Risk Management and Financial Performance of Deposit Money Banks in Nigeria.

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A RESEARCH PROJECT WRITTEN AND SUBMITTED TO THE DEPARTMENT OF BANKING AND FINANCE, FACULTY OF MANAGEMENT SCIENCES, UNIVERSITY OF BENIN IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR DEGREE OF BACHELOR OF SCIENCE IN BANKING AND FINANCE OF THE UNIVERSITY OF BENIN, BENIN CITY

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DECLARATION

I declare that:

This project work is based on a study undertaken by me in the Department of Banking and Finance, University of Benin under the supervision of Ven. Prof. I. O. Osamwonyi. This work has not been previously submitted for award of a degree elsewhere.

All ideas and views are product of my personal research effort and all references to works of others have been duly acknowledged.

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Christiana Titilayo ADETUNJI

Date:_____

CERTIFICATION

This is to certify that this research work has been submitted by **Christiana Titilayo ADETUNJI** with the Matriculation Number **MGS1807815** to the Department of Banking and Finance, Faculty of Management Sciences, University of Benin, Benin City under the full supervision of **Ven. Prof. I. O. Osamwonyi**. and in accordance with the requirement of the Department of Banking and Finance of the University of Benin, Benin City for the award of Bachelor of Science Degree in Banking and Finance.

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DEDICATION

This work is dedicated to God Almighty for his care, love, grace, support and endless guidance towards me and my parents, Mr. and Mrs. Adetunji for their relentless support.

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First and foremost, praises and thanks to God Almighty, for His blessings throughout my research work to complete the project successfully.

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ABSTRACT

The relevant goal of this study was to empirically examine the relationship between credit risk management and financial performance of deposit money banks in Nigeria for a period of 9 years (2009 to 2017). The rationale for the study was based on the realization that credit risk is one of the most sensitive exposures facing the financial performance of any deposit money banks in the world today. Failure to effectively mitigate its adverse effect, will spell doom for the banks. Descriptive statistics and correlation coefficient were used to examine the background characteristics of the variables. The panel data analysis econometric technique was employed for the main analysis of the study.

The findings from the empirical analysis, on the basis of the fixed effect indicate that nonperforming loans and bank size have significant negative impact on the banks ' financial performance in Nigeria. While capital adequacy, loan loss provision and liquidity ratio does not have significant impact on banks 'financial performance in Nigeria.

The study recommends among others that; management needs to be cautious in setting up a credit policy that can be strongly linked with profitability in the banks. Management also needs to know how credit policy affects the operation of their banks to ensure judicious utilization of deposits and maximization of profit. Improper credit risk management reduces the bank profitability, affects the quality of its assets and increase loan losses and non-performing loans which may eventually lead to financial distress. Also, management should not solely concentrate on the profit maximization concept but should also adopt measures that will ensure effective liquidity management. These measures will help to minimize or avoid cases of excessive variation in banks ' liquidity position..

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Deposit money banks play leading roles in lending and intermediation between lenders and borrowers. Deposit money banks serve as a conduit for funds to be received in form of deposits from the surplus units of the economy and passed on to the deficit units, it also serve as a veritable source of income (interest income). Ajayi (2000) noted that credit implies a promise by one party to pay another for money borrowed or goods and services received. Therefore, efficient intermediation of deposit money banks is vital for developing economies in order to achieve high economic growth, while banks' insolvency leads to economic crisis. However, the intermediation function of deposit money banks give rise to different types of risks with different magnitudes on the level of bank performance such as; credit risk, liquidity risk, market risk, operational risk (Van Gestel & Baesens, 2008). Among others, credit risk is seen as the most critical risk affecting the performance of deposit money banks.

The Basel Committee on Banking Supervision (2001), defined credit risk as the possibility of losing the outstanding loan partially or totally, due to credit events (default risk). Risk management is the human activity that integrates recognition

of risks, risk assessment, developing strategies to manage risk and mitigating perceived risk using managerial efficiency. Credit risk management is an integral part of lending, and as such, the absence of good credit management can turn good loans to bad ones. The significance of credit risks management cannot be over emphasized because it requires the establishment of sound and efficient credit policies. For banks to be successful and achieve long-run sustainability, their corporate credit appraisal, disbursement, efficient monitoring and repayment must be guaranteed. A characteristic of successful bank is the ability to generate and grant good credit to users of fund for investment purpose. However, this process is laden with risk to both borrower and the lender.

Poor credit administration reduces banks' profitability and leads to bank distress or failure (Osuka, & Amako, 2015). The purpose of credit risk management is to maximize a bank's risk adjusted rate of return. This can be achieved by maintaining credit risk exposure within acceptable parameters. Efficient loan portfolio diversification can ensure that credit risk is minimized but it is imperative for banks to beware of credit risk in administering each individual loan. In order to tackle the issues of credit risk management in the country, the Central Bank of Nigeria (CBN) entered into an agreement in 1987 known as Basel I and Basel II. Both accords emphasize the importance of capital adequacy for mitigating credit risks, which cushions the effects of sudden financial losses on banks (Iwedi & Onuegbu, 2014). According to Kosmidou, (2008), capital

adequacy refers to the sufficiency of the amount of equity available to absorb any shocks that the bank may experience. The 2007-2008 financial crisis made Basel committee realize that Basel II seems not enough in the complicated financial markets. A major overhaul of Basel II was necessary. The banking sector had entered the crisis with too much leverage and inadequate liquidity buffers. Poor governance and risk management, as well as inappropriate incentive structures accompanied these defects. Therefore, a new standard Basel III was published in December 2010 that was to be fully effective by the end of 2019. It strengthened the Basel II framework and made some innovations, including tightened definition of capital requirements for leverage ratio and a counter cyclical buffer. The Bank of International settlement (BIS) based Basel III framework provides three ratios to highlight capital adequacy namely, Common Equity Tier 1/ Risk - Weighted Assets, (Not less than 4.5%) Tier 1 Capital / Risk - Weighted Assets (not less than 6%) and Total Capital /Risk - Weighted Assets (not less than 8%) (BIS, 2010). There is more emphasis not only on capital adequacy, but also on moral hazard which implies events that occurs after loan has been granted. The BASEL accord recommended capital adequacy ratio is 10% for international banks.

Brown and Moles (2014), posit that loan loss provision is a common practice among financial institutions, which involves setting aside some provisions that

will help reduce the effects of expected losses. The provision of loan loss reserve is a mechanism used by such lenders to recognize in a timely fashion imminent losses on troubled loans. The weight of non - performingloans (NPL) in the banking system erode investors' confidence and alarm stakeholders in the banking industry. Osuka and Ammako, (2015) posit that between 1999 and 2009, non-performing loans was critically high and peaked at 35% in 2009 in deposit money banks in Nigeria. This excessively high level of NPL in the bank's book were caused by poor corporate governance practices, lax credit administration processes and the absence or non-adherence to sound credit risks management practices. High levels of non - performing loans have a tendency to reduce the lending ability of deposit money banks and possibility put them out of business.

1.2 Statement of Research Problem

Deposit money banks are major players in the financial sector of every economy; they are entrusted with the funds of depositors. These funds are generally used by banks for their business transaction. Credit risk is one of the major sources of income in deposit money banks. One of the significant problems challenging the industry today is the increasing incidence of loan defaults and consequent loan losses that are manifested on the profitability of the banks. Sequel to increasing incidence of huge bad debts in the Nigerian banking industry, insider's abuses, management's competence have been called to question. Bad debts occur as a

result of the inability of the bank's management to recover loans granted to customers. As credits standards are relaxed, the probability of bad debts increases. The Nigeria Deposit Insurance Commission 1989 Annual Report and account reported that the deteriorating health of the banking industry is on the increase due to; huge uncollectible loans and advances, the financing of long assets short term funds, over trading and inefficient management practices (Campbell, 2007). According to Kipkoech (2015), there is a growing concern of increase commercial bank failures and bank distress which can be attributed to poor credit risk management and finance mismatch. It is important to note that the major cause of the cessation of most of the banks s poor management of their finances and credit. Osayeme (2002) pointed out that maintaining a good credit standing is crucial to the survival of the Nigeria deposit money banks in 2004, there are still cases of poor credit management and operational inefficiencies in deposit money banks which have led to asset takeover or outright merging of various DBMs in Nigeria.

The performance of banks is usually influenced by different factors including management, location, size and time (Haslem, 1968). It is of great interest to see how this performance is affected by the credit risks faced by deposit money banks. Despite considerable number of research on credit risk management and performance of deposit money banks, the nature of empirical Relationship that exists between credit risk management and financial performance of DBMs is still controversial one. For instance, Kaaya and Pastory, (2013) found evidence that

credit risk management impact negatively on bank's profitability. Kithinji (2010) evaluated the effect of credit management on the profitability of deposit money banks and found that the performances of banks are not affected by nonperforming loans. Ruziqa (2013) tested the impact of credit risk and liquidity risk on the financial performance of deposit money banks in Indonesia. The results revealed that credit risk is negatively related to profitability while liquid risk showed a positive effect. Chandan (2010), Island and Ndoka (2016) and Poudel (2012) reported a negative relationship between capital adequacy ratio and banks performance. On the other hand, Noman, Pervin, Chowdhury and Banna (2015), Idowu and Awoyemi (2014) and Gizaw, Kedebe and Selvaraj (2015) finds a positive significant relationship between CAR and financial performance. Kolapo, Ayeni and Oke (2012) reported that an invariant relationship exists between banks performance and credit risk management using return on asset as a measure of performance. This implies that banks in Nigeria still experience high profit irrespective of the huge credit risk exposure, conflicting with views shared by other researchers. These types of researchers alike, thus, making this area worth studying. For the purpose of sustainability of the banking sector, it is important to know the precise relationship that exist between credit risk management and financial performance of deposit money banks in Nigeria in order to adopt the appropriate risk management strategy.

Owing to the recent trend of banks failure in Nigeria which has forced many banks to merge with other banks or outright takeover by other banks, it is important to examine whether these distresses are as a result of credit risk related issues such as over laden nonperforming loans in their books or they are being plagued by operational inefficiency and mismanagement. Furthermore, most of these studies focus on developed countries such as Europe and Asia with little evidence from Nigeria that capture the capital adequacy as a unified framework in accordance with provisions Base I and II Accords. This gap in knowledge has ignited the interest of the researcher to embark on this study. It is against this backdrop that this study attempts to examine the effect of credit risk management on the financial performance of deposit money banks in Nigeria.

1.3 Research Questions

In light of the above issues that surrounds credit risk management and financial performance of deposit money banks, the study seeks to provide answers to the following specific research questions;

- What impact does liquidity ratio have on the financial performance of banks in Nigeria?
- What effect does non-performing loans have on the financial performance of banks in Nigeria?
- Does loan loss provision have any significant relationship with the financial performance of banks in Nigeria?

- What effect does capital adequacy ratio have on financial performance of banks in Nigeria?

1.4 Objective of the Study

The general objective of this study is to examine the effect of credit risk management on financial performance of deposit money banks in Nigeria. However, the specific objectives are to;

- determine the impact of liquidity ratio on the financial performance of banks in Nigeria.
- ascertain the effect of non-performing loans on the financial performance of the banks in Nigeria.
- examine the relationship between loan loss provision and the financial performance of banks in Nigeria.
- determine the effect of capital adequacy ratio on the financial performance of in Nigeria.

1.5 Research Hypotheses

In the bid to achieving the above objectives, the following research hypotheses are formulated and tested in the study:

- Hi: Liquidity ratio has no significant effect on the financial performance of banks in Nigeria.
- H2: Non-performing loans has no significant influence on the financial performance of banks in Nigeria.

- H3: No significant relationship exists between loan loss provision and financial performance of banks in Nigeria.
- H_4: Capital adequacy ratio does not have significant effect on the financial performance of banks in Nigeria.
- **Scope of the study**

The study examines the effect of credit risk management on the financial performance of deposit money banks in Nigeria for a period of 11 years (2009 to 2019). For the purpose of this study, 12 Deposit money Banks are selected from the listed Banks on the Nigerian Stock Exchange, using the stratified random sampling technique. The choice of the 12 banks is because of availability of specific data laying emphasis on credit risk management. The choice of this period is ample enough to capture the potency of financial reforms in Nigeria banking sector after the global financial crisis In 2007/2008. This period will also proffer more recent evidence on credit risk management and financial performance of deposit money banks in Nigeria.

1.6 Significance of the study

This study would fill the research gap in Nigeria by attempting to examine the effect of credit risk management on the financial performance of deposit money banks in Nigeria. The findings of this study will be of immense benefits to various stakeholders of the financial sector, banks in particular and nonfinancial sectors of the Nigeria economy, Evidence from this study will help sharpen the decision-

making skills of management of banks, as it will help in understanding the various credit risk factors that significantly affect banks' profitability. This will go a long way in improving the sustainability as well. In the application, processing and administration of credit, this research will act as a guide in assisting facility managers as they will definitely need a blueprint so as to avoid administering non-performing loans to potential customers. This will go a long way to increasing the liquidity ratio and financial performance of banks as bad loans are a major leakage in the financial sector.

The Central Bank of Nigeria (CBN) and Nigeria Deposit Insurance Commission (NDIC) will also benefit immensely from the outcome of this study, as it will help in determining the credit risk areas that will demand stiffer measures and compliance. It will also enable such regulatory authorities to reevaluate existing policies on credit risk management and financial performances of deposit money banks in Nigeria. This will help to boost investors' confidence in the banking sector, as well as resultant to profitable investment decisions. Access to credit without sufficient measures in place to avoid default has always led to such facility going bad which in turn may result in the eventual collapse of the financial institution in particular and the sector in general. Hence, this work will further reiterate the importance of capital adequacy ratio on the financial performance of banks as this cannot be overemphasized.

