

**RISK MANAGEMENT STRATEGY AND FINANCIAL
PERFORMANCE OF LISTED BANKS AT NIGERIA
STOCK EXCHANGE**

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

I dedicate this Thesis to the Almighty God, my wife and children.

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LIST OF ABBREVIATIONS AND ACRONYMNS

AHP	Analytical Hierarchy Process
ATM	Automated Teller Machine
BCBS	Basel Committee on Banking Supervision
CAPM	Capital Asset Pricing Model
CBN	Central Bank of Nigeria
CEO	Chief Executive Officer
CFT	Classical Financial Theory
Cindex	Compliance Index
COSO	Committee of Sponsoring Organization of the Treadway
CMA	Capital Market Authority
CRO	Chief Risk Officer
CSC	Colombo Stock Exchange
CB	Capital Buffer
DV	Dependent Variable
ERM	Enterprise Risk Management
FP	Financial Performance
GDP	Gross Domestic Product
HHI	Herfindahl-Hirschman index

HRM	Human Resources Management
ICR	Insurance Cost Ratio
IVs	Independent Variables
IA	Internal Audit
IAC	Internal Audit Characteristics
IBM	International Business Machine
IRMS	Integrated Risk Monitoring Strategy
ID	International Diversification
IFRS	International Financial Reporting Standard.
IID	Independent and Identically Distributed
IMF	International Monetary Fund
IPO	Initial Public Offering
IT	Information Technology
KPMG	KPMG Institutes
KSE	Karachi Stock Exchange
LSE	London Stock Exchange
LLP	Loan Loss Provision.
MS	Market Share
MPT	Modern Portfolio Theory

NCFT	Neo-Classical Financial Theory
NIM	Net Interest Margin.
NPL	Non- Performing Loan
NSE	Nigeria Stock Exchange
OECD	Overseas Economic Cooperation for Development
OLS	Ordinary Least Squares
P/E	Price/Earnings ratio
PWC	Price Water Coopers
RC	Regulatory Capital
ROA	Return on Asset
ROE	Return on Equity
ROI	Return on Investment
RM	Malaysia Ringgit Currency
RPD	Related Product Diversification
RWAC	Risk Weighted Asset Capital
SOX	Sarbanes-Oxley Act.
SPSS	SPSS Statistical Analysis Software
SR	Specialization Ratio
TPD	Total Product Diversification

TSE	Tehran Stock Exchange
UBA	United Bank for Africa
UPD	Unrelated Product Diversification.
USA	United States of America
VIF	Variance Inflation Factor

DEFINITION OF TERMS

Credit Diversification

Credit diversification is defined as the process by which firms extend the range of their credit portfolios across different economic sectors to eliminate idiosyncratic risks (Kleffne, 2013). Credit risk diversification is one of the economic functions of banks and other financial intermediaries.

Economic Capital (EC)

An Economic Capital is mandatory capital that financial institutions are required to hold in addition to other minimum capital requirement (CBN, 2014). Banks are expected to reserve enough capital at risk, which is in addition to the minimum bank capital as amount of available capital to buffer the loss from investment beyond the expected loss. The value of capital at risk is generally known as economic capital (CBN,2014)

Financial Performance

Damodaran (2013) defines financial performance in broader sense as the degree to which financial objectives has been accomplished and is an important aspect of risk management. It is the process of measuring the results of a firm's policies and operations in monetary terms.

Market Share

A firm's market share is its revenue measured as a percentage of an industry's total revenues. You can determine a bank's market share by dividing its total sales or revenues by the industry's total sales over a fiscal period. Use this measure to get a general idea of the size of a company relative to the industry (Diamond, 2014).

Market risk hedging

Market risk hedging techniques generally involve the use of financial instruments known as derivatives. The two most common derivatives are options and futures. With derivatives, you can develop trading strategies where a loss in one investment is offset by a gain in a derivative. (PWC, 2012).

Regulatory capital

Also known as capital requirements. Capital requirements are standardized regulations in place for banks and other depository institutions that determine how much liquid capital (that is, easily sold securities) must be held viv-a-vis a certain level of their assets (CBN, 2014)

Risk Management

Risk management is the identification and assessment of the collective uncertainty that affect firm value, and the implementation of a firm-wide strategy to manage those uncertainties. (Hapsari, 2018).

