dependent variable but are outside the scope of this study. The result also revealed that the R-squared value which is the coefficient of determination stood at 40.35 which is equivalent to 40% approximately, indicates that the independent variables explained about 40% of the systematic variation in the performance of money deposit banks of selected banks in West African countries over the ten (10) years period observed while the remaining 60% were unexplained and hence explained outside the unspecified variables thereby captured by the error term, thus, exogenously explained. This implies that about 40% of the systematic variations in individual dependent variables were explained in the model while about 60% were unexplained. The F-Statistic value of 63.20 and its associated P-value of 0.000 shows that the regression model on the overall is statistically significant at 1% level, this means that the regression model is valid and can be used for statistical inference. Moreover, the Durbin Watson statistic of 1.73 showed that the model is well spread since the value is approximately 2 and that there have not been self or auto correlation problem and that error are independent of each other. In testing our hypotheses, we provide the below specific analysis for each of the independent variables as follows:

#### ***H<sub>01</sub>: Credit risk has no significant effect on performance of Deposit Money Banks of West African Countries.***

The analysis result of the effect of risk management on performance of quoted deposit money Banks in West African countries showed a coefficient value of -0.322, t-value of -0.150 and a P-value of 0.0038 for credit risk variable. The coefficient value of -0.322 shows that credit risk is negatively related to return on equity of deposit money banks in West African countries. The result suggests that Non-Performing Loans (NPL) which measures the extent of credit default risk sustained by deposit money banks have a negative effect on ROE. The result in this study suggests the need for strong credit risk management to keep the level of NPL as low as possible which will enable to maintain the high profitability level of deposit money banks in West African countries. In order to decrease NPL, deposit money banks in West African countries should evaluate any potential risk may cause the borrower to default on its loan obligation. Therefore, based on t-statistics values of risk management and its coefficient, bank's credit risk (CRSK) appears to be statistically significant and negatively associated with the probability for banks to make huge profit in financial year. This indicates that an increase in the profitability level of banks leads to a decrease in their credit risk of selected banks to the tune of -0.322%. By implication, this means



that an increase in the bank's nonperforming loans level (proxy for credit risk) will result to about 32% decrease in banks profitability. There is evidence that higher non-performing loans values are significantly associated with a slight decrease in profitability level of banks. The higher the credit risk of banks, the lower the return on assets of banks and this attract loss of potential investors to their banks. That is, it may not be the level of nonperforming loans that is significantly related to the level of return in asset; rather, it is the amount of provision made that is negatively associated with the profit. The t-value of -0.150 reveals that banks credit risk has a strong effect on return on equity of selected banks. The probability value of 0.003 reveals that the effect of credit risk on banks profitability in West African countries is statistically significant at 1% level of significance. The p-value result re-affirms the t-test statistics result. This finding is in line with the findings of prior studies such as Etale, Ayunku and Etale (2016), Athanasoglou, Brissimis and Delis (2005), Felix and Claudine (2008), Kagi (2011), Li yugi (2007), Alper and Anbar (2011) who documented negative and significant result between credit risk and firm performance but negates the findings of Harvey and Merkowsky (2008), Akong'a (2014) that found positive and significant results. Our finding also disagreed with findings of Kolapo, Ayeni and Okey (2012), Taiwo et al. (2017) and Githinji (2010) that found insignificant relationship between credit risk and performance of firms. This result therefore rejects our first null hypothesis ( $H_1$ ), which states that credit risk has no significant effect on performance of deposit money banks in West African countries and therefore accept our alternate hypothesis and conclude that credit risk has significant effect on return on assets of banks which was statistical significant at 1% level of significance.

***H<sub>02</sub>: There is no significant effect between capital adequacy risk and performance of deposit money banks in West African countries.***

It can be observed from the regression result that capital adequacy risk has a negative coefficient value of 0.075. This reveals a very weak but negative effect on performance of banks. there is a negative relationship between CARSK and ROE. The minimum CARSK requirement of deposit money banks in West African countries is 15% whereas our average CARSK was 52% which is higher than the minimum requirement. That is to say that capital adequacy risk was found to be statistically insignificant and negatively associated with the profitability of banks. By implication, this means that a 1% increase in capital adequacy risk leads to a corresponding decrease in return on equity of banks. This means that decreases in the ratio of capital adequacy risk of West African banks increases the likelihood for them to make profit. The bank has a reserve beyond the necessary amount enough to handle unexpected risk. As banks with strong capital base has every tendency of making profit in the long run. It maintains stability and protection against depositors and confidence on the deposit money banks in West African countries. Thus banks with lower capital adequacy ratio have more incentive to decrease their profitability base as a result of such risk associated with it. The t-value of 0.75 reveals that banks capital adequacy risk has a strong effect on return on equity of selected banks but its effect is not statistically strong enough to drive its performance. The probability value of 0.4519 reveals that the effect of capital adequacy risk on banks profitability in West African countries is statistically insignificant. This result is in agreement with the findings of Hosna and Manzura (2009), Grace (2012), Hosna et al. (2009), Khouri (2011), Boland (2012), Li yugi (2007) and Adeusi, Akeke, Adebisi and Oladunjoye (2013) that documented a positive and strong effect between capital adequacy risk and performance of banks while our finding is in disagreement with the findings of Ogilo (2012) and Khouri (2011)