Finally, this study shall also be of immense benefit to researchers and academicians as it will be an addition to existing literature. It will provide a lucid idea on the nature of relationship that exists between credit risk management and the financial performance of deposit money banks in Nigeria.

1.7 Limitations of the study

Generally, no study is conducted on a hitch-free basis, and this study is not an exemption. The limitations conceived in this study are that it focuses only on some selected deposit money banks in Nigeria. As such, findings of the study are limited and peculiar to the Nigerian financial terrain. In addition, this study is dependent solely on secondary data that has its own weakness, as they may be subject to manipulations and errors at source, aimed at putting publishing institutions in good light. The use panel regression for this study comes with its own pitfalls despite its numerous advantages as data measurement errors can lead to under-identification of an economic model. Panel data also has design and data collection problem as well as cross section dependence problem. Despite these challenges, efforts were made to minimize errors and enable the results obtained therein to remain valid and reliable by employing appropriate preliminary tests such as descriptive statistics and correction coefficient, as well as the Hauseman tests specification for Fixed Effect and Random Effect.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the concept of credit risk management and profitability of deposit money bank in Nigeria. The chapter examines the conceptual framework, theoretical framework and empirical literature of various variables that relates to deposit money banks' performance.

2.2 Conceptual Review

2.2.1 Credit Risk Management

Primarily, deposit money banks exist not only to accept deposits but also to grant credit facilities (loans and advances), hence they are exposed to credit risk. Credit risk is by far the most important risk confronted by banks and the survival, sustainability and performance of their business depends on precise measurement and efficient management of this risk to a greater extent than any other class of risks (Kargi, 2011). Granting of credit facilities by deposit money banks which is the principal function as pointed out earlier, expose banks to credit risk. Credit risk is the risk of default by counterparty to a loan transaction (Choudhry, 2011). Credit risk is perhaps most significant of all risks in terms of magnitude of probable losses and can be divided into; default risk, exposure risk and recovery

risk (Hosna & Manzura, 2009). Basel Committee on banking Supervision (2006) defined credit risk as the risk of loss due to an obligator's nonpayment of an obligation in terms of a loan or other categories of credit. According to Chen and Pan (2012) credit risk is the degree of value variability in debt instruments due to changes in the underlying credit quality of borrowers and counterparties. It is losses arising from the refusal or incapability of credit customers to pay what is owed in full and on time (Coyle, 2000). Furthermore, it is a probable loss to a deposit money bank as a result of failures on the part of bank borrowers to pay the loaned amount on time, or the amount becomes entirely irrecoverable. It is failure of borrowers to meet their financial obligations with banks in accordance to prearranged terms and conditions.

Kayode, Obamuyi, Owoputi and Adeyefa (2015) opine that credit risk arises from the possibility that a creditor is either not willing to perform an obligation or his ability to perform such responsibility is weakened, resulting in financial loss to the bank. However, Heffernan (1996) posit that credit risk is the risk that a loan or asset becomes irrecoverable, in the case of complete default or the risk of delay in repayment of loans and advances. Hence, when this situation occurs or becomes persistent, the performance of the bank is affected. In a bank’s credit portfolio, losses often arise from outright default due to inability or unwillingness of a customer to meet commitments in relation to trading, lending, settlement and other financial transactions.

Alternatively, losses may result from the decline in assets value due to perceived or actual deterioration in credit quality. Credit risk stems from a bank's financial exposure to dealing with individuals, corporations, financial institutions or sovereign nations. Obalemo (2007) defined credit risk as a risk that is based on the assumption that a borrower would default in repayment to the lender. In addition to direct accounting loss, credit risks could also be observed in the context of economic exposures. These include; opportunity costs, expenses associated with a nonperforming asset, transaction costs over and above the accounting loss. It can be further sub divided on the basis of issues responsible for default. For instance, the default could be attributed to country in which there is exposure or difficulties in settlement of financial transaction.

Moreover, it does not essentially occur in isolation, the same factor that endangers credit risk for the banking industry may also expose it to other risks. According to Basel committee on Banking Supervision (1999), for most banks, loans are the major and the most recognizable source of credit risk, however, credit risk could arise from activities relating to both off and on balance sheet transactions.

Ojo (2010) asserts that credit risk is the likelihood that a payment will not be entirely settled because the debtor becomes bankrupt. The problem of credit risk in the bank lending undertakings is of serious concern to the banking authorities and regulators due to the high levels of anticipated risks resulting from some of

the negative characteristics of clients and their business environment. Giving the strong relationship between inefficient credit risk policy, poor internal supervision and weak management, bad credit risk management characterized by poor lending practices could be taken as the most serious causes of distress in the Nigerian financial industry (Ojo, 2010) Credit risk has been identified by Basel Committee as a main source of risk in the early stage of Basel Accord. Bessis (2002) is of the opinion that credit risk is crucial since the default of a small number of significant customers can create large losses which can plunge the bank into liquidity crisis. Credit risk exists when a bank is faced with a level of bad loans, problematic loans or provision for loan losses (Jimenez & Saurina, 2006). Efficient management of credit risk has great impact on the performance of banks. Risk management is about those activities engaged in to minimize the adverse effect of uncertainty regarding possible losses. It is a process that involves risk identification, evaluation of organization or individual pure loss, and for the selection and implementation of the best practices for dealing with such exposure. Credit risk management has been a major part of the loan process in banking business, it involves reducing the risk associated with loans to an acceptable level (Ogboi & Unuafe, 2013). Effective management of credit risk is inseparably linked to the growth and expansion of banking technology which enables high speed loan decision making and concurrently reducing the cost of monitoring

credit risk (Das & Ghosh, 2007). Credit risk is one of significant risks of banks by the virtue of their transactional activities.

Through effective management of credit risk exposure, banks not only maintain the viability and profitability of their own business but also fundamental to the systemic stability and to an efficient distribution of capital in the economy (Iwedi, & Onuegbu, 2014).

Credit risk management take full advantage of bank's risk adjusted rate of return by keeping credit risk exposure within acceptable limit in order to provide a basis for understanding the impact of credit risk management on profitability of banks (Kargi, 2011). Demirguc-Kunt and Huzinga (1999) hold that credit risk management is in two-fold which includes; the recognition that after losses have occurred, the losses become unbearable and the developments in the field of financing commercial paper, securitization, and other non-bank competition which forced banks to find viable loan borrowers.

2.2.2 Profitability

The word profitability is comprised of two words, namely; profit and ability. Profit is what is left of the revenue an enterprise generates after it pays all expenses directly related to the generation of the revenue. Profitability determines whether an enterprise stays in business or not, it demonstrates how efficiently the

management can create profit by using all the resources available in the market. Profitability in today's business world has become one of the major tools for judging firm's performance. As such, banks must remain profitable in order to remain in business and actualize its long run going concern goal and meet up with its obligation as they fall due.

Profitability may be defined as the ability of an investment to earn a return from its use (Tulsian, 2014). Bank profitability is the capacity of a bank to create revenue in excess of cost, in relation to the bank's capital base. A profitable and lucrative banking sector is better able to survive negative shocks and contribute to the sustainability and stability of the financial system (Athanasoglou, Brissimis & Delis, 2005). According to Ahmed and Ahmad (2016), profit is determined by the difference of production cost and selling cost, if the selling cost is greater than production cost then it is profitable otherwise, the entity will be bearing a loss. Profitability refers to the firm's ability to create adequate profit on capital invested. Profitability is a relative concept while profit is an absolute connotation. Regardless of being closely related to and mutually interdependent, profit and profitability are two distinct concepts. In other words, in spite of their universal nature, each one of them has a separate role in business. As an absolute term, profit has no relevance in comparing the efficiency of a business organization. A very high profit does not always connote sound organizational efficiency and low profitability is not often a sign of organizational ill health. Therefore, it can be

opined that profit is not the chief variable on the basis of which the operational efficiency and financial efficiency of an organization can be measured.

As Pandya (2014) has rightly stated, Profit in two distinct business concerns may be identical, yet, many a times, it usually happens that their profitability differs when measured in terms of magnitude of investment. In literature, different techniques: return on assets (ROA), return on equity (ROE), return on capital employed (ROCE) has been used to measure the profitability of deposit money banks and other non-fmancial firms. However, ROA has been considered to be the best technique to measure operational efficiency and profitability (Tulsian, 2014). ROA measures how effectively and efficiently the enterprises uses its assets to generate profit. It is defined as a percentage of profit after tax to total assets.

2.2.3 The BASEL Journey on Credit Risk Management

The Basel Committee initially named the Committee on Banking Regulations and Supervisory Practices was established by the central bank governors of the Group of Ten (GIO) countries at the end of 1974. The Committee was established to enhance financial stability by improving the quality of banking supervision worldwide, and to serve as a forum for regular cooperation between its member countries on banking supervision matters.

The committee issued its first guidance in 1988, the Basel 1. The aim of Basel 1 was to require banks to maintain enough capital to absorb losses without causing systemic chaos in the event of liquidity threat. A Major challenge of Basel 1 was the prevalence of regulatory arbitrage. Basel 1 gave banks the ability to control the amount of capital they required by shifting between on balance sheet assets with different weights, and by securitizing assets and shifting them off balance sheet (a form of disintermediation). Thus, the introduction of Basel II.

According to Basel Committee on banking Supervision, (2006) the Basel II Accord was introduced following substantial losses in the international markets since 1992, which were attributed to poor risk management practices. The Basel II accord provided a more sophisticated framework by making it mandatory for financial institutions to use standardized measurements for credit, market, and operational risk. It stood on three pillars;

The first pillar deals with ongoing maintenance of regulatory capital to safeguard the three major components of risk that a bank can face, that is; credit risk, operational risk, and market risk. Pillar two gave regulators better 'tools' over residual risk (systemic, concentration, strategic, reputational, liquidity, and legal risk). Pillar three aims to encourage market discipline by developing a set of disclosure requirements relating to capital adequacy. However, different levels of

compliance allow financial institutions to pursue advanced risk management approaches to free up capital for investment. Hence, the need for Basel III.

Basel III is an extension of the existing Basel II framework. It became an effective regulatory requirement in January2019. Basel III was intended to strengthen bank capital requirements by increasing bank liquidity and decreasing leverage. The main focus of the changes in Basel III, is to increase banks' equity capital requirements. It aims to promote a more resilient banking system by focusing on four vital banking parameters that include; capital, leverage, funding and liquidity.

The global capital framework and new capital buffers require financial institutions to hold more and higher quality capital. It introduces an on-risk based measure to supplement the risk-based minimum capital requirements of Basel II. It also introduced two new liquidity ratios.

BASEL III SUMMARY

- Tightening the capital requirements.
- Raising the quality, consistency and transparency of the capital base through stricter rules on eligibility of instruments to be included in capital.
- Introduction of a new core Tierl ratio (Common Equity Tierl).

- Enhancing risk coverage through strengthening counter party credit risk capital requirements in respect of derivatives, repurchase transactions and securities financing.
- Supplementing risk-based capital requirements with a non-risk-based leverage ratio.
- Reducing pro-cyclicality and promoting counter cyclical capital buffers.
- Introducing a global liquidity standard comprising a stressed liquidity coverage ratio and a longer-term structural liquidity ratio.

2.2.4 Credit Risk Management Practices

The credit risk management strategies are measures put in place by deposit money banks to avoid or mitigate the adverse effect of credit risk. Effective credit risk management entails risk manager to have comprehensive understanding of the corporate financial risks and how they relate with credit risk. This requires critical evaluation of the business environment in which the bank operates and the assessment of the credit risk in terms of likelihood of occurrence and impact on the entity's loan portfolio. A sound credit risk management framework is a pivotal process for banks so as to entrance profitability and a guarantee for their survival. According to Lindgren (1987), the key principles in credit risk management process are sequenced as follows; establishment of a clear structure, allocation of responsibility, processes have to be prioritized and disciplined, responsibilities

should be unambiguously communicated and accountability assigned. The strategies for hedging credit risk include but not limited to;

- **Credit Derivatives:** This provides banks with an approach which does not require them to adjust their loan portfolio. Credit derivatives provide banks with a new source of fee income and offer banks the opportunity to reduce their regulatory capital (Shao & Yeager, 2007). The commonest type of credit derivative is credit default swap whereby a seller agrees to shift the credit risk of a loan to the protection buyer. Partnoy and Skeel (2006) opine that "credit derivatives encourage banks to lend more than they would, at lower rates, to riskier borrowers". Recent innovations in credit derivatives markets have enhanced lenders' capacities to transfer credit risk to other institutions while sustaining relationship with borrowers (Marsh, 2008).

- **Credit Securitization:** Transfer of risk (commonly called securitization) is another efficient way to manage credit related risk. It is the transfer of credit risk to a factor or third party insurance firm and this relieves the bank from monitoring the borrower and fear of the perilous effect of classified assets. This method insures the lending activities of banks. The growing acceptance of credit risk securitization can be likened to the fact that banks typically use the instrument of securitization to diversify concentrated credit risk exposures. By this, they explore an alternative source of funding by realizing regulatory

arbitrage and liquidity improvements when selling securitization transactions (Michalak and Uhde, 2009). A cash collateralized loan obligation is a method of securitization in which assets (bank loans) are expunged from a bank's balance sheet and packaged in tranches into marketable securities that are traded to investors through a special purpose vehicle (Marsh, 2008).

- **Compliance to Basel Accord:** The Basel Accord is a set of international principles and regulations guiding the operations of banks to guarantee 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 a unified manner, with full auditability and transparency and creates the opportunity to improve the risk management procedures of banks (Kolapo et al.). The New Basel Capital Accord places explicitly the responsibility on banks to embrace sound internal credit risk management practices to assess their capital adequacy requirements (Chen & Pan, 2012).