ABSTRACT

This study was to evaluate the risk management strategies and financial performance of listed banks at Nigeria Stock Exchange (NSE). Specifically, the study sought to determine the effect of credit diversification, Market risk hedging, credit risk insurance and capital buffer strategies on financial performance of listed banks at the Nigeria Stock Exchange. Contingency theory, Modern Portfolio theory, Financial Intermediation Theory, Extreme Value theory and Agency theory were used to expound on the effect of risk management strategies and financial performance. Longitudinal cross sectional survey research design was adopted. The study's target population includes all the 28 listed banks at Nigeria stock exchange. Data was collected from 2010 to 2019 for 20 listed banks in Nigeria. The secondary data was collected from audited financial statements of listed banks and other relevant internal report. Descriptive statistics were employed with the use of panel least regression model and appropriate model diagnostic tests carried out on the panel data. Data collected was subjected to diagnosis tests of autocorrelation, stationarity, fixed and random effects. Panel model was used to establish the relationship and significance between the study variables. The formulated hypotheses were tested. The study found out that there are insignificant effect between credit diversification, credit risk insurance strategies and financial performance of the listed banks at NSE. The study also revealed that there was a positive significant effect between market risk hedging, capital buffer strategy and financial performance of the listed banks. The study also finds out that the bank size had moderating effect on the relationship between Risk Management strategies and financial performance of the listed banks at NSE. The findings from the empirical evidence provided by the study indicate that banks must be involved in risk management practices so as to achieve good returns on asset and capital for the banking operation. Conclusively, the results from the study therefore upheld a theoretical expectation that bank risk management strategies has significant effect statistically on financial performance. The study therefore recommends that, banks need to improve on credit risk management so as to impact positively on the earnings from assets (higher income) and reduce cost/expense on non-performing loans to enhance the level of financial performance. Banks must review the need to maintain optimal economic capital position to guarantee adequate capital buffer for the banks to ensure higher profitability. Bank regulators must evolve an inclusive approach in monitoring and supervision of banks periodically. Notable constraints of this study are its short period of examination and the measuring metrics employed. Also there available limited theoretical and literature review on this study. Further study should evaluate the effect of qualitative aspect of the research by including management and corporate governance aspects in financial performance of Banks.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Doing business in the 21st century is more complex, versatile and uncertain than in the past. The challenges and opportunities come together with a wide range of risks that are based on a company's view of risk management (Bierc, 2013). Both risk and uncertainty have had major impacts on most organisations. Organisations have to observe, manage and control numerous internal and external variables that pertain to risk and uncertainty, as well as their potential outcomes. They are also concerned with their ability to predict and manage both positive and negative outcomes that result from various kinds of risk. Yegon (2015) stated that: "Balancing risk is becoming the only effective way to manage a corporation in a complex world." The effective management of risks can minimise its impact on an organisation and also create numerous opportunities for it to excel in dynamic business environment. This aforementioned phenomenon has led to a large number of organisations finding ways to manage risk and uncertainty (Arena et al., 2012; Bierc, 2013).

Risk management (RM) takes a holistic view of attempts to reduce the probability of large negative earnings and cash flows by coordinating and controlling offsetting risks across the enterprise (Soltanizadeh et al., 2016). Committee on Sponsoring Organization Framework defines risk management as follows: a process through which management board designed strategies to recognize certain organizational activities with higher negative consequences and proffer a solution to manage the risk within the control of the organization (COSO, 2013). COSO (2013) summarizes RM as helping an entity gets to where it wants to go and avoid pitfalls and surprises along the way. Although there are many variations in the definition of RM, the basic theme is that RM is primarily a way of measuring, understanding and controlling the risks facing the firm.

Consistent with this view, Risk management is the evaluations of firms' uncertainties which focus on ensuring that firms are addressing all of their

uncertainties, setting proper expectations about which risks are and are not taken and setting methods that ensures that firms' avoid losses outside tolerance levels (Standard & Poors, 2014).

1.1.1 Risk Management Strategies

The most common types of risks are interest rate risk, exchange rate risk, currency risk, and capital risk (Glantz, 2013). It should be emphasized that the risk of interest rates is more important for banks and financial institutions that provide loans to their clients. Banks are obliged to fulfill their obligations. When liquidity becomes insufficient, liquidity risk occurs (Saiful, 2015). A bank faces liquidity risk when it is in financial difficulty and when it fails to finance its assets and perform its obligations. Operational risk is the risk that relates to the conduct of daily duties and tasks of the enterprise (Jorion, 2013). All operational risks include internal operating procedures, control systems, information technology system, organisational structure, accounting systems, training and quality of staff members. Mismanagement of these can heavily affect the business and result in significant financial losses. Operational risk is the risk of loss of a business from staff that failed due to not following these procedures (Edwards, 2004). These losses can arise from fraud, waste, errors, and inefficiencies in the banking system.

Adding the word management to integrated, business, or enterprise-wide risk implies a structured and disciplined approach that aligns strategy, processes, people, technology and knowledge with the purpose of evaluating and managing the uncertainties the enterprise faces as it creates value. Hence, the goal of an enterprise-wide risk management initiative is to create, protect, and enhance shareholder value by managing the uncertainties that could either negatively or positively influence achievement of the organization's objectives (Barton, Shenkir & Walker, 2012) Risk management is also driven by methodological and technological progress including advanced methods of risk quantification and information technologies (Raghavan, 2003). Overall, RM system thus enables the board and senior management to better monitor the company's risk portfolio as a whole (Beasley et al., 2015). Based on the

definition, RM is a top-down approach which considers identifying, assessing and responding to strategic, operational and financial risks (Harner, 2010).