that recorded negative and weak effect. As a result of this insignificant result found, this study therefore accepts the fifth null Hypothesis ( $H_{05}$ ), which states that capital adequacy risk has no significant effect on profitability of deposit money banks in West African countries. We therefore reject our alternate hypothesis and conclude that capital adequacy risk has no statistical significant effect on profitability of banks.

***H<sub>03</sub>: Loan loss provision has no significant effect on performance of deposit money banks in West African countries.***

Loan loss provision was found to have a positive and insignificant effect on performance of deposit money banks in West Africa. This implies that a 1% increase in the fraction of loan loss provision is associated with a percentage increase in the ratio of return on equity by a very minimal magnitude of 0.001%. The management of deposit money banks in West African countries clearly recognised the risk arising from lending business and strengthens their credit risk management capability, in addition to allowing high loan loss provisions to loan and advances. The more provision banks keep aside against loan loss, the more their ability to manage their profit and performance base. The t-value of 0.451 reveals that banks loan loss provision has a very weak effect on return on equity of selected banks. The probability value of 0.6522 reveals that the effect of loan loss provision on banks profitability in West Africa is statistically insignificant. Thus, banks have the tendency to increase or decrease loan loss provision or expected loan Loss for the purpose of performance measures. It was discovered that loan loss provision is used for capital management which led to higher profitability level. This result indicates that the tendency for banks to increase their capital/profit by increasing the amount of loan loss provision to boost the reported capital under CBN regulation. This study agreed with the study of Hosna and Manzura (2009), Olawale et al. (2013) and Chang et al. (2008) that studied the relationship between discretionary loan loss provisions (DLLP) and operating performance of banks listed in the Taiwan Stock Exchange. Based on the total number of 164 companies for 1999 – 2004, their findings showed positive relationships between DLLP and the earnings before loan loss provisions and between one year ahead earnings and non-performing loans. Eng and Nabar (2007) examined the behaviour of loan loss accounting disclosures and the association between the market valuation of the loan loss accounting disclosures and future bank cash flows of banks in Hong Kong, Malaysia, and Singapore. Using data from 1993 to 2000, they also examined the impact of the financial crisis of July 1997 – 1999 on the behaviour and valuation of loan loss reserves. The findings of their study indicate a positive relationship between unexpected loan loss provisions and the banks stock returns and future cash flows. An examination on the impact of crisis reveals that during the crisis, the association between unexpected loan loss provisions and bank stock returns and future cash flows were less significant in comparison to other periods. Banks with high profit have the tendency to adjust loan loss provisions with an intention of managing earnings (Eng & Nabar; 2007). Therefore, it is expected that the higher the loan loss provision of the company, the higher the management profit.

Our finding is in disagreement with the findings of Kargi (2011), Dietrich and Wanzenried (2011) who documented negative and significant effect between loan loss provision and banks performance and also negates the findings of Kolapo, Ayeni and Oke (2012) that recorded insignificant result. As a result of this insignificant result documented, this leads to the rejection of our last alternate hypothesis and conclude that loan loss provision has no

significant effect on performance of deposit money banks in West African countries measured using return on assets.

### **CONCLUSION AND RECOMMENDATIONS**

Based on a sample of 20 selected banks from Nigeria and Ghana Stock Exchange for ten fiscal years from 2009-2018 and using three independent variables (CRSK, CARSK, LLPV,). The study found that:

1. Credit risk has negative and significant effect on performance of banks in both Ghana and Nigeria using ROA model which was statistically significant at 1% level of significance while using ROE the negative effect of credit risk on banks performance was found to be statistically insignificant.
2. Capital adequacy risk was found to have positive and insignificant effect in both Nigeria and Ghana banks.
3. Last but not the least, loan loss provision was also discovered to have positive and insignificant effect in both Nigeria and Ghana banks.