- **Adoption of a sound internal lending policy:** The lending policy guides banks in granting loans to customers. Strict adherence to the lending policy is by far the cheapest and easiest method of credit risk management. The lending policy should align with the overall bank strategy and the factors considered in planning a lending policy should include; industry norms, the existing credit policy, general

economic conditions of the country and the prevailing economic climate (Kithinji, 2010).

- **Credit Agency (Credit Bureau):** This is an institution which collates information and sells this information to banks in respect to the lending profile of a borrower. The bureau awards credit score called statistical odd to the borrower which makes it easy for banks to make prompt lending decision. Example of a credit bureau is the Credit Risk Management System (CRMS) of the Central Bank of Nigeria (CBN). In general, deposit money banks should have in place a credit risk management structure, and ensure its effective implementation by defining the role of each personnel.

2.2.5 Key Principles in Credit Risk Management

i. Selection: According to Gestel (2009), an effective credit risk management starts with a proper choice of borrowers and the products that suit them. For this to be possible, a competent loan officers and operative models of estimating risk should be put in place. This is a very fundamental stage because decisions are taken by the entire committee member.

Here, borrowers that are likely to default are either denied credit or asked to secure the loan with more collateral to limit the consequence of default. This principle will help reduce the problem of adverse selection.

- **Limitation:** Gestel (2009) stated that this method assists the bank by reducing the amount of loss suffered from a debtor. It prevents the event where the failure of counterparty to meet his or her obligation will have outrageous affect in the financial performance of the bank. The number of riskier transactions is brought to the bearer minimal.

- **Diversification:** Here, banks should deal with different counterparties ranging from individuals, institutions and industries. This helps to spread the risk across a number of borrowers so that banks can effectively reduce the impact of loss; it is more practicable with large and international banks. That involves managing credit risk through risk diversification or spread (Gestel, 2009).

- **Credit Evaluation:** Credit evaluation is a loan function that is focused on mitigating loan loss through credit evaluation and analysis. The bank uses this method in an attempt to ascertain the ability of the borrower to repay the legitimate loans extended to him. By refusing to grant credit to a potential borrower whose analysis discloses insufficient financial strength, the bank expects to improve on its chances to avoid unnecessary losses in its loan portfolio (Nwankwo, 1991). This is a very crucial stage because it helps to ensure loan quality. In simple terms, the granting of credit is dependent on the sureness the lender has in the borrower's ability to pay (credit worthiness). Credit worthiness is the ability and the willingness of a borrower to settle his or her debt. This is one

of abundant issues which determine what should be added to the credit policies of a lender. A lot of financial models come into play when assessing the credit worthiness of the deficit units. The most commonly used is the five-financial analysis tools which include character, capital, capacity, condition and collateral. These tools are generally known as the 5Cs of credit (Machiraju, 2004).

2.2.6 Liquidity Ratio and Banks Performance

The liquidity in the deposit money banks represents the ability to fund its obligations at the time of maturity, which includes; lending and investment commitments, deposits, withdrawals and accrued liabilities (Amengor, 2010). On one hand, liquidity denotes the ability to trade on securities, such as a stock or bond while on the other hand, liquidity is how easy one can obtain fund to trade on securities. While the latter is called funding liquidity, the latter is referred to as market liquidity (Alshatti, 2014). Specific number of studies on effect of liquidity on bank profitability is scanty. Adler (2012) opines that most financial theories and models presumed markets were frictionless, thus in traditional asset pricing models, liquidity plays no role at all because it is assumed away over the past decades since Markowitz's seminal paper of 1952 on portfolio selection. The moments these conventions were relaxed, the world changes, though not in a way that has been expected. The vast literature on liquidity and asset pricing contends that liquidity is indeed priced and contains both theoretical models and empirical

findings on how asset liquidity impact on expected future returns. Though inadequate liquidity is one of the major causes of bank failure, holding liquid assets has an opportunity cost of greater returns. Liquidity might have a positive impact on profitability and there are several authors who gave details in their studies that association between liquidity and profitability is positive. In the recent study conducted by Oluwasegun and Samuel (2015), they find a positive relationship between liquidity and bank performance for a panel of 13 banks for the period of 2004 to 2012. Similarly, in another study conducted by Ismail (2016) finds that liquidity proxy by current ratio and the cash conversion cycle have significant positive influence on profitability (ROA) of the 64 Pakistani nonfinancial firms for the period of 2006-2011. Furthermore, in a similar study by Ahmad (2016) there is a positive relationship between liquidity and profitability. It is more interesting to note that in some countries the study to evaluate the effect liquidity have on profitability have been done on the different sectors and various authors have obtained the same result. For instance, Olagunju, David and Samuel, (2012) observed that liquidity has a positive effect on profitability of deposit money banks in Nigeria. Similarly, Umobong (2015) demonstrate that there is a positive relationship between liquidity and performance of Pharmaceutical firms in Nigeria. Moreover, Ajanthan (2013) suggests that liquidity is positively associated with profitability in his study which was conducted on 8 quoted companies in Sri Lanka over the 5 years' period. Ibrahim (2017) examine the

impact of liquidity on performance of banking sectors of Iraq for the period between 2005 and 2013. The study employed Ordinary Least square model to examine the link between liquidity and banks profitability. The study however finds that there is a positive significant relationship between liquidity and profitability. The study notices that any increase in liquidity ratios will lead to an increase in return on asset and recommends a balance between liquidity and profitability.

Liquidity might also have a negative impact on the performance of DBMs as suggested by some prominent authors. This is because when the firm or any financial institution has more profit this might be the result of keeping a little money in their accounts. Among authors who supported that liquidity has a negative effect on the profitability include; Shafana (2015) find that liquidity have a significant and negative effect on profitability of financial institutions in Sri Lanka for the period from 2009 to 2013 which covered 16 banks and financial firms quoted in the Colombo Stock Exchange. Moreover, Raheman and Nasr (2007), find a strong negative relationship between liquidity and profitability in the study which conducted on some Pakistani firms listed on Karachi stock exchange. Similarly, Bolek and Wilinski (2012) find that liquidity has a negative effect on the performance of a company in their study which has been done on a group of construction companies listed on Warsaw Stock Exchange. Eljelly (2004) use correlation and regression on a sample of 929 joint stock companies in order

to determine the link between liquidity and profitability and find that there is a significant negative relation between them which was measured by current ratio. Furthermore, Saleem and Rehman (2011) mention that there is a close relationship between liquidity and profitability when liquidity increases profitability will decrease and vice versa for the 26 oil and gas companies in Pakistan over the 5 years. Some recent studies by various authors examined that relationship. Likewise, In the recent study by Dahiyat (2016) who empirically examined the impact of liquidity and solvency on banks profitability in all banks quoted in Amman exchange for the period 2012 to 2014 and find that profitability will be negatively influenced by liquidity.

Liquidity might impact profitability but this impact might not be clear is it a positive or negative as some authors mentioned. For instance, in the latest study conducted by Al Nimer, Warrad and Al Mari (2015) study the Impact of Liquidity on Jordanian Banks Profitability through Return on Assets. The study revealed a significant impact of liquidity (quick ratio) on the profitability (ROA) for the Jordanian banks through the period of 2005 to 2011. Some authors believe that this relationship could be negative or positive at the same time. A good example of this is Narwes (2004, cited in Umobong 2015) suggest that the relationship between liquidity and profitability depend on the liquidity variables that could be organized by a firm and this relationship could be positive or negative. In the same vein the relationship between liquidity and profitability might be nonlinear.

There are several authors in various countries who found a nonlinear relationship between them in banking sector. For example, Shahchera (2012) have find that a nonlinear connection between profitability and liquid assets using a sample of Iranian banks for the period of 2002 to 2009. Moreover, Olarewaju and Adeyemi (2013) found no important link between liquidity and profitability in their study which was conducted on most of deposit money banks in Nigeria. On the basis of these findings, the banks should increase their liquidity base to attain a higher performance.

2.2.7 Non-performing Loans and Banks Performance

Non-performing loans ratio (NPLR) specifies how banks manage their credit risks as it define the proportion of loan losses amount in relation to total loan amount. Bhattarai (2016) examine the effect of non-performing loans on the performance of Nepalese deposit money banks using pooled data of fourteen (14) deposit money banks with 77 observations during the period of 2010 to 2015.

The OLS regression model was employed for this study. The study reveal that non-performing loan ratio has negative effect on overall bank profitability (ROA) whereas non-performing loan ratio has positive effect on shareholders' return (ROE). The study however concludes that performance of deposit money banks in Nepal is influenced by the non-performing loan ratio. Idowu and Owoyemi (2014) in their study find a positive and significant relationship between Non-performing

loan (NPL) and profitability of banks. This finding however contradicts theoretical expectations of negative relationship. The positive relationship between NPL loans and profitability of banks reveal that, even though there is high rate of loan default, NPL are increasing proportionately to profitability. This implies that the effective institutional procedures to deal with credit risk management is lacking in deposit money banks. Thus, the banks shift the cost on loan defaults in form of greater interest rate on loans to customers.

Chege and Bachanga (2016) conducted a similar study in Kenya. The study aimed at establishing the effects of nonperforming loans and financial performance of bank using a sample of 44 deposit money banks quoted in the Nairobi Stock exchange for the period covering 2011-2015. The study employed multiple regression and ANOVA technique for data analysis. The study revealed that nonperforming loans has a negative and statistically significant effect on financial performance proxy by ROA.

Adebisi and Matthew (2015) examined the impact of non-performing loans on the performance of specific banks in Nigeria. Secondary data set were obtained from the Annual Report and Statement of Accounts of the NDIC for a period of seven years (2006- 2012). The data were analyzed using the regression model. The authors found significant negative relationship between the Non-Performing Loans (NPL) and Return on Assets (ROA); however, they found a positive but not

significant relationship between the Nonperforming Loan (NPL) and Return on Equity (ROE) of Nigerian Banks.

Shrestha (2011) has analyze trend of NPLs and the effect of NPL on share price of the 18 sampled deposit money banks of Nepal using the trend and one factor econometric model and descriptive statistics. The stratified sampling method was employed in choosing the banks for the study. The author asserts that NPL of deposit money banks is in declining trend, however, the total performing loan to total deposit ratio in the industry is an increasing trend during study period. The author further concludes that the real share price of the deposit money banks has a negative association with the levels of their NPLs.

Chimkono, Muturi and Njeru (2016) explore the effect of nonperforming loan ratio and other determinants of the financial performance of deposit money banks in the Malawian banking sector. Secondary data of seven-year period from 2008 to 2014 have been collected and analyzed using regression method. They affirm that nonperforming loan ratio, average lending interest rate and cost efficiency ratios have a significant effect on the performance of banks in Malawi.

2.2.8 Loan Loss Provisions and Banks Performance

Banks are in the business of granting credit facilities in form of long or short term loans. However, due to the risk of defaults, there is the need to make provisions

for loan losses that may arise as a result of bad loans. Beatty and Liao (2009) define loan loss provision as a strategy that is followed by deposit money banks by putting some money aside (reserves) to absorb any potential loans default, which in turn would help to protect banks' positions in terms of profitability and capital.

Loan loss provisioning is pivotal in assessing any financial system's stability and they are vital policies that influence profitability of banks (Beatty & Liao, 2009). Basically, loan loss provisioning should reflect the bank managers' confidence about the quality of their loan portfolio, this implies that the provisions should cover the entire spectrum if expected credit loss (Borio & Lowe, 2001). In a bid to understanding the relationship that exists between loan loss provisions and profitability, Dushku (2016) study the empirical evidence of loan loss provisions for Albanian banks. The study employed dynamic panel data for banks 15 Albanian banks covering the periods of 2004 - 2014. Findings form the study reveals that provision for loan loss has a positive significant relationship with profitability. This positive relationship between profitability and loan loss provisions indicates that banks use provisions to smoothen earnings (earnings management) in period of crisis. Similarly, Hasni (2016) in Malaysia did a cross country study to empirically investigate loan loss provision behavior with profitability. Pooled OLS was employed for the period of 2004 - 2012. The study found that ROA as a proxy for profitability has a positive relationship with loan

loss provisions in both economies of Malaysia and Thailand. The study however suggests that loan loss provisions should be properly managed to ensure that sufficient amounts are allocated to counterbalance the nonperforming loan during financial instability.

Alhadab and Alsahawneh (2016) examine the impact of loan loss provision on the profitability of Jordanian deposit money banks. By examining a sample of 13 Jordanian banks listed on Amman Stock Exchange (ASE) over the period 2004-2014. ROA and ROE was used to proxy profitability. Findings form this study provided evidence that loan loss provisions contrary to other findings have a negative effect on performance of Jordanian deposit money banks. This evidence proposes that Jordan banks adjust their loan loss provision due to several motives and, this in turn, leads to negative consequences on their profitability. Tahir, Ahmad and Aziz (2014) examine the impact of LLP on Bank Profitability in Pakistan using panel data multiple linear regression analysis using return on equity (ROE) and return on assets (ROA) as proxy for performance. The study finds that there is a negative relationship between the loan loss provision (LLP) and profitability (ROA, ROE). This implies that, the higher loan loss provisions decreases profitability and financial stability of the bank, and the higher provisions for loan losses decrease profitability.