Managers tend to diversify their business to get more benefits from the current market with minimum risk. Globalization provides an opportunity to expand their business across the border for profit maximization. Thus, corporate diversification strategy becomes important for the expansion and growth of firms in competitive and dynamic environments. The objective of corporate diversification is to increase profitability, market share, debt capacity, growth opportunity, risk reduction, and the need to use human and financial resources efficiently (Akhtar et al., 2012). Changes in economic or industrial conditions force management to diversify their business (Pancheva, 2014). Diversification also helps firms to explore different markets (Greunig & Brajovic, 2014).

One way that banks have responded to these structural changes in the intermediation business is by ameliorating their intermediation costs, especially in the credit portfolios, through sectoral diversification. Indeed the theory of intermediation (Yegon, 2015; Thakor, 1993; Diamond, 1984) advocate for diversification to attain efficiency by reducing the intermediation costs. They identify two types of diversification: that of sharing risks among many independent agents; and that of adding risks by a single agent. In practice, intermediation posits that diversification is beneficial to banks for at least two reasons. First, by increasing the risk tolerance of banks, diversification reduces the monitoring cost beyond what direct intermediation can achieve. Consequently, banks are able to earn a return beyond what is payable to the fund suppliers; thereby enhancing their profitability. Secondly, diversification reduces costs by centralizing monitoring to a single agent with several projects.

In the process, the bank acquires a great deal of customer information in the process of making loans (Diamond, 1991; Tasche, 2004) which can be used in efficiently screening and monitoring borrowers thereby enhancing the bank's monitoring capabilities. Based on these theoretical prescriptions, it is plausible then to expect that diversification of credit portfolios across different economic sectors benefit banking institutions, first by enhancing their performance levels and, secondly by improving their monitoring effectiveness. The latter is so because the intermediary

would be able to develop special skills in interpreting subtle signals presented in the customer information.

Empirical evidence is equivocal on performance and monitoring outcomes of credit diversification in banking institutions. The relationship becomes even more blurred when risk and returns are considered simultaneously. Opponents of bank credit diversification cite cost and scale inefficiencies, probably so because banks may have an expertise on some of the sectors, but not all, thus involving more sectors would make it more costly to monitor (Harner, 2010).

Market risk hedging has been widely discussed by both researchers and the practitioners as a holistic and effective approach to managing the wider range of risks faced by business MRH. It is expected that effective risk management practices enable business managers creating and protecting long term MRH value and assuring the long term stability and growth. Especially, in the context of global financial crisis and corporate scandals and high profile corporate failures (Eikenhout, 2015). The concept of MRH gained an increased attention among corporate managers. Prior to the emergence of the concept of MRH as a holistic approach to manage the risk, market risk hedging used to manage their risk factors on case by case basis which said to be a traditional and less effective approach. While the banking system tends to expand in size, its performance is unstable, and lots of risks arise and need to be resolved like bad debt, potential bankruptcy of banks. One of the urging strategic solutions is to establish and upgrade risk monitoring of commercial banks (Salehi, 2008).

Market risk hedging Strategy is geared to address risks that can occur to a business organization such as financial risks, strategic risks and operation risks (Tazhir & Razali, 2012). Weak risk management system was a major contributing factor to the financial crisis in United States of America (USA) in 2008. The crisis affected the economy and financial markets in the USA leading to collapse of the mortgage industry (Babalola, 2012). All financial institutions aim to perform effectively, manage the business risks, comply with laws and regulations, and prepare reliable financial statements. However, during the operations, they expose to the potential

risk of not achieving these objectives due to weaknesses of managers, staff or a third person that cause risks and reduce their performance. Building market risk hedging strategy is one of the solutions to evaluate and manage risks, improve performance effectiveness and achieve business objectives. In recent years, the commercial bank system in Vietnam has considerably developed in term of asset size, branch-office system, products and services, and the information technology system. However, besides growth in size and profit, the bank system is facing many limits, weaknesses and has potential risks. Market Risk Hedging becomes an important self-defense system against risks, which enhances effectiveness of banks' performance.

Credit risk insurance and reinsurance are vehicles to limit the exposure to a certain risk and to promote liquidity in the market. While reinsurance is only available for (primary) insurers, other forms of risk transfer are traded on the capital markets. But the negative side, however, these markets do not only serve as a means to reduce credit risk exposure and as a vehicle of portfolio management but also open a new channel for contagion (Allen & Carletti, 2013).