### **Conclusion**

To identify the effect of risk management on the performance of deposit money banks in West African countries, Descriptive statistics and panel data regression analysis were employed on data collected from the deposit money banks in West African countries over 10 years' period from 2009 to 2018. The ratio of non-performing loan which measures credit risk and loan loss provision ratio is sharply declining in recent years. This indicates that the risk management of deposit money banks in West African countries had been improving during the study period. The capital adequacy risk and operational risk ratio was also found to be a little bit higher than the regulatory requirement. Based on the descriptive analysis, the deposit money banks in West African countries have an adequate capital to withstand shocks resulting from credit and other operational risks. West African banks and regulatory authority should periodically review the operations of banks to ensure they comply with relevant provisions of the Bank and Other Financial Institutions Act (BOFIA, 1990) and prudential guidelines. Moreover, Nigeria and Ghana banks should enhance their capacity in risk management by devising effective and efficient process to identify measure, monitor and control risks.

The study therefore recommended that credit reporting agencies and supervising authorities should be strengthened in order to reduce the high level of non-performing loans in the banking sector of Nigeria and Ghana. Based on our findings, it was recommended that banks in Nigeria and Ghana should enhance their capacity in credit analysis to reduce the risk of default in repayment. Therefore, to stem the cyclical nature of non-performing loans and increase their profits, West African banks should adopt an aggressive deposit mobilization to increase credit availability and develop a reliable credit risk management strategy with adequate punishment for loan payment defaults. Generally, Based upon results, banks should fully concentrate on the loan assessment procedure, polices and quality of loans and liquidity management. West African banking industry should inculcate a balance risk management culture to mitigate risks and shocks. There should be

risk based strategy formulation and mature corporate governance framework. There should be proper implementation of Basel accord II and III.

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## APPENDIX

**Table 1: DESCRIPTIVE STATISTICS**

|           | ROE       | CRSK      | CARSK    | LLPV      |
|-----------|-----------|-----------|----------|-----------|
| Mean      | 11.20801  | 0.564188  | 16.01921 | -25.19522 |
| Median    | 10.98000  | 0.540000  | 14.40000 | -19.82800 |
| Maximum   | 91.95000  | 2.100000  | 70.89000 | -1.329000 |
| Minimum   | -14.97000 | -0.020000 | 0.520000 | -99.48000 |
| Std. Dev. | 10.25190  | 0.348515  | 7.669364 | 20.35038  |

|              |          |          |          |           |
|--------------|----------|----------|----------|-----------|
| Skewness     | 2.546873 | 1.463752 | 3.959042 | -1.259289 |
| Kurtosis     | 21.99746 | 7.032031 | 28.48032 | 4.191199  |
| Jarque-Bera  | 3078.680 | 197.5860 | 5665.876 | 61.77407  |
| Probability  | 0.000000 | 0.000000 | 0.000000 | 0.000000  |
| Sum          | 2140.730 | 107.7600 | 3059.670 | -4812.287 |
| Sum Sq. Dev. | 19969.28 | 23.07785 | 11175.64 | 78686.22  |
| Observations | 200      | 200      | 200      | 200       |

**Table 2: CORRELATION RESULT**

|       | ROE       | CRSK      | CARSK     | LLPV     |
|-------|-----------|-----------|-----------|----------|
| ROE   | 1.000000  | -0.008008 | -0.048311 | 0.020842 |
| CRSK  | -0.008008 | 1.000000  | -0.048970 | 0.005673 |
| CARSK | -0.048311 | -0.048970 | 1.000000  | 0.228935 |
| LLPV  | 0.020842  | 0.005673  | 0.228935  | 1.000000 |

**Table 3: REGRESSION RESULT**

Dependent Variable: ROE

Method: Panel Least Squares

Date: 01/11/20 Time: 08:17

Sample: 2009 2018

Periods included: 10

Cross-sections included: 20

Total panel (balanced) observations: 200

| Variable           | Coefficient | Std. Error            | t-Statistic | Prob.  |
|--------------------|-------------|-----------------------|-------------|--------|
| C                  | 13.03190    | 2.542558              | 5.125506    | 0.0000 |
| CRSK               | -0.322760   | 2.150216              | -0.150106   | 0.0038 |
| CARSK              | -0.075659   | 0.100375              | -0.753762   | 0.4519 |
| LLPV               | 0.017058    | 0.037783              | 0.451482    | 0.6522 |
| R-squared          | 0.403528    | Mean dependent var    | 11.20801    |        |
| Adjusted R-squared | 0.372458    | S.D. dependent var    | 10.25190    |        |
| S.E. of regression | 10.31556    | Akaike info criterion | 7.525905    |        |
| Sum squared resid  | 19898.83    | Schwarz criterion     | 7.594015    |        |
| Log likelihood     | -714.7239   | Hannan-Quinn criter.  | 7.553493    |        |
| F-statistic        | 63.20689    | Durbin-Watson stat    | 1.735035    |        |
| Prob(F-statistic)  | 0.001949    |                       |             |        |