2.2.9 Capital Adequacy Ratio and Banks Performance

Capital adequacy ratio (CAR) is recommended by Basel accord Basel (1998) for measuring asset quality and judicious credit risk management. It is the ratio of total capital to risk adjusted assets of the bank. The higher the ratio is the more adequate the bank's capital and better assets quality, consequently, low credit risk exposure. According to Berger (2011), the adequacy of capital is judged on the basis of capital adequacy ratio (CAR). Capital adequacy ratio indicates the internal strength of the bank to survive losses in the events of crises. Capital adequacy ratio is directly proportionate to the resilience of the bank to crisis situations. It has also a direct consequence on the profitability of banks by determining its expansion to risky but profitable ventures (Chandan, 2010).

To Peterson (2005), Capital Adequacy Ratio (CAR) measures the ability of bank's deposit to mitigate the risk of insolvency. He noted that the higher the ratio, the lower the need for external financing and therefore the higher the profitability of the bank. Poudel (2012) observed that there is significant negative relationship between dependent variable (return on assets) and independent variable (capital adequacy ratio). The result of his study shows that credit risk management is an integral predictor of bank financial performance, thus, the success of bank performance depends highly on risk management approach. Conversely, Noman, Pervin, Chowdhury and Banna (2015) in a study conducted in Bangladesh finds a

positive significant relationship between CAR and profitability. The results suggest that the commercial banks in Bangladesh may heavily depend on the equity capital as the major source of funding but it cannot use it beneficially due to the lack of quality fund management.

2.3 Theoretical Review

Relevant theories on deposit money banks credit shall be reviewed in this section. These theories include; commercial loan theory, the shift ability theory, anticipated income theory, credit risk theory and liability management theory.

2.3.1 Commercial Loan Theory

The earliest theory of banking is the commercial loan theory, also called the real bills doctrine.

The commercial loan theory states that banks have to lend only on short term, self-liquidating, commercial paper as banks operate primarily in the money market. According to Hosna and Manzura (2009), the commercial loan theory is geared towards influencing persuasively both the bank lending and the entire economic activities. Stringent adoption of this theory will disclose that it is expected to serve as a monetary supply to changes in aggregate economic activities. The acceptance of this principle among Deposit Money Banks (DMBs) in Nigeria is evident. Nigerian bankers believe that since their resources were

repayable at short notice, such depositors' monies should be employed accordingly in short term loans. Kargi, (2011) posited that the strong tie to this conception is rather conventional if concern is given to the fact that at the time of the supremacy of the theory, there were little or no secondary reserve assets, which could have served as a liquidity safeguard for the bank. More so, this theory fails to put into consideration the credit needs of Nigeria's emerging economy. It has not encouraged banks to fund the purchases of plants, land, equipment, and home-ownership. For a theory to uphold that all loans must be liquidated in the normal course of business shows its failure to acknowledge the relative stability of bank deposits. Although, demand deposits are based on demand, all depositors are unlikely to demand payment at the same time. Thus, stability of deposits enables a bank to lend out funds for a reasonable long period of time without danger of illiquidity. Though, with its shortcomings, the commercial loan theory, or the real bills doctrine has been a persistent theory of banking. Evidence of it still remain in the bank examination procedures, structure of bank regulatory agencies, and the philosophy of many bankers (Umobong, 2015). One cannot appreciate modern banking without an understanding of our banking history, and cannot understand banking history without an in depth understanding of the commercial loan theory.

2.3.2 The Shift ability Theory

This was developed during the 1920's and 1930's with increased holding by banks of marketable securities. To meet customers deposit withdrawals, the shiftability theory of asset management, advocates banks holding of marketable securities so that liquidity could be met by shifting or selling the securities held to other buyers. This theory assumes that assets need not be tied on only self-liquidating bills, but also held in other shiftable open-market assets, such as government securities (Moti, Masinde, & Mugenda, 2012). It must be noted that the shiftability theory did not replace the commercial loan theory or made it to be invalid. Instead, the shiftability theory took a more general view of the banking business by broadening the list of assets deemed legitimate for bank ownership. The shiftability theory does not say that commercial loan are inappropriate bank assets, it does say that commercial loans are not the only appropriate asset. The thrust of the shiftability theory affirms that the liquidity of a bank depends on its capability to shift its assets to someone else at an anticipated price. According to Hosna & Manzura (2009), the profound effect the shiftability theory had on banking practices can hardly be denied. What it did, basically was to refocus the attention of bankers and the banking authorities from loans to investments as a source of bank liquidity. Indeed, proponents of the theory argued that the liquidity of short-term, commercial loans was largely fictional in any case. According to Kargi, (2011), as with the commercial loan theory, however, the shiftability

theory contained a serious flaw. Actually, this flaw did not lie so much in the theory itself, it was well understood by the various authors on the subject as it did in the bank administrative practices to which the theory led. The defect of the theory was simply this: Although one bank could obtain needed liquidity by shifting its assets, the same thing was not true of all banks taken together.

2.3.3 The Anticipated Income Theory

Out of an exhaustive study in 1949, Prochnow formulated a new loan theory which he called "the Anticipated Income Theory". According to Afriyie & Akotey, (2011), they found in their study that; in every instance, notwithstanding the nature, disposition and character of the borrower's business, the bank planned liquidation of term loans from anticipated income of the borrower. Liquidation is not by sales of assets of the borrower as in commercial or customary theory of liquidity or by shifting the term loan to some other creditors as in the shiftability theory of liquidity but by anticipating income of the borrower. Consequently, this theory assumes that banks should advance loans on the basis of the anticipated income of the borrower and not on his present value.

In the words of Kolapo et al., (2012), one remarkable aspect of this theory is its "future-oriented approach" to bank loans and advances. It is also commonly known as "cash flow approach" to lending. Properly understood, this theory was a rival only to the commercial loan theory, not the shiftability theory. It does not

query the shiftability opinion that a bank's most essential source of liquidity is its secondary reserves. Rather, it again focused attention on the categories of loans appropriate for a bank to make but came to quite a dissimilar conclusion than that extended by the advocates of the commercial loan theory (Moti, Masinde, & Mugenda, 2012).

2.3.4 The Credit Risk Theory

Credit risk according to Salas and Saurina, (2002) refers to the risk that a borrower will default on any type of debt by failing to meet up with the required payments. This is based on moral hazard principle that suggests that once a borrower receives the loans, they may develop moral hazardous behavior and are likely to take up on highly risky ventures or investments (Chodecai, 2004). The risk is principally that of the lender and comprises loss of principal and interest, disrupt loss may be complete or partial and can arise in a number of situations, such as an insolvent bank unable to return funds to a depositor. To lessen the lenders risk, the lender may carry out a credit check on the potential borrower, may require the borrower to take suitable insurance, such as mortgage insurance or seek security or assurances of third parties. In general, the higher the risk, the higher will be the interest rate that the debtors will be asked to pay on the debt (Owojori, Akintoye & Adidu, 2011).

2.3.5 The Liability Management Theory

This theory holds that it is unnecessary to observe traditional standards since reserve money can be borrowed or obtained in the money market using short term debt instruments whenever a bank experiences reserve deficiency. According to Shafiq & Nasr, (2010), it does not mean that the bank manages only its liabilities actively and passive with respect to its assets. Rather, the theory continues to recognize that the asset structure of the bank has a prominent role to play in providing the bank with the much needed liquidity. But the theory takes a one dimensional approach to liquidity and argues that the bank can also use its liabilities for liquidity purposes. A bank wants liquidity for deposit withdrawal purposes and also to meet the equitable loan requests of its customers. Not only are bank loans profitable, but a bank that cannot make loans to its depositors when they need funds is not likely to retain those depositors for a foreseeable future.

2.4 Empirical Review

The principal business of deposit money banks is connected to credit risks which poses a great threat to their long run performance. In this regards, various researches have examined the nexus that exists between credit risk management and the performance of banks. Empirical evidences and results of numerous studies show a mixed trend on the effect of credit risk on banks' performance.

While some established a nexus relationship between credit risk and bank performance, other studies found a positive relationship. This session of this research provides related empirical findings on the subject matter.

One of the earliest studies by Bourke (1989), using data from European, North America and Australian banks from 1973 to 1986 employed panel regression for data analysis. Evidence from the study reveals that the level of credit risk tends to be negatively connected with banks performance. Molyneux and Thornton (1992) investigate the determinants of bank profitability using a panel of multi-country setting of 18 European countries from 1986 to 1989 period. Their findings suggest a negative relationship between credit risk and bank profitability.

In Turkey, Alper and Anbar (2011) examine the determinants of banks' profitability in Turkey over the time period from 2002 to 2010. In the study, bank profitability is measured on the basis of return on assets (ROA) and return on equity ROE), while credit risk is proxied by loans to total assets and loans under follow-up to total loans. In their findings, the ratios of loans under follow up/total loans and loans/assets are found to have negative and significant impact on profitability.

Similarly, in Greece, Athanasoglou, Brissimis and Delis (2005) adopt a dynamic panel data models to explore the effect of credit risk on the performance of Greek banks for the period of 1999-2004. Their findings reveal that credit risk is

negatively and significantly related to performance. The result suggests that an increased exposure to credit risk lowers profits. Al- Khouri (2011) assess the impact of bank's specific risk characteristics, and the overall banking environment on the performance of 43 deposit money banks operating in 6 of the Gulf Cooperation Council (GCC) countries over the period 1998-2008. He used fixed effect regression analysis, results reveal that liquidity risk, credit risk and capital risk are significant factors that affect bank performance when profitability is measured by return on assets (ROA) while the only risk that affects profitability when measured by return on equity (ROE) is liquidity risk. Conversely, Naceur and Omran (2008) in an attempt to probe the influence of bank concentration, regulations, institutional and financial development on deposit money banks' margin and in Middle East and North Africa (MENA) countries from 1989-2005 found that bank capitalization and credit risk have positive and significant effect on banks' net interest margin, cost efficiency and profitability.

In Taiwan, Chen and Pan (2012) examine the credit risk efficiency of 34 Taiwanese deposit money banks over the period from 2005 to 2008. Their study used financial ratios to assess the credit risk and was evaluated using Data Envelopment Analysis (DEA). The credit risk parameters were; credit risk allocative efficiency (CRAE), credit risk technical efficiency (CRTE) and credit risk cost efficiency (CRCE). The results point out that only one bank is efficient in all types of efficiencies over the estimated periods. Generally, the DEA results

reveal a relatively low average efficiency levels in CRTE, CRAE and CRCE in 2008. Poudel (2012) study the factors affecting deposit money banks performance in Nepal for the period of 2001- 2012 and used a linear regression analysis technique. The study reveals a significant converse association between deposit money bank performance measured by ROA and credit risk measured by capital adequacy ratio and default rate. In this study, the a priori assumption is that credit risk (nonperforming loans, loan loss provisions, loans and advances) has a negative impact on profitability.

In more recent studies across the globe, Alshatti (2015) examine the effect of credit risk management on financial performance of 13 Jordanian deposit money banks during the period from 2005 to 2013. Using two mathematical models to measure the relationship, the empirical findings show positive effect of nonperforming loans/gross loans ratio, a negative effect of leverage ratio and an insignificant effect of capital adequacy ratio and credit interest/credit facilities ratio on ROE and ROA. Based on these findings, the study recommends the need for Jordanian banks to advance their credit risk management techniques to achieve superior performance. However, the method used for this study only captures a short-run relationship between credit risk and banks' performance.

Considering the difficulties Albanian financial institutions face in managing loans, Islami and Ndoka (2016) contributed to empirical literature by exploring the effect of credit risk management on performance of Albanian deposit money

banks during the period 2005-2015. Using quarterly data from the 16 banks operating in the Albanian banking system, the authors regressed nonperforming loans ratio and capital adequacy ratio on return on equity and return on assets. The estimation produced a significant negative impact of nonperforming loan ratio and capital adequacy ratio on ROA and a significant negative and insignificant positive effect of Non-performing loan ratio and capital adequacy ratio on ROE respectively.

Empirical findings in some African countries also reveal the nature of relationship that exist between both variables. For instance, Kithinji (2010) assess the effect of credit risk management on the profitability of deposit money banks in Kenya. Data on the amount of credit, level of nonperforming loans and profits were put together for the period 2004 to 2008. The findings reveal that majority of the profits of deposit money banks in Kenya are not subjective to the amount of credit and nonperforming loans. Consequently, suggesting that other variables other than credit and nonperforming loans impact on profitability. In Ghana, Boahene, Dasah and Agyei (2012) using OLS examined the nexus between credit risk and profitability of some designated deposit money banks in Ghana, using a panel of six selected banks for a period of five years from 2005 to 2009. Their study exemplifies one of the few attempts to account for credit risk beyond nonperforming loans. From their results, credit risk (net charge-off rate, nonperforming loan rate and pre-provision profit as a percentage of net total loans

and advances) has a positive and significant connection with bank profitability. The results point out that banks in Ghana enjoy high profitability irrespective of high credit risk.

Employing panel data analysis technique, Kaaya and Pastory (2013) examine credit risk and performance of Tanzanian deposit money banks for the period, 2005 through 2011. The study revealed negative correlation between credit risk indicators (loan loss provision and nonperforming loans) and bank performance as measured by return on assets. The study recommended that banks should improve their credit risk management techniques and also consider increasing their capital reserve to protect them from future losses. Similarly, in Ethiopia, Gizaw, Kedebe and Selvaraj (2015) empirically scrutinized the impact of credit risk on profitability of deposit money banks in Ethiopia. Secondary data was used for this purpose and were collected from a sample of 8 deposit money banks for the period between 2003 and 2014.

The data were evaluated using descriptive statistics and panel data regression technique and the results shows that credit risks measures: nonperforming loans, loan loss provisions and capital adequacy have a significant impact on the profitability of banks in Ethiopia. The study however suggests a need for improving credit risk management to enhance the prevalent profitability of deposit money banks in Ethiopia.