Credit risk insurance is a transaction, where mainly credit institutions and insurers are involved in selling and credit protection. This process is both used to confine the risk of the protection buyer and to further diversify the protection seller's portfolio. Credit risk insurance have become attractive due to their ability to separate credit risks off from the original credit transactions and to render them tradable in the market. Moreover, they can contribute to an improvement of liquidity of bank assets. The impact on overall company risk, one can expect from such transactions, depends critically on how the proceeds are invested. Thus, the resulting effect can be in both directions. But it is comprehensible that an institution that heavily participates in this market and reinvests the proceeds will have a completely changed portfolio risk position afterwards (Krahnert & Wilde, 2016).

Banking efficiency has attracted the interest of multiple researchers with various approaches. Among them, Jeroh and Okoye (2015) examined the efficiency level of 20 banks with the largest assets in Indonesia using the stochastic frontier analysis method. The results of their research demonstrated that banks from foreign bank

groups tend to be more efficient. The same situation occurred with the Regional Development Bank (BPD) group. Another finding from their research is that several banks, which calculated efficiency based on the intermediation emphasis model, exhibited high profits but were not efficient. This shows that such banks have not carried out the intermediary function properly; as a result, they do not optimally contribute to a broader economic growth.

For economic capital practices, however, there is still a long way to go. Absent of greater convergence, regulatory capital standards seem destined to become increasingly distorted due to further financial innovations and improved and new methods for economic capital calculations. Even though Basel II has a positive impact on risk management practices, the impact on regulatory capital arbitrage and associated financial stability is ambiguous and will highly depend on the financial institutions, which in itself will again distort the level playing field. Banks operate in highly competitive lending and funding markets. As a result, their creditworthiness determines their cost of funds and the level of profitability acquired from underwriting the loans or any instruments exposed to credit risk. In the circumstance without deposit insurance, the higher credit rating allows a bank to raise funds with a lower deposit rate and to be more competitive, as its cost of funds is low (Adebiyi, 2016). Depending on the objectives of the tool and availability of data, a different methodology is required. The relevance and usefulness of economic capital depends on the extent to which senior management realizes the importance of the economic capital measures (BCBS, 2008).

One of the major challenges in economic capital calculation is risk aggregation (Chenhall, 2006). Economic capital typically covers credit risk, market risk (including interest rate risk), operational risk, concentration risk and is sometimes extended to business and strategic risk, counterparty risk, insurance risk, model risk etc. The individual risk components are often estimated while ignoring potential interaction effects between them. Besides the interaction effect, also differences in horizons, confidence levels etc. might bias the calculations. At the same time most banks acknowledge that economic capital is currently not used to its full potential,

and that it often has the same use as regulatory capital. In future, they expect to use it for identifying concentrations in the portfolio and for measuring and managing risk.

The amount of available capital in excess of the required capital at risk is a measure determining the solvency of the bank and its ability to keep the promise to repay the funds to its own creditors. In addition, it helps banks to stay competitive by making the cost of funds cheaper than lower-rated banks. Berger, Herring and Szego (1995) discussed the role of bank capital in value creation and pointed out that banks hold capital in excess of regulatory requirements to create competitive advantage. Allen, Carletti and Marquez (2010) provided empirical evidence suggesting that a bank is undercapitalized relative to social-welfare optimizing levels, although it holds capital in excess of regulatory capital. It shows that the undercapitalized capital of the financial system leads to financial crises. Funding liquidity shortage due to bank credit deterioration leads banks to cut lending (Munene, 2013). Hence, loan supply and capital sufficiency are closely related. On the contrary, profitable lending and the low cost of raising capital increase a bank's risk taking capacity and help the bank build up capital (Calomiris & Kahn, 1991) to create more business opportunity. The empirical results supporting this argument include the work by Tahir and Razali (2012). Therefore, capital adequacy is crucial for the stability of the financial system at the macro level and for any bank's on-going operations at the micro level.

1.1.2 Global Perspective of Risk Management Strategies in Banking Sector

Globally, research and studies on the risk management and financial performance of the banks have been conducted extensively especially on banking industry development (Arena et al., 2012; Jaouadi et al., 2014). Many authors have provided a definition of risk. Risk in an organisational context is traditionally defined as anything that can have an impact on the achievement of the company's objective, or as a negative event that could disrupt performance (Dominguez, 2006). The concept of risk management has both negative and positive sides, such as losses and the possibility of increasing value for stakeholders. Stomper (2006) summarised the definition of risk in the business context, as the cumulative effect of the probability of uncertain occurrences that may have a positive or negative effect on a project's

objectives. IMF (2016) defined risk as the effect of uncertainty on an objective. The effect may be positive, negative or a deviation from the expected outcome. Risk is also often described by the event, a change in circumstances or a consequence.