Comparable study has also been conducted by authors in Nigeria and findings have been divergent. Prominent among authors who have attempted similar studies in Nigeria include; Kargi (2011) evaluated the impact of credit risk on the profitability of banks in Nigeria. Financial ratios as measures of bank performance and credit risk were collected from the annual reports and accounts of selected banks from 2004 to 2008 and evaluated using descriptive, correlation and regression techniques. The findings reveal that credit risk management has a significant impact on the profitability of Nigerian banks. He concluded that banks' profitability is conversely influenced by the levels of loans and advances, nonperforming loans and deposits thereby exposing them to greater risk of illiquidity and distress.

Kolapo, Ayeni and Oke (2012) carried out an empirical investigation into the quantitative effect of credit risk on the performance of deposit money banks in Nigeria over the period of 11 years (2000-2010). Cross sectional basis was use to randomly select 5 deposit money banks for a period of eleven years. The conventional profit theory was employed to express profit, measured by Return on Asset (ROA), as a function of the ratio of Nonperforming loan to loan and 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 representatives of credit risk. Panel data model analysis was used to estimate the determinants of the profit function. The results show that the effect of credit risk on bank

performance measured by the Return on Assets of banks is cross- sectional invariant. The study proposes that banks in Nigeria should improve their capacity in credit analysis and loan administration while the regulatory authorities should pay more attention to banks' compliance to applicable provisions of the Bank and other Financial Institutions Act (1999) and prudential guidelines.

Idowu and Awoyemi (2014) investigate the impact of credit risk management on the performance of deposit money banks in Nigeria. Data sourced from the financial reports of seven commercial banking firms were analyze foe seven years ranging from 2005 to 2011. The panel regression model was employed for the estimation of the model. In the model, ROA and ROE were used as the performance indicators while nonperforming loans and capital adequacy ratio represent credit risk management indicators. The findings reveal that credit risk management has a significant impact on the performance of deposit money banks in Nigeria.

Ogboi and Unuafe (2013) using panel data analysed the influence of credit risk management indicator, represented by capital adequacy on financial performance of Nigerian listed banks over the period, 2004 to 2009. The result showed that sound credit risk management and capital adequacy impacted positively on bank financial performance with the exemption of loans and advances which was found to possess a negative impact on banks performance. The authors recommended

that Nigerian banks should formulate more efficient credit risk management strategies by conducting rigorous credit assessment before loan disbursement.

In an attempt to examine the effect of credit risk management on bank performance, Iwedi and Onuegbu (2014) used panel data regression on a sample of 5 Nigerian DMBs. Using judgmental sampling technique, the findings reveal a positive association between the ratio of nonperforming loans to loans and advances and ratio of loans and advances to total deposits on bank performance. In line with the findings, the study recommend that management of Nigerian banks should enhance their capacity in credit analysis and loan administration.

In a more recent study conducted in Nigeria, Kayode et al. (2015) investigate the impact of credit risk on banks' performance in Nigeria. A panel estimation of six Nigerian DBMs from 2000 to 2013 was done using the random effect model framework. The findings displayed that credit risk is negatively and significantly correlated to bank performance represented by return on assets (ROA). This suggests that the higher the exposure to credit risk by banks, the profitability of such bank. The study also found that total loan has a positive and significant impact on bank performance. Therefore, to stem the cyclical nature of nonperforming loans and increase their profits, the banks should adopt an aggressive deposit mobilization to increase credit availability and develop a

dependable credit risk management strategy with adequate punishment for loan payment defaults.

2.4.1 Gap in Literature

Going by the related empirical literatures reviewed, most of the prior studies that were crosscountry specific studies in Nigeria were scanty. It was observed that findings of various studies on credit risk management and performance of deposit money banks are ambiguous. These ambiguities may be due to differences in theoretical frameworks and estimation methods. For instance, Kaaya and Pastory, (2013), Kithinji (2010), Ruziqa (2013), Ogboi and Unuafe (2013),

Kayode et al. (2015) empirically investigated the relationship between credit risk management and banks performance in their respective and cross countries, they unanimously concluded that credit risk management impact negatively on bank's profitability. On the other hand, authors such as Idowu and Awoyemi (2014), Gizaw, Kedebe and Selvaraj (2015), Boahene, Dasah and Agyei (2012) concluded that a positive relationship exist between credit risk management and profitability. On the same subject matter, Kolapo et al. (2012) show that the effect of credit risk on bank performance represented by the Return on Assets of banks is cross-sectional invariant. In the light of these inconclusive findings, this current study intends to investigate the actual relationship that exist between both variables in the Nigerian context in order to lay to rest these controversies in findings.

In terms of methodology, majority of the studies reviewed either employed OLS, or multiple regression analysis which does not consider cross sectional data. Other studies employed the panel data analysis which is adjudged to be more appropriate and effective because it has the ability to account for omitted variables as well as the endogeneity and heterogeneity of the data set. Hence, this study will employ the panel data analysis in investigating the relationship between credit risk management and financial performance of DBMs in Nigeria.

In summary, most studies particularly those that are reviewed in this study could not adequately address the credit risk management problems of banks by making a thorough analysis of the interplay of credit risk management and bank performance using appropriate methodology to assess the effect of various influential factors on the subject matter. Hitherto, most of them did not include control for other factors like size and equity capital of the bank as these are factors known to affect performance. This study therefore seeks to add value and fill the gap in knowledge into existing literatures conducted in Nigeria and beyond by highlighting evidence from data that are more recent.

S/N	Author/Year	Country	Methodology	Period of Study	Findings
1	Bourke (1989)	Europe, North America	Panel Regression	1973-1986	Evidence from the study shows that the level of

		and Australia			credit risk tends to be negatively connected performance of bank.

2	Molyneux and Thornton (1992)	Europe	Panel Regression	1986-1989	Findings from this study show a negative connection between credit risk and bank performance
3	Athanasoglou, Brissimis and Delis (2005)	Greece	Panel Regression	1999-2004	They concluded that credit risk is negatively and significantly linked to banks performance
4	Naceur and Omran (2008)	Middle East and North Africa (MENA) countries	Multiple Regression Analysis	1989-2005	Bank capitalization and credit risk have positive and significant impact on banks' cost efficiency, net interest margin and profitability
5	Kithinji (2010)	Kenya	Regression Analysis	2004-2008	The findings brought to a fore that majority of the profits of

					deposit money banks are not influenced by the amount of credit and nonperforming loans, therefore signifying that other variables other than credit and nonperforming profitability
6	Alper and Anbar	Turkey	OLS	2002-2010	The ratios of loans/assets and loans under followup/total loans are found
	(2011)				to have negative and significant influence on profitability.
7	Islami and Ndoka (2016)	Albania	Quarterly Regression Data	2005-2015	The estimation produced a significant negative impact of non-performing loan ratio and capital adequacy ratio on ROA and a significant negative and insignificant positive effect of

					nonperforming loan ratio and capital adequacy ratio on ROE respectively.
8	Boahene, Dasah and Agyei (2012)	Ghana	OLS	2005-2009	Credit risk (net charge-off rate, nonperforming loan rate, and preprovision profit as a percentage of net total loans and advances) has a positive and significant association with bank profitability.
9	Kaaya and Pastory (2013)	Tanzania	Multiple Regression	2005-2011	The study reveal negative correlation between credit risk indicators (loan loss provision and nonperforming loans) and bank performance as measured by return on assets.
10	Iwedi and Onuegbu (2014)	Nigeria	Panel Data		The findings reveal a positive relationship between the ratio of nonperforming loans to loans and advances and ratio

					of loans and advances to total deposits on bank

					performance
11	Alshatti (2015)	Jordan	Multiple Regression	2005-2013	Findings show positive effect of nonperforming loans/gross loans ratio, a negative effect of leverage ratio and an insignificant effect of capital adequacy ratio and credit interest/credit facilities ratio on ROE and ROA.
12	Gizaw, Kedebe and Selvaraj (2015)	Ethiopia	Panel Data	2003-2014	Credit risks measures: nonperforming loans, loan loss provisions and capital adequacy have a significant impact on the profitability of banks in Ethiopia.
13	Ogboi and Unuafe (2013)	Nigeria	Panel Data	2004-2009	The result showed that sound credit risk management and capital adequacy impacted

					positively on bank financial performance with the exception of loans and advances which was found to have a negative impact on banks.
14	Kargi (2011)	Nigeria	Panel Data	2004-2008	The findings reveal that credit risk management has a significant impact on the profitability of Nigerian banks.
15	Kolapo, Ayeni and Oke	Nigeria	Panel Regression	2000-2010	The results show that the effect of credit risk on bank performance measured by the Return on Assets of
	(2012				banks is cross-sectional invariant.

Source: Author's Compilation, 2021

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter examines the research design, the population and sampling technique, sources of data, the model specification, method of data analysis as well as the operationalization of variables used to investigate the effect of credit risk management on profitability of deposit money banks in Nigerian.

3.2 Research Design

This study adopts the causal research design. The causal research design is chosen because, the study attempts to test and analyze the relationship among hypothesized variables, the design helps to find empirical association between the independent variables and a dependent variable. However, observations were gathered at several points in time.

3.3 Population and Sampling Technique

The population of the study is the entire deposit money banks that are listed in the Nigerian Stock Exchange (NSE). A stratified random sampling technique is employed to select our sample size from the list of 22 licensed deposit money banks as at December 31st 2017. For the purpose of this study, 12 deposit money

banks were selected from the population considering the heterogeneity of the banks. The banks were selected based on a wide network of branches and timely published financial statements. The sample size size is select due to availability of data as some of the listed DBMs had missing data problems for the period under review. In addition, the banks were also selected considering their national and international operating authorisation.

3.4 Sources of Data

This study will use only secondary data which are sourced from Nigeria Stock Exchange annual publications and published financial statements of selected deposit money banks. The data will be on Liquidity Ratio (LQR), Nonperforming Loans (NPL), Loan Loss Provisions (LLP), Capital Adequacy Ratio (CAR), Bank Size (BSIZE) as the control variable and Return on Asset (ROA) which represents bank's performance.

3.5 Model Specification

This study is based on the commercial loan theory otherwise known as the real bills doctrine, regarded as the oldest banks' credit theory. The commercial loan theory holds that banks should lend only on selfliquidating, short-term commercial paper. According to Hosna and Manzura (2009), the commercial loan theory is geared towards influencing bank lending and the overall economic activities. Nigerian bankers believe that since their resources were repayable at

short notice, such depositors' monies should be employed accordingly in short-term loans.

Thus, the model for this study hinges on the commercial loan theory or the real bills doctrine. It is noted that Kargi (2011) model stems from the same theory hence, the model of this study is underpinned to that of Kargi (2011). In his study, Credit Risk and the Performance of Nigerian Banks measured performance with Return on Asset (ROA) as a function of the ratio of Nonperforming loan to loan & Advances (NPL/LA) and ratio of Total loan & Advances to Total deposit (LA/TD) used as indicators of credit risk. However, this current study differs, and improved on his model by incorporating the ratio of loan loss provision, liquidity ratio and capital adequacy ratio as measure for credit risk. In addition, a control variable is added to the model that is found to impact on bank profitability (Kaur & Singh, 2014). We control for bank size by using natural logarithm of total assets (SIZE).

Thus, the functional form of the model becomes:

$ROAit = f(LQR,NPL,LLP,CAR,BSIZE)$..... (1)

The econometric form of the above model is stated as follows:

$Y = (30 + [31Xit +$ ..... (2)

Where, Y is the dependent variable. /?0 is constant, P is the coefficient of explanatory variable, *Xit* is the explanatory variable and */j.tt* is the error term (assumed to have zero mean and independent across time period.

By adopting the economic model as in equation (2) above, the estimated equation of the model is expressed as;

RO Ait = jgO + */3\LQRit + (32NPLit + (33LLPit + /34CARit + (35BSIZEH + nit...* (3)

Where;

RO Ait = Return on Asset of bank i in year t

LQ = Liquidity Ratio of bank i in year t

NP = Nonperforming Loans of bank i in year t

LLPit = Loan Loss Provision of bank i in year t

CARit = Capital Adequacy Ratio of bank i in year t

BSIZ = Natural Logarithm of total assets bank i in year t

[30 = Intercept

nit = Stochastic error term

PO — /?5 are parameters to be estimated in the model. They describe the directions and strengths of the relationship between bank performance and the factors used to determine it in the model.

The A priori expectations for the equation as derived from the literature are given as;

/?4 *and* /35 > 0 *while* /?l,2,/33 <

3.6 Method of Data Analysis

The study employs three main methods to analyze the data; the descriptive statistics, correlation matrix and the panel data analysis. The descriptive statistics enable us determine the summary qualities of the data and present them in a convenient form. The Pearson correlation matrix is used to ascertain the direction of relationship between dependent variable and all the explanatory variables and to ascertain if there exist any problems of multicolinearity.

The Panel Data Analysis was employed in this study under the assumption that all 12 banks are heterogeneous. First, the Hausman test specification was carried out in order to best choose the best individual performing effects between the random effects and the fixed effects. The Hausman test checks whether there is a significant difference between the fixed and random effect estimates.

If the null is rejected, the probability associated with the difference must be below significant and the fixed effect must be used.

The advantages of using panel data over cross sectional data include; panel data provide more degree of freedom, less multicolinearity among variables, improvement in the efficiency of economic estimates as well as flexibility of various samples (Gujarati & Sangeetha, 2007). In order to make the model reliable for decision-making, the data collected for the study were analyzed using Eviews 9 Statistical Package.