In India, Arena et al. (2012) reported that the overall risk management of public sector banks is not satisfactory as compared to other sector banks especially foreign banks. According to Saksonova (2011), risk management variables which could be used in banking industry are the aggregate measures of the current financial performance of the financial institutions. From a business and competitive advantage standpoint, executives need to understand whether their strategy to engage in risk management has been beneficial. Moreover, executives need to learn about the risk management practices followed by other firms, and the consequences that have resulted from those practices. Such learning will help banks to improve their own risk management strategies and results (Oluitan & Ashamu, 2015).

The increase in revenue and the largest reduction in expenses among US banks for 2000-2006 revealed commitment to continuous performance improvement by focusing on cost and revenue consistently as documented by Berihun-Engida (2015), Financial performance of financial institutions have gained momentum especially in developed countries as against the less developed countries under different operating environment and the characteristics of banks on risk management for all the Asian banks of China, Taiwan, South Korea, Hong Kong, Malaysia, were different (Chen, 2014).

In Switzerland, Otieno (2012) in a study showed that risk management strategies include diversification designed to cut back risk by combining various investments. This led to a result of increasing performance through diversification gain from shifting into interest income in bank's revenue and reduced volatility of bank profits. A diversified portfolio that combines a variety of loan products that belong to different asset classes in an optimal way will help a bank survive much. Diversifying bank's activities forms part of the risk management practices. Several studies have been undertaken to analyze the benefits of international portfolio diversification in

developed as well as in emerging markets. Ali-Yrkko (2015) classifies the bank's motive to diversify as an economic, management and value maximization motive.

Similarly, In Grace et al. (2015) found out that the Italian banking system has a negative impact of credit risk on bank lending behavior as regards credit risk measures for non- performing loans and loan loss provision ratio in the Italian banking sector. However in Brazil, Edwards (2004) found that state owned banks are significantly engaged market risk hedging in their risk management practices. Market risk hedging is designed and set by the management and implemented by the whole staff within the organization (Edwards, 2004). This strategy is not linear, a risk management may have impact also on other risks, and control devices identified as being effective in limiting a risk and keeping it within acceptable limits, may prove beneficial in controlling other risks.

1.1.3 Regional Perspective of Risk Management Strategies in Banking Sector

The issue of risk management by commercial banks in developed economies differs significantly from developing economies of the world (Boeve et al., 2014). Consenting to this Glantz (2013), documented that the South African banks were being pressurized to review risk management strategies of banks for competitiveness locally and globally. The main objectives of this review are to ensure the efficiency and effectiveness of activities, the reality of reporting and regulations compliance in the field. This review system is developed and monitored in order to implement the process for designing adequate management devices to ensure limitation of significant risks and keeping them within acceptable limits, aiming to give the security that the organization's objectives will be met (Fosu, 2013). Most banks in Africa record performance gains on profitability by achieving efficiency gains in cost reduction (Amer et al., 2011). Furthermore, it was observed that there is link between banks relative competitive position and performance efficiency through examining the financial status of the highly and slowly competitive banks in Egypt. Consenting to this Ncube (2009) documented that the South African banks were being pressurized to review performance efficiency of banks for competitiveness locally and globally. According to Amer et al. (2011) there are (4) largest economies in

Africa; South Africa, Algeria, Egypt and Nigeria based on the financial services they provide since they are service oriented economies, yet they are consistently implementing difficult and crucial financial reforms to meet global best practices.

In Sub-Sahara Africa, traditional risks were increasing since 2010 and therefore eroding financial performance of firms in the region. Risks such as: fiscal vulnerabilities, security, declining prices for commodity goods and growing capital flows was dynamics for risk management (International Monetary Fund, 2014). In Zambia, 2008 witnessed general increase in wages which affecting firms' income by increasing cost of production, while in Ghana growing deficits in the national budget and political instability was affecting the local currencies against the major currencies and therefore putting pressure on locally produced goods. Growing insecurity in Central Africa Republic and Southern Sudan was the main cause of slowdown in growth prospect since 2010 and therefore affecting the local firms in the region (Price Water Coopers, 2012).

The banking industry in Ghana is generally lucrative and developing very fast. Looking beyond the mere surface, nonetheless, makes the story somehow different and complicated. Risks exposures in the industry are escalating treacherously and security structures are becoming more vulnerable to breaches. This calls into question the strength of the internal control structures, risk management structures as well as the sustainability of the present business model into the near future (Abata, 2014) .Most banks and financial institutions in Ghana are bleeding and struggling to maintain operations. This claim is evidence by numerous bankruptcies, closure and recent revokes of licenses of several banks, savings and loans and numerous Microfinance Institutions by the Central Bank of Ghana Although statistics on failed financial institutions, especially microfinance institutions are rare to come by, it is clear, following the demise of several too-big-to-fail banks and non-bank financial institutions such as UT Bank, Capital Bank, The Beige Bank, etc. that the entire industry is floundering, calling into question the strength of the financial risk-management and internal control practices put in place by financial institutions in Ghana.