3.7 Operationalization of Variables

THE DEPENDENT VARIABLE

Return on Assets (ROA)

The Dependent Variable for this research is Return on asset (ROA), it is calculated by dividing net profits after tax to total assets at the end of the financial year. ROA is an indicator of performance and measures how the banks are profitable relative to their assets, meaning how management is efficient in utilizing the company assets to generate profit. On average, higher ROA indicates effective and efficient use of a firm's assets to generate profits. In literature, authors such as Poudel (2012), Kargi (2011) have used ROA to proxy of performance.

EXPLANATORY VARIABLES

Liquidity Ratio (LQR)

This is the ability of a bank to meet its short-term obligations as at when due. The more cash bank holds as reserve, the more liquid they are said to be and the less investment they can engage in. This may have an adverse effect on perfeormance. The A priori expectation for this variable is /? 1 <0.

Nonperforming Loans (NPL)

These are credits which the banks perceive as possible losses of funds due to loan default. NPL is the major indicator of deposit money banks credit risk, it defines the proportion of loan losses in relation to total amount of loans granted. It represents how much of the banks loans and advances are becoming increasingly difficult to recover. As the amount increases, a negative signal is sent to management because it shows high probability of none recoverable loans (Ogboi & Unuafe, 2013). It is expected that nonperforming loans will have negative relationship with ROA. Thus, the A priori expectation is *(32* < 0.

Loan loss Provisions (LLP)

This is an amount of money that a bank set aside from its annual earnings as a precaution against possible loss of a non performing loan, or to off-set a lost credit facility. In other words, loan loss is a contra income account that enables banks to recognize in their profit and loss statements the expected loss from a particular loan portfolio (Gizaw et al, 2015). Depositors are protected against anticipated loss through loan loss provisions. This variable is expected to have an inverse relationship with the dependent variable, suggesting that when loan loss provisions increase, profitability decrease. Hence, the A priori expectation is /?3 < 0.

Capital Adequacy Ratio (CAR)

This ratio is a measure of bank's capital. It is also known as capital to risk weighted assets ratio which is used to protect depositors and promote stability and efficiency of the financial system.

The standard set by bank and Other Financial Institution Act, 2001 (BOFIA, 2001) is 10% while the international standard is 15% according to BASEL 2. The A priori expectation is /?4 > 0.

CONTROL VARIABLE

Bank Size

Banks size is used as a control variable in this study. Bank size is argued to have strong positive relationship with bank performance. It is measured as natural logarithm of banks total assets. It is expected that the bigger the bank the less likely the credit risk and in the case of default, there will be enough assets to cushion the effects. In literature, Alper and Anbar (2011) reported a positive effect of bank size on profitability, which implies that higher ROA is associated with larger banks size. The A priori expectation for this variable is $/35 > 0$.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

The focus of this chapter is on data analysis, presentation of results and discussion of findings. The analysis involves the use of both statistical and econometric methods to provide a rich background for investigating credit risk management and financial performance of deposit money banks (DMBS) in Nigeria. Thus, while the descriptive statistics and the correlation coefficient were used to provide the initial characterization of the data, the Panel Data Analysis method was employed in for the main econometric analysis.

4.2 Descriptive Statistics

Descriptive statistics show the summary of data and other basic characteristics within the series.

The annualized summary statistics for the main variables in the study are presented for the sampled banks in table 4.1 below:

Table 4.1: Descriptive Statistics

	Mean	Med	Max.	Min.	Std. Dev	Skew	Kurt.	J.B.	Prob.
ROA	0.025956	0.017614	0.32954	-0.09274	0.047026	3.57716	21.64602	1794.862	0
CAR	21.09315	19.895	47	3.72	7.031391	1.45062	6.06116	80.01676	0
NPL	0.09766	0.0773	0.542	0.000786	0.089365	1.794235	7.940232	167.7732	0
LLP	0.047751	0.0317	0.1738	-0.002	0.043403	1.107194	3.355033	22.63301	0
LQR	0.875864	0.43695	10.5445	0.114557	1.746891	4.180009	20.23892	1651.816	0
BSIZE	7.96109	8.774026	9.75	4.860386	1.571958	-0.73229	1.869843	154001 1	0

Source: Author's computation (2024)

The mean performance (ROA) value is NO.02595 million Naira for the entire sample of 108, while the median value is 0.017. The data appears to be skewed to the right, and that explains why the mean is greater than the median value. This was further confirmed by the skewness coefficient of 3.577 which indicated that the distribution was positively skewed to the right, which was a common feature of the return on asset. The maximum value of the entire sampled banks' performance was about 0.3295, while the minimum value is -0.0927. With this result, more banks are seen to perform very well within the periods, while others did not. That is while the minimum ROA (performance) value negative (-0.44791). There also appeared to be quite a lot of variations in the financial performance of the sampled banks, the standard deviation value of 0.04702 is very large compared to the mean value of 0.02595. This simply suggests a high level of variability of the pattern of financial performance either across the banks

or overtime within banks. The summary statistics with respect to Jaque-Bera (J-B) statistic value of 1794.862 for the financial performance variable is significant at the 1 percent level and implies that the probability distribution of the sample for the variable is not normally distributed. This invariably suggests that the financial performance across the sampled banks is heterogeneous and exhibit bank-specific characteristic. This is one justification for the application of the panel data estimation technique in this study.

The mean value for bank capital adequacy ratio (CAR) is 21.09315, while the maximum value is 47.000. By this result, it becomes glaring that deposit money banks operating capital adequacy ratio in Nigeria is higher than the normal threshold recommended by the CBN and Tier 1 and Tier 2 Basel Accord. This is also an indication that the risk of bank's failure occasioned by insolvency is very minimal. The standard deviation value of 7.031391 also attest this. Hence, the skewness coefficient of 1.45062 indicates that the distribution is positively skewed to the right, which was a common feature of the capital adequacy ratio. The descriptive statistics for the other variables in the study also present interesting results. For the banks' credit risk factor represented by (NPL and LLP), the mean and maximum values (NPLR 0.09766, 0.542 and LLPR 0.047751, 0.1738) clearly show that on average, credit risk liabilities are higher than financial performance for the Nigerian banking industry. The degree of variability in terms of risk among the banks, is also high compared to the mean value.

Although the skewness values of (1.794235 and 1.107194) is positive, indicating that more banks are faced with higher credit risk than the reported mean value for the sampled period. The J-B statistic values (167.7732 and 22.6330) for both variables representing credit risk are significant at the 1% level. This also indicates non-normal distribution, an indication of heterogeneity in the pattern of credit risk liability by the banks. Indeed, all the variables in the study had highly significant J-B values, clearly showing that individual bank's characteristics are quite important in the measurement of the variables.

The average bank liquidity risk value (LQR) is 0.875864 with corresponding high maximum value of 10.5445. The standard deviation value of 1.746891 shows that there is a large spread in liquidity risks, among the sampled banks. The mean value of bank size (BSIZE) is 7.6109 billion, with maximum value reaching over 9.75. There appeared to be minimal variations in the assets of banks, the standard deviation value of 1.571958 is very low as compared to the mean value across the sampled banks in the study. Although the skewness value is negative (-0.73229), indicating that few banks have assets that are lower than the reported mean value for the period of the sample.

The J-B statistic also shows non-normal distribution, an indication of heterogeneity in the pattern of banks' assets within the period of investigation.

4.3 **Correlation Analysis**

Furthermore, we present the ordinary correlations matrix coefficients to examine the background behavioural patterns in the data set. The results of the correlation tests are shown in Table 4.2 below.

Table 4.2: Pairwise Correlation Matrix

	ROA	CAR	NPL	LLP	LQR	BSIZE
ROA	1					
CAR	0.137750	1				
NPL	-0.086389	-0.142511	1			
LLP	0.160239	0.034661	0.782164	1		
LQR	0.257944	-0.033784	-0.139207	-0.0282049	1	
BSIZE	-0.256743	0.080644	-0.253925	-0.2696919	-0.4394198	1

Source: Author's computation (2024).

The results of the correlation matrix in table 4.2 above show that Return on Assets (ROA) has a weak correlation with all the other variables in the study. The correlation values are really low and indicate that one-on-one relationship of the variables with ROA is weak for the entire sample. The only variables with high significant correlation (0.782164) are between loan loss provisions ratio (LLP) and non- performing loan ratio (NPL). On the other hand, bank size (BSIZE) is also seen to have moderate correlation value of -0.4394198 with liquidity ratio. Thus, we conclude that, the correlation matrix results above indicate the absence of multicolinearity among the hypothesized variables in the model.

4.4 **Empirical Results on the Regressions**

4.4.1 The Baseline Result

In this section, the estimated results for the empirical model are presented and analyzed in table

• below. First, we present the result of the Panel Least Squares estimation of the relationships without taking into account the bank-specific characteristics of the data. The overall performance of the model is relatively not impressive since the data used are pooled rather than time series. The R-squared value is 0.125 percent indicate that over 12 percent of the systematic variations in the banks' financial performance are explained in the model. This indicates that the model performs poorly in explaining bank performance. Even the adjusted R-squared value of 0.176 percent is also very weak and it implies that the model has a weak predictive ability. Moreover, the coefficients of capital adequacy ratio (CAR) and bank liquidity (LQR) failed the 5 percent significance level.

This implies that these two variables do not have significant impact on bank financial performance in Nigeria. The other coefficients of NPL, LLP and BSIZE passed the 1 percent and the 5 percent level of significance test, suggesting that these variables have strong impacts on deposit money bank financial performance in Nigeria. Generally, the results of these estimations are rather weak and may not

capture the empirical behaviour of credit risk management and deposit money bank profitability for the sample in the study.

Table 4.3: Credit Risk Management and Deposit Money Banks Financial performance in Nigeria (PLS)

Variable	Coefficient	T-ratio	Probability
Constant	0.062457	1.997138	0.0485
CAR	0.000462	0.753883	0.4527
NPL	-0.264956	-3.322034	0.0012**
LLP	0.541198	3.400814	0.0010**
LQR	0.003070	1.112311	0.2686
BSIZE	-0.006143	-1.961282	0.0526*
R^2=0.125	Adj. R^2=0.176	F-5.5936	D.W.=2.26

Source: Author's computation 2021. Note: ** Sig. at 1% level, * is Sig. at 5% level.

4.4.2 Hausman Test for Panel Effects

The poor Panel Least Square (PLS) result suggests that another estimation technique will be appropriate in the estimation of the relationships. The Panel Data Analysis method is therefore used for the estimation of the relationships. As stated in the previous section, the standard test for the method of panel analysis is the Hausman test specification for random effects. Since the biases in the pooled data could either come from cross sectional heterogeneity or time series (periodic) changes, the Hausman test (reported in table 4.4 below) is conducted to determine the best effects model to be adopted. The Chi-square statistic value for the model is significant. From the results, the statistic provides little evidence against the

null hypothesis that there is no misspecification when the Fixed-effect model is employed for the estimates in values. Hence, the best method to apply for the model estimation is the Fixed-effect strategy.

Table 4.4: Hausman Test for Panel Effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-Section random	20.0195	6	0.0027

Source: Author's computation 2021

4.4.3 Estimation with DMBs Financial Performance and Credit Risks Management Factors

The Fixed Effects (FE) estimates are reported in table 4.5 below. From the result, the goodness of fit is moderate, with the R squared value of 0.404, indicating that over 40 percent of the systematic variations in bank financial performance is captured by changes in the explanatory variables (credit risk). The adjusted R-squared value of 0.274 percent is low and it implies that the model has a weak predictive ability. However, given that the data set used is a panel, the outcome of the adjusted R squared may not pose estimation threats to the results (Maddala, 1999; Woodridge, 2002). The F value of 3.1071 for the result is high and easily passes the significance test at the 1 percent level; suggesting existence of significant relationship between bank financial performance and all the credit risk variables combined.

Table 4.5: Credit Risks and Deposit Money Banks' Financial Performance Estimates (Dependent Variable = ROA)

Fixed Effects(EF)

Variable	Coeff	t-Stat.	Prob.
Constant	0.386256	2.274981	0.0257
CAR	0.000560	0.623936	0.5345
NPL	-0.272791	-2.357059	0.0209*
LLP	0.302677	1.205665	0.2316
LQR	-0.001918	-0.492516	0.6237
BSIZE	-0.044756	-2.184736	0.0319*
AR(1)	-0.279970	-1.938579	0.0562*
R^2	0.404		
Adj. R^2	0.274	F-Statistic=3.1071	DW-1.78

Source: Author's computation (2021) Note: * significance at 5% level.

Although, the R-square is 40%, the initial DW statistic showed some signs of serial correlation (not reported, during data estimation). After correcting for serial correlation with Autoregressive process that had 9 iterations and 1 lag, the improved estimate equation with t-statistics and probability values (0.0562) are reported in table 4.5 above. Now, the relevance of each of the variables in the model is determined by considering the individual coefficients of the variables in terms of significance and signs (Greene, 2002; lyoha, 2004). Indeed, it is seen that capital adequacy ratio (CAR) and non-performing loans (NPL) are the only variables possessing the right signs in line with the apriori expectation in the model; all the other variables did not possess the expected signs. In this study, credit risk management is measured by non-performing loans ratio (NPL) and

loan loss provisions ratio (LLP). However, a close examination of the individual coefficients in the model revealed that, non-performing loans ratio (NPL) have significant negative relationship with bank's financial performance. It was significant at the 5 percent level. The loan loss provisions ratio (LLP) though positively signed, but failed the 5 percent significance level. This result however disagrees with those of Dushku (2016), Hasni (2016), Boahene, Dasah and Agyei (2012), and Tahir, Ahmad and Aziz (2014), who find significant positive and negative relationship between loan loss provisions ratio and financial performance. It therefore means that, in the determination of bank's financial performance in Nigeria, credit risks management is very relevant. However, the aspect of credit risk that should be of more concern to management and policy makers is the non-performing loans ratio (NPL).

This is true because, a unit increase in the NPL will reduce bank financial performance by 0.272791; and failure to effectively tackle it will spell doom for the bank's overall financial performance.

The coefficient of capital adequacy ratio (CAR) is positive, but however failed the 5 percent level of significance. This means that capital adequacy ratio is not a major threat to the financial performance of banks in Nigeria. One possible reason for this result is that, banks were able to effectively build up their capital base such that they are able to meet their financial obligations to customers and

creditors as they fall due. This was evidence from the report of the respective annual audited financial statements of all the sampled banks, where they were already operating on capital adequacy ratio that was far above the minimum 15.0 per cent recommended threshold (for banks with international authorisation) and 10.0 per cent (for banks with either national or regional authorisation) in Nigeria by the Central Bank of Nigeria (CBN).

The coefficient of liquidity ratio (LQR) has an insignificant negative relationship with bank's financial performance, as it failed the 5 percent level of significance. This is an indication that this variable is not a significant factor in determining bank's financial performance in Nigeria. This could probably be that, Nigeria banks being aware of the dangers of lack of excess liquidity to meet its short-term obligations, have been able to build up excess liquid-capacity that will guarantees optimal profitability at a minimal risk. Also, the capacity of banks to perform their intermediation and credit creation roles in a manner that guarantees optimal profitability within a given minimum risk level, is greatly hinge on having adequate liquidity (Okoye & Eze, 2014; Ibe, 2015).

The coefficient of bank size (SIZE) has significant negative impact on banks' financial performance. It was indeed significant at the 5% level. Bank size is measured by the natural logarithm of total asset, its effect on financial

performance is generally agreed in the extant literature to be positive (Smirlock, 2008). However, the opposite seems to be the case in this study.

The result suggests that, the size of a bank actually have significant negative effect on the overall financial performance of banks in Nigeria within the period of investigation. The implication of this result is that bank's asset has actually reduced bank's performance by -0.044756. This again clearly shows that, banks in Nigeria have not been able to effectively utilize their assets in such a way as to have the much needed positive impact on performance. Antother reason for this negative relationship could be attributed to the effect of diseconomies of scale. Being that, as some firms grow in sizes, performances tend to reduce as result of internal bureaucratic tendencies and bottleneck. The finding agrees in all respect with those of Davydenko (2013), Al- Tamimi and Al Mazrooei (2017), Jamil, Bizri and El-Baba (2018) and El-Mehdi (2018). It however disagrees with those of Ali, Akhtar & Sadaqat (2011), Awojobi and Amel (2011) and Saidu & Tumin (2014), who submitted that bank size does not have any significant impact on the financial performance of deposit money banks.

Based on the foregoing analysis, we conclude that credit risk management significantly affect deposit money banks' financial performance in Nigeria within the period of investigation. Therefore, the overall results obtained from the model estimation are effectively acceptable because the D.W. statistic value of 1.78 is

appropriate and it indicates the absence of multicolinearity in the model. Thus, the results are applicable for structural analysis and policy directions.

- **Discussion of Findings**

According to Atlassian (2018), credit risk management, essentially ensures that the borrower is of sound credit standing, has capability to repay debt, is run and managed by good personnel, forms a part of performing industry, is compliant with regulatory and legal requirements and importantly has not defaulted or is delinquent in other obligations. If a borrower account becomes delinquent, it has an overarching impact on banks, as apart from increasing the cost of managing a particular account it hampers profitability of banks. The hidden costs of an account gone bad are many, and apart from causing administrative hassles and pains, attempts to recover dues causes a lot of efforts and expenses. When a large number of borrower accounts becomes non-performing it ends up stressing the bank (Atlassian, 2018).

From the result, non- performing loans as one of the measures of credit risk is seen to have significant negative relationship with banks' financial performance. This was rather expected because, theoretically, there should be an inverse relationship between bank's financial performance and non-performing loans. Where the ratio of non-performing loans is high, it will have adverse effect on performance. Therefore, the lower it is the better. On the basis of this finding, we

submit that credit risk management is a major factor affecting deposit money banks financial performance in Nigeria within the period of study. This result therefore, is in line with the CBN (2018) report on nonperforming loans of banks in Nigeria; that the ratio, remained above the regulatory threshold of 5.0 per cent. The decrease in the NPL ratio reflected the effect of the favourable macroeconomic conditions and stricter prudential regulation. This finding agrees with those of Kargi (2011), Kolapo, Ayeni and Oke (2012), Ogboi and Unuafe (2013), Kaaya and Pastory (2013) who find significant negative relationship between non-performing loans as measure of credit risk and performance. This finding however disagreed with those of Idowu and Awoyemi (2014) who find significant positive relationship and Kithinji (2010) who submitted a non-significant relationship between non-performing loans and bank financial performance.

The non-significant nature of the loan loss provisions ratio (LLP) as a second measure of credit risk indicates that, the variable is not a significant determinants of bank's financial performance in Nigeria, hence, it does not pose a serious concern to management. One probable reason for this outcome may be that overtime, management may have been able to make adequate provision as a buffer against shocks occasioned from non-performing loans. Again, it could also be as a result of the CBN strict directive to banks to intensify efforts at debt recovery, realisation of collateral for lost facilities and strengthening their risk

management processes. As at June 2018, loan loss provision was 75.74 per cent, as against 80.4 per cent in the corresponding period of 2017. The banking industry liquidity ratio increased to 46.09 per cent at the end of the first half of 2018, from 45.8 per cent at End-June 2017, reflecting the rise in the stock of liquid assets held by banks (CBN, 2018). This result however, disagrees with those of Dushku (2016), Poudel (2012), Kaaya and Pastory (2013), Kolapo, Ayeni and Oke (2012), Ogboi and Unuafe (2013), Alper and Anbar (2011), Tahir, Ahmad and Aziz (2014) who variously concluded significant positive and negative relationship between loan loss provisions (as a measure of credit risk) and bank financial performance. Capital adequacy ratio, also known as capital-to-risk weighted assets ratio, is used to protect depositors and promote the stability and efficiency of banking sector. It is very critical in making sure that banks have enough cushion to absorb a reasonable amount of losses before they become insolvent and consequently loss of depositors' funds. Therefore, from the result of the empirical analysis of this study, capital adequacy ratio has no significant impact on banks' financial performance. This is suggestive from the report of the respective annual audited financial statements of all the sampled banks that were already operating on capital adequacy ratio that was far above the minimum 15.0 per cent recommended threshold (for banks with international authorisation) and 10.0 per cent (for banks with either national or regional authorisation) in Nigeria by the Central Bank of Nigeria (CBN). Hence, overtime, and within the period of

study, banks capital adequacy has improved tremendously and was not a significant factor in determining their financial performance. This result is seen to be in line with those of Alshatti (2015) who find no significant relationship between capital adequacy and bank performance. The finding however disagrees with those of Poudel (2012), Islami and Ndoka (2016) observed a significant negative relationship, and those of Naceur and Omran (2008), Noman, Pervin, Chowdhury and Banna (2015), Idowu and Awoyemi (2014), Gizaw, Kedebe and Selvaraj (2015) who submitted a significant positive relationship between capital adequacy and bank's financial performance.

Liquidity might also have a negative impact on profitability (Shafana, 2015; Oluwasegun & Samuel, 2015). This is because when bank has more profit this might be the result of keeping little money in their accounts. Although, insufficient liquidity is one of the major causes of bank failure, holding liquid assets has an opportunity cost of higher returns. Liquidity might have a positive impact on profitability (Al-Khouri, 2011). However, the result from this study has clearly indicated that liquidity ratio has no significant impact on banks' financial performance over time in the period of investigation in Nigeria. This might probably be that banks in Nigeria are highly liquid and hence, there is no fear of any form of crisis or failure resulting from lack of liquidity. Even the Central Bank of Nigeria report showed that the banking industry liquidity ratio increased to 46.09 per cent at the end of the first half of 2018, from 45.8 per cent at End-

June 2017, reflecting the rise in the stock of liquid assets held by banks (CBN, 2018). Thus, this finding is in agreement with the findings of Shahchera (2012), Olarewaju and Adeyemi (2013) who did not find any significant relationship between liquidity ratio and performance. It however disagrees with those of Al-Khouri (2011), Al Nimer, Warrad and Al Mari (2015), Oluwasegun and Samuel (2015) and Ahmad (2016), who submitted positive relationship as well as those of Saleem and Rehman (2011) and Shafana (2015), who concluded that liquidity ratio has a negative impact on bank's financial performance.

- **Test of Hypotheses**

Hypothesis One: In hypothesis one, we earlier hypothesized that there is no significant relationship between liquidity risk and financial performance of deposit money banks in Nigeria. However, on the basis of the results obtained from the empirical investigation, it was observed that liquidity risk does not have significant relationship with banks' financial performance. Therefore, the null hypothesis is accepted while we rejected the alternative hypothesis.

Hypothesis Two: We hypothesized that there is no significant relationship between nonperforming loans ratio (NPL) and the financial performance of deposit money banks in Nigeria.

However, from the empirical analysis, it was observed that performance of deposit money banks in Nigeria is strongly affected by non-performing loans ratio (NPL). This presupposes that the null hypothesis is rejected while the alternative hypothesis is accepted in this regard.

Hypothesis Three: In the third hypothesis, we hypothesized that loan loss provision (LLP) do not have significant effect on deposit money banks financial performance in Nigeria. However, from the empirical analysis, it was discovered that loan loss provision (LLP) does not actually affect deposit money banks financial performance in Nigeria. Hence, while the null hypothesis holds (accepted), the alternative hypothesis is rejected in this regard.

Hypothesis Four: It was hypothesized that capital adequacy ratio (CAR) does no significantly affect financial performance of deposit money banks. We therefore observed from the empirical analysis that, capital adequacy ratio (CAR) is not a significant factor in the determination of banks' financial performance in Nigeria. Thus, while we accept the null hypothesis, the alternative hypothesis is rejected.

CHAPTER FIVE

SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 Summary of Findings

The relevant goal of this study was to empirically examine the relationship between credit risk management and financial performance of deposit money banks in Nigeria. The fixed effect of the panel data analysis technique was employed in the empirical investigation. On the basis of this analysis, the findings are made:

That capital adequacy ratio does not have significant relationship with banks' financial performance in Nigeria.

- That non-performing loans have significant negative relationship with banks' financial performance. Thus, a unit increase in the NPL will reduce bank financial performance by - 0.272791 percent.

- That loans loss provision is not a significant factor in the determination of banks performance in Nigeria. The variable failed the 5 percent level of significance.

- That banks' liquidity ratio also failed the 5 percent significance level, hence, it is not a relevant factor in determining banks' financial performance in Nigeria within the period under investigation.

- That bank size is a highly significant factor in the determination of bank performance in Nigeria, ft is seen to have significant negative impact on performance. The results showed that the size of banks tend to reduce the level of financial performance in terms of return on assets.

- **Policy Recommendations**

The main policy recommendations that may be inferred from these results are imperative.

Firstly, since credit risk (measured by non-performing loans) has significant negative relationship with banks' financial performance, management needs to be cautious in setting up a credit policy that can be strongly linked with profitability in the banks. Management also needs to know how credit policy affects the operation of their banks to ensure judicious utilization of deposits and maximization of profit. Improper credit risk management reduce the bank profitability, affects the quality of its assets and increase loan losses and non-performing loan which may eventually lead to financial distress.

Secondly, since the results show that size of banks (in terms of assets) has a strong negative impact on its performance, banks should strive to improve their asset base in order to ensure steady profitability. Further, bank management are tasked to come up developmental strategies in order to effectively use their large size to generate more profit. In the same vein, larger banks should evolve more efficient measures in operations so as to sustain their profitability growth activities.

Thirdly, since the result from this study has shown that liquidity ratio does not have significant effect on bank's performance, this does not mean that management should relax and go to sleep. But, it is a wake-up call on them to tighten up any loopholes that is capable of undermining their liquidity position. Knowing fully well that the survival of deposit money banks anywhere across the globe depends on effective liquidity management, they should not solely concentrate on the profit maximization concept but should also adopt measures that will ensure effective liquidity management. These measures will help to minimize or avoid cases of excessive variation in liquidity and asset holdings that may eventually leads to loss of confidence occasioned by liquidity crisis and bank failure.

Finally, since the result has proven that capital adequacy ratio does not pose a serious threat to banks' financial performance, the regulatory authority (CBN)

should either sustain the current strides or improve on them by ensuring consistent compliance by banks in Nigeria to the minimum 15.0 per cent recommended threshold (for banks with international authorisation) and 10.0 per cent (for banks with either national or regional authorisation). By so doing, Nigerian banks will be far from crisis and banks' failure.

- **Conclusion**

Deposit money bank's operations come with it some inevitable risk factors, and one of these factors is credit risk. Credit risk is understood simply as the risk a bank takes while lending out money to borrowers. They might default and fail to repay the dues in time and these results in losses to the banks granted. Loan portfolio management is very essential but most times a bank cannot fully assess if it will retrieve the money back because even if the borrowers have been paying their dues on time, the economy might show shift and change the way things have always been. So, what do banks do then? They have to effectively manage their credit risks well. It is based on this realization of the role of credit risk management in bank's financial performance that this study was undertaken in the Nigerian context. Descriptive statistics and correlation coefficient were used to examine the background characteristics of the variables; whiled the panel data analysis technique was adopted for the main analysis of the study. The results from the empirical analysis (fixed effect) generally indicate that non-performing

loans, which is one of the proxies for credit risk, has significant negative relationship with banks' financial performance in Nigeria. Bank size also has an inverse relationship with performance and while the other hypothesized variables such as capital adequacy, loan loss provision and liquidity ratio do not have any significant impact on banks' financial performance in Nigeria. Therefore, since the goal of credit risk management in banks is to maintain credit risk exposure within proper and acceptable parameters, management should strive to sustain the practice of mitigating losses by proper understanding of the adequacy of a bank's capital and loan loss provisions at any given time. These measures will definitely go a long way to reduce credit risk exposure, prevent confidence evaporation and eventual bank's failure.