In Liberia, credit Risk Management Practices and financial Performance in banks has gained much importance because of the huge financial losses faced by international financial organizations. Since the financial crisis, financial organizations particularly commercial banking sector have taken special measures to mitigate any forthcoming financial losses caused by mismanagement in loan allocations and credit recoveries. There is a need for banks to have a strong and effective credit risk management policies in order to ensure consistent recoveries from clients (Jennings, 2013). Loan portfolio Performance of commercial banks depends on the effective credit risk planning, analysis and monitoring. Hapsari (2018) assert that loan portfolio performance of banks is determined by effective credit risk management practices. According to Ariffin (2012), credit risk management practices used by banks include credit limits, taking collateral, diversification, loan selling, consortium loans, credit insurance and securitization. Lamido (2009) states credit risk management practice in Liberia banking operation is an important function of financial institutions in the reduction of banks' exposure to credit risks. Efficient credit risk management practices have been vital in preventing occurrence of bad debt and non-performing loans.

1.1.4 Local Perspective of Risk Management Strategies in Banking Sector

Risk management by commercial banks in developed economies differs significantly from developing economies of the world (Mugera, 2013). Available empirical studies in Nigeria reported divergent results as to banking efficiency (Mandelbrot et al., 2015). Risk Management in the Nigerian banking sub-sector still remain a problem and require further investigation especially as regards bank its impact on financial performance of the banking industry. Risk Management Integrated Framework published by Committee of Sponsoring Organization (COSO) and Internal Control Integrated Framework provide a useful description of risk management and internal control systems being used as risk management framework in Nigeria Banking Industry (PWC, 2011). Building controls in response to risk is a form of mitigation. Berger et al. (2013) states that after a unit identifies risks, it should evaluate existing controls to mitigate the high-priority risks. Companies

accepts certain operational safety risks by self-insuring because it believes it has extensive controls over the area that allow it to accept a higher level of risk.

In Nigeria banking systems, effective integration of firms' risk management is expected to enhance compliance to various policies and regulations leading to reduction in cost incurred in mitigating non-compliance. As a result of international competition, this decreased pressure in regulation and trade barriers; rapid technological inventions and changing customers' demands, the environmental uncertainty becomes a main concern for companies (Shafique, Hussain & Taimoor, 2013).

In Nigeria banking industry regulators have gradually adopted Basel I, II, and III, though implementation and enforcement have not been accelerated. The motivation for Basel adoption has come basically from regulators, who are embedded in international policy networks. They consider Basel II and III the most appropriate set of regulatory standards to enhance risk management in Nigeria's large, internationalized banking sector. While Basel adoption was not an important issue among Nigeria's politicians, Nigeria's large internationally active banks welcomed the implementation of Basel II as an important means to stabilize their competitiveness and signal soundness to markets. These banks play an important role in providing access to finance for the private and government sectors in Nigeria. Gordon et al. (2009) argue that under Basel II, regulatory and capital buffer will have different determinants. To protect banks against failure and to prevent economic crisis due to contagion and systematic risk, different stakeholders want banks to maintain a certain level of capital. Rating agencies, supervisors and debt holders want higher capital to support solvency. Shareholders want lower capital to boost profitability and even the behaviour of other banks might impact the target capital ratio (Fosu, 2013). As a result of these conflicting interests, bank capital needs to be optimized.

Given the continuous evolution in the risk profile of banks, the presumed importance of capital adequacy for financial stability and the agency costs, high capital levels might bring along, regulatory authorities in an ongoing search for optimal capital

regulation. This search has resulted in the new Basel II framework (Grace, Leverty, Philips & Shimpi, 2015). Banks are expected to reserve enough capital at risk, which is the minimum amount of available capital to buffer the loss from investment beyond the expected loss. The value of capital at risk is generally known as economic capital (EC). The amount of available capital in excess of the required capital at risk is a measure determining the solvency of the bank, its ability to keep the promise to repay the funds to its own creditors. (Krahen & Wilde, 2016). In December 2010, the Basel Committee on Banking Supervision released official regulatory standards for the purpose of creating a more resilient global banking system, particularly when addressing issues of liquidity. Capital buffers identified in Basel III reforms include countercyclical capital buffers, which are determined by Basel Committee member jurisdictions and vary according to a percentage of risk-weighted assets, and capital conservation buffers, which are built up outside periods of financial stress. Banks expand their lending activities during periods of economic growth and contract lending when the economy slows.