- **Suggestions for Further Studies**

Since this study mainly examined the relationship between credit risk management and financial performance of deposit money banks in Nigeria, we suggest that further studies should be investigated such that Nigerian banks' credit risk management practices could be compared to those of other selected countries from either in West Africa region or any other countries in Sub Saharan Africa.

Again, it is not only credit risk that banks are expose to in Nigeria. There are other relevant risks such as strategic risk, compliance risk, cyber security risk, liquidity risk, market risk, operational risk affecting the financial performance of banks.

These could also be investigated to know the extent to which banks financial performance is being threatened by them. In literature, it is expected that bank size vary directly with performance, however, in this study, the reverse is the case. A reason for this could be as a result of the interplay of diseconomies of scale. Further research could be done using bank size as a unified variable in order to ascertain the nature of relationship between bank size and financial performance of deposit money banks in Nigeria.

Finally, in this study, we have used panel data analysis as the main method of investigation. However, we suggest that the generalized methods of moment (GMM) which seems to be superior the panel data analysis should be employed in this study. By so doing we will be able to effectively compare the results from both methods.

- **Contribution to Knowledge**

The study contributed to knowledge in the following ways:

- It provides an empirical understanding of the relationship that exist between credit risk management and deposit money banks' performance in Nigeria. This understanding is very crucial for the government, academics, policy makers and relevant stakeholders in shaping the future banking sector towards higher performance and hence, the overall growth of the economy.

- It also provides a solid foundation for achieving broad based risk management strategy that will ensure safety, stability and confidence in the Nigerian banking sector by depositors and, further provoking a more robust policy discourse in this direction.

- The study also added a new clause to existing findings in the extant literature. Contrary to findings from other studies, this study has demonstrated that while non performing loans could affect the financial performance of a bank, the loan loss provision aspect may not.

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Appendix I: Data use for Regression Results

	Year	ROA	CAR	NPL	LLP	LQR	BSIZE
Access Bank Nigeria PLC	2009	0.0161	35.43	0.0815	0.0171	0.5867	8.85
	2010	0.0097	3.72	0.0697	0.0217	0.5624	8.9
	2011	0.0094	20.84	0.0389	0.0243	0.3537	9.21
	2012	0.022	23	0.0393	0.0304	0.3461	9.24
	2013	0.0154	19.12	0.0244	0.0309	0.4315	9.23
	2014	0.0202	18.4	0.0282	0.0167	0.5146	9.3
	2015	0.0273	19.5	0.0248	0.0216	0.5154	9.38
	2016	0.0231	21.1	0.0207	0.0231	0.5152	9.49
	2017	0.0081	22.5	0.0219	0.0292	0.4995	9.51
City Nigeria Ltd	2009	0.0261	15.03	0.103904	0.088799	0.114557	8.560455
	2010	0.030454	35.5	0.079416	0.048702	0.138321	8.562596
	2011	0.025553	25.01	0.064702	0.038905	0.155694	8.564828
	2012	0.040665	20.71	0.055331	0.048834	0.18909	8.509858
	2013	0.040612	24.05	0.037659	0.021466	0.23971	8.531678
	2014	0.039008	28.29	0.000854	0.00556	0.230991	8.601911
	2015	0.024596	27.48	0.079141	0.045263	0.219316	8.634313
	2016	0.04228	27.48	0.000786	0.034368	0.194647	8.780992
	2017	0.054208	29.54	0.01522	-0.002	0.1648	8.775106
Diamond Bank PLC	2009	-0.01261	19.5	0.211369	0.050352	0.497847	8.811865
	2010	0.002241	16.6	0.166405	0.048506	0.518194	8.772946
	2011	-0.01724	13.9	0.101487	0.105519	0.487467	8.90104
	2012	0.018766	17.3	0.049014	0.054048	0.496731	9.071184
	2013	0.018814	17.48	0.036528	0.024291	0.453742	9.181517
	2014	0.012602	18.45	0.052584	0.049259	0.406831	9.243105
	2015	0.002465	18.25	0.076602	0.0823	0.417296	9.191782
	2016	0.001185	17.62	0.112132	0.073611	0.483989	9.220764
	2017	0.000513	16.74	0.158806	0.08789	0.445569	9.229313
Eco Bank Nigeria Limited	2009	0.025377	20.8	0.140801	0.061842	0.273861	8.273452
	2010	0.025433	21.01	0.139059	0.061665	0.273168	8.337869
	2011	0.025475	15.2	0.137733	0.061531	0.272643	8.393954
	2012	0.025508	19.3	0.13669	0.061425	0.272231	8.443617
	2013	0.007981	20.4	0.018161	0.0082	0.428465	9.164594
	2014	0.016771	18.3	0.013889	0.006296	0.503531	9.24869

	2015	0.0063	18.7	0.016433	0.007475	0.455513	9.253907
	2016	0.003196	16.7	0.016628	0.007585	0.48099	9.257319

Fidelity Bank PLC
First Bank Nigeria PLC
Guarantee Trust Bank PLC
Stanbic IBTC Bank PLC
Sterling Bank PLC

2017	0.011042	15.62	0.018635	0.008521	0.454471	9.262394
2009	0.004556	44.05	0.1279	0.0905	0.4267	8.7
2010	0.01219	44	0.1473	0.1579	0.3316	8.68
2011	0.008059	30	0.0985	0.029	0.3452	8.87
2012	0.006087	29	0.0867	0.0431	0.3102	9
2013	0.007141	21.77	0.0674	0.0389	0.3941	9.03
2014	0.011622	24.21	0.0322	0.0079	0.4563	9.07
2015	0.011288	19	0.0359	0.01	0.4694	9.09
2016	0.007498	17	0.0335	0.0121	0.5534	9.11
2017	0.013672	16	0.0357	0.0147	0.5574	9.14
2009	0.006254	15.25	0.0084	0.0154	0.3684	6.3
2010	0.01239	15.27	0.0773	0.0429	0.4927	6.37
2011	0.006516	16.12	0.0224	0.021	0.4379	6.46
2012	0.024014	18.7	0.0237	0.0186	0.4998	6.5
2013	0.226519	16.8	0.0228	0.0176	5.8338	5.49
2014	0.019748	15.22	0.0221	0.0167	7.2107	5.46
2015	0.007708	18.32	0.0216	0.0161	8.2418	5.45
2016	0.028126	24.4	0.0212	0.0156	9.6928	5.43
2017	0.0344	22.8	0.0209	0.0152	10.5445	5.43
2009	0.030176	22.56	0.1303	0.0581	0.5276	9.01
2010	0.044311	23.55	0.0416	0.0162	0.5575	9.03
2011	0.040062	24.43	0.0695	0.0264	0.464	9.18
2012	0.064004	23.8	0.0042	0.0009	0.4808	9.21
2013	0.044921	23.91	0.0074	0.0031	0.4868	9.28
2014	0.041931	21.4	0.0156	0.0052	0.556	9.33
2015	0.041406	17.03	0.0437	0.0093	0.5555	9.36
2016	0.048534	19.79	0.0893	0.0448	0.5423	9.42
2017	0.057093	20.52	0.1563	0.0911	0.4481	9.45
2009	0.018906	35	0.164094	0.075383	0.335248	5.519828
2010	0.020963	21.25	0.174457	0.093765	0.329898	5.571257
2011	0.017268	20.8	0.1385	0.108889	0.248733	5.734217
2012	0.014523	20.7	0.169684	0.121549	2.025128	4.860386

2013	0.110503	22	0.158393	0.132303	2.106007	4.877377
2014	0.173594	20.4	0.183822	0.14155	2.256505	4.87893
2015	0.130049	21.3	0.198261	0.149588	2.40717	4.880253
2016	0.007999	22.8	0.148249	0.156638	2.55692	4.881573
2017	0.32954	23.5	0.198889	0.162872	2.705765	4.882889
2009	-0.03239	12	0.2852	0.1013	0.38	8.31

Union Bank of Nigeria
PLC
United Bank for Africa
PLC
Zenith Bank of Nigeria PLC

2010	0.016097	14.7	0.3764	0.1184	0.3595	8.41
2011	0.013706	14.52	0.2959	0.1307	0.3215	8.7
2012	0.011984	15.04	0.265	0.1016	0.3954	8.76
2013	0.011701	14	0.2288	0.0853	0.455	8.85
2014	0.010921	14	0.2329	0.0662	0.4502	8.92
2015	0.012875	17.49	0.2932	0.1291	0.4237	8.9
2016	0.006236	11.2	0.2395	0.096	0.5636	8.92
2017	0.007911	12.2	0.209	0.0835	0.5596	9.03
2009	-0.0642	29	0.0938	0.0302	0.3628	6.04
2010	0.140729	43.01	0.1702	0.0609	0.2053	5.92
2011	-0.09274	20.79	0.542	0.1738	0.1745	5.92
2012	0.003576	17.35	0.1913	0.0891	0.1545	5.95
2013	0.005806	18.21	0.118	0.0415	0.2382	5.95
2014	0.022212	16.4	0.0773	0.0157	0.3277	5.97
2015	0.018017	15.3	0.0629	0.0522	0.3486	6
2016	0.014139	13.3	0.0756	0.043	0.436	6.05
2017	0.009618	17.8	0.2266	0.067	0.366	6.13
2009	0.001534	14.3	0.0885	0.0064	0.3918	6.19
2010	0.00037	13.6	0.0817	0.0045	0.3887	6.21
2011	-0.00497	15.8	0.0895	0.0037	0.355	6.29
2012	0.019294	17.6	0.0998	0.0031	0.32	6.35
2013	0.020963	16.23	0.1035	0.0024	0.3594	6.35
2014	0.017138	18.24	0.105	0.0152	0.3782	6.37
2015	0.021496	20.9	0.1255	0.014	0.3712	6.35

2016	0.01872	19.7	0.1042	0.0139	0.4293	6.4
2017	0.014475	21.5	0.1057	0.0128	0.4002	6.47
2009	0.012414	47	0.0693	0.0642	0.4208	9.22
2010	0.01796	34	0.0444	0.0341	0.5233	9.25
2011	0.019041	28	0.0284	0.0198	0.546	9.34
2012	0.039314	30	0.0178	0.0092	0.5857	9.39
2013	0.028976	26	0.0137	0.0132	0.4347	9.46
2014	0.031901	22.45	0.0153	0.0103	0.4606	9.57
2015	0.03135	20	0.0155	0.0099	0.4965	9.6
2016	0.03307	22	0.0251	0.0164	0.483	9.68
2017	0.031801	23.21	0.0437	0.0325	0.3754	9.75

Appendix 2: Baseline Regression Results using Ordinary Least Square

Dependent Variable: ROA
Method: Panel Least Squares
Date: 07/23/21 Time: 12:59
Sample: 2009 2017
Periods included: 9
Cross-sections included: 12
Total panel (balanced) observations: 108

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAR	0.000462	0.000613	0.753883	0.4527
LLP	0.541198	0.159137	3.400814	0.0010
LQR	0.003070	0.002760	1.112311	0.2686
NPL	-0.000956	0.001268	0.753883	0.4527
BSIZE	-0.006143	0.003132	-1.961282	0.0526
R-squared	0.124505	Mean dependent var		0.025956
Adjusted R-squared	0.175835	S.D.dependent var		0.047026
S.E. of regression	0.043284	Akaike info criterion		-3.396892
F-statistics	5.593667	Schwarz criterion		-3.272719
Probability	0.056432	Hannan-Quinn criter.		-3.346545
Durbin-Watson stat	2.263366			

Appendix 3: Fixed Effect Regression Results

Dependent Variable: ROA
Method: Panel Least Squares
Date: 07/23/21 Time: 13:02

Sample: 2009 2017
Periods included: 9
Cross-sections included: 12
Total panel (balanced) observations: 108

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.386256	0.619063	0.623936	0.534513
CAR	0.000560	0.000898	0.623936	0.534518
LLP	0.302677	0.251046	1.205665	0.231614
LQR	-0.001918	1.000000	-0.001918	0.623714
NPL	0.272791	0.115734	-2.357059	0.020924
BSIZE	-0.044756	0.020486	-2.184736	0.031914
AR (1)	-0.279970	0.144420	-1.938579	0.056234

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.404389	Mean dependent var	0.025956
Adjusted R-squared	0.274350	S.D. dependent var	0.047026
S.E. of regression	0.041462	Akaike info criterion	-3.384543
Sum squared resid	0.156437	Schwarz criterion	-2.962356
Log likelihood	199.7653	Hannan-Quinn criter.	-3.213362
F-statistic	3.107122	Durbin-Watson stat	1.789386
Prob(F-statistic)	0.000678		

Appendix 4: Hausman Tests

Correlated Random Effects - Hausman Test Equation: Untitled
Test cross-section and period random effects

Chi-Sq.
Test Summary Statistic Chi-Sq. d.f. Prob.

Cross-section random	20.019500	6	0.002700
Period random	0.000000	6	1.0000
Cross-section and period random	16.704432	6	0.0051

- Cross-section test variance is invalid. Hausman statistic set to zero.

- Period test variance is invalid. Hausman statistic set to zero.