When banks without adequate capital run into trouble, they can either raise more capital or cut back on lending. If they cut back on lending, businesses may find financing more expensive to obtain or not available. Bank capital is the difference between a bank's assets and its liabilities, and it represents the net worth of the bank or its equity value to investors. The asset portion of a bank's capital includes cash, government securities, and interest-earning loans (e.g., mortgages, letters of credit, and inter-bank loans) (BCBS, 2014)

All these legal and regulatory controls were made by the government in order to ensure sanity, transparency and accountability within the financial system which translates to bank financial soundness for the banking system in Nigeria. For instance, Abata (2014) investigated financial soundness and stability with a result indicating that asset quality enhances efficiency in banks. Mandelbrot et al. (2015) also confirmed that cost inputs and outputs must be controlled to ensure financial soundness in Nigeria. Corroborating these empirical findings in Nigeria, the CBN (2017) reported that, credit risk increased as the industry-wide non-performing loans (NPLs) ratio rose from 12.8% to 15.02% as at June, 2017, reflecting a 2.22% points

increased credit risk compared to 1.1% in the preceding period. The increase was accounted for by the continued low level of oil prices and government revenue. CBN (2017) further stated the credit risk management system of the banks was further enhanced with the adoption of the strategy of a bank verification number (BVN) for every individual while taxpayer identification number (TIN) made for corporate entity as a unique identifier to capture all loans and borrowers of lending institutions irrespective of amount.

A company's risk management system have a well organised structure to allow the boards to periodically review and monitor existing risk, while also fulfilling their oversight responsibility. Jorion (2013) mentioned: "The board must consider the best organizational structure to give risk oversight sufficient attention at the board level. Grace et al. (2015) found that there is a positive relationship between the risk report to the board of directors or the CEO and the firm's operating performance.

The strategic objectives of banks for risk management are set by the board of directors who determine the limits and suitable methods related to risk actions. A robust system for management is based on reporting of adequate processes for internal monitoring and includes appropriate procedures for granting approvals and setting deadlines. Risk assessment, monitoring, and control functions are connected to each other to meet the objectives (CBN, 2014).

1.1.5 Financial Performance of Banks in Nigeria

Financial Performance in broader sense refers to the degree to which financial objectives has been accomplished and is an important aspect of risk management. It is the process of measuring the results of a firm's policies and operations in monetary terms (Damodaran, 2013). It is used to measure firm's overall financial health over a given period of time and can also be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. Profitability is a bank's protection against unexpected losses, as it strengthens its capital position and improves future profitability through the investment of retained earnings. An institution that persistently makes a loss will ultimately deplete its capital base, which in turn puts equity and debt holders at risk. Moreover, since the ultimate

purpose of any profit-seeking organization is to preserve and create wealth for its owners, the bank's return on equity (ROE) needs to be greater than its cost of equity in order to create shareholder value. Although banking institutions have become increasingly complex, the key drivers of their performance remain earnings, efficiency, risk-taking and leverage. While it is clear that a bank must be able to generate earnings, it is also important to take account of the composition and volatility of those earnings. Risk-taking is reflected in the necessary adjustments to earnings. (e.g. credit-risk cost over the cycle).

Among the large set of performance measures for banks used by academics and practitioners can be made between traditional, economic and market-based measures of performance. Traditional measures of performance are similar to those applied in other industries, with return on assets (ROA), return on equity (ROE) or price earning(P/E) ratio being the most widely used as external measure of performance. In addition, given the importance of the intermediation function for banks, net interest margin is typically monitored. The return on assets (ROA) is the net income for the year divided by total assets, usually the average value over the year. Return on assets equals net income / average total assets. Return on equity (ROE) is an internal performance measure of shareholder value, and it is the most popular measure of performance, since it proposes a direct assessment of the financial return of a shareholder's investment; it is available for analysts, only relying upon public information; and it allows for comparison between different companies or different sectors (Auta, 2010). Financial performance of listed banks in Nigeria can be measured through some financial metrics such as return on capital employed(ROCE), Earnings per share measured by Profit/shares issued, Price/earnings ratio measured by Share price/earnings per share, Dividend yield as dividend per share/current share price. Investors are majorly concerned about stock price movements because this directly affects their wealth in the form of capital gain. They constantly review the stock market and the company performance (Babalola, 2012).

An analysis of the industry data showed a strong relationship between monetary policy instruments and commercial bank profitability measures, suggesting that appropriate monetary and banking policies are important factors to the continued

stability and profitability of the commercial banking industry. More importantly, the evidence of oligopolistic competition in the commercial banking industry involving the three big commercial banks raises questions on their influence on effective transmission of monetary policy in Nigeria, role as financial intermediaries and the overall stability of the financial system in the event of a pronounced distress in any of them.

When the economy is healthy and businesses expand, part of that increased revenue returns to banks as payment on capital. Banking profits usually drop when the economy struggles. Central bank policy plays a huge role in the management of financial services considering the influence of internal factors is under the control of bank management such as loan interest rates, third party funds and bad credit and external factors such as those that are beyond the control of bank management such as inflation and economic growth (GDP). (Abata, 2014)

1.1.6 Overview of Risk Management Strategies and Financial Performance

Risk Management and Financial Performance, highlights the importance of considering risk in both the strategy-setting process and in driving performance. A major objective of bank management is to increase shareholders' return signifying performance. The objective often comes at the cost of increasing risk. There are some risk which can undermine the profitability of the banks and thus the basis why banks have to manage risk rigorously (Olusanmi, Uwuigbe & Uwuigbe, 2013). The implication of risk management on banking system for a fragile and weak financial system in Nigeria is far reaching. First, unguided financial liberalization exposes the banks and indeed the economy to excessive financial shocks. The recent financial crises in the Asian countries are a case in point (Olajide, Asaolu & Jegede, 2011). Second, continuous reforming the financial system makes the system unstable, planning difficult and indeed creates unfriendly operational environment that may affect the efficient operational performance of the banks. For instance, the ripples of universal banking introduced in 2001 have not settled before the recapitalization exercise was introduced in 2004. Similar reversal and rewriting of rules were noticed in the past reforms (Jeroh & Okoye, 2015).

Permanent Subcommittee on Homeland Security and Governmental Affairs of the United States Senate (2007) identified a number of factors that affect financial performance of firms in the USA. Such factors identified include high risk lending, regulatory failure, inflated credit ratings and investment bank. These were identified as the main cause of financial crisis in USA.

The banking sector in Nigeria consists of 28 listed commercial banks, other private banks and micro finance banks. These banks provide various services for their clients including loans, guarantees, current accounts, savings accounts, time deposits, transfers in the country and abroad as well as services for storing items of value. The Central Bank of Nigeria continues to supervise to ensuring financial stability in the country, which represents the main target of the law (Central Bank of Nigeria, 2014). The Central Bank of Nigeria, like all the banks of other countries, functions in accordance with the Basel II framework (Feiguine & Nikitina, 2008) that was standardized from 1 January 2008. The Basel II framework determines the minimum level of capital requirement that is required to be created by banks to maintain the funds of depositors and investments in their value. As a form of legislation, Basel II directs banks to consider the risks that they face and develop capacity for their risk management. Banks are obliged to submit their annual accounts in accordance with International Financial Reporting Standards (IFRS) and accounting standards.

Nigerian banking system is fragile and marginal because of the challenges that they face, which if not addressed could result in crisis. A banking crisis or failure can be triggered by weakness in banking system as a result of persistent illiquidity, insolvency, undercapitalization, high level of non-performing loans and weak corporate governance (Oluitan, Ashamu & Ogunkenu, 2015). The need for risk management is strongly supported by the CBN (2014) which maintains that risk management is still at its rudimentary stage in Nigeria and is bedeviled by a number of challenges. These challenges include poor knowledge of risk management by members of the board of many banks and lack of professionals and ineffective monitoring mechanism. Others are lack of risk training and education and lack of a framework that supports the development of skilled and capable workers in the industry (Saifu, 2015). The CBN had issued a Guideline for the Development of risk

management frameworks for individual risk elements by CBN (2014) which required all commercial banks operating in Nigeria to put in place adequate policies, which sanctioned by the board of directors, for the management and mitigation of their risk exposures.

Looking at the business context, it is clear that insurance may be regarded as the origin of risk management (Glantz, 2013). An organisation can manage risk by reducing possible hazards through insurance. An early key development in risk management emerged during the 1950s as a result of the insurance management function in the US, and then the concept of contingency planning emerged in the 1960s, which has become more essential to businesses. Owing to the high cost of insurance and the fact it was insufficient to protect businesses, risk management became a more popular method to safeguard a firm's assets and control its business operation. Risk management developed to consider risk as having both positive and negative outcomes (Norris & Shazia, 2010). Insurance has now become one of the options that can be used to manage hazards and risks. Faced with cost pressures and market competition in dynamic globalized business era, more and more businesses take recourse to risk insurance to sustain viability and ensure survival. Risk Management employed credit risk insurance strategy which is used to confine the risk of the buyer protection and to further diversify the protection of seller's portfolio. Credit risk transfer products have become attractive due to their ability to separate credit risks off from the original credit transactions and to render them tradable in the market (Kleffne, 2013). Moreover, they can contribute to an improvement of liquidity of bank assets (Shafique, 2013).

Banking crises in several countries have made regulators, supervisory authorities and the banks themselves more aware of the importance of maintaining a sufficient equity capital to assets ratio. Although capital generally accounts for a small percentage of the financial resources of banking institutions, it plays an important role in their long-term financing and solvency, and therefore in the level of public confidence that they maintain (Espireh, 2013). The most important function of bank capital is that it provides a buffer to absorb unexpected losses and thus assists in preventing banking failures. Regulating capital requirements to ensure that banks

hold a minimum level of capital in proportion to their asset risk reduces the probability of insolvency, and therefore avoids the negative externalities faced by the financial system (Espireh, 2013). Capital buffer is mandatory capital that financial institutions are required to hold in addition to other minimum capital requirement.

It is the overall responsibility of the Board and Management of each bank to ensure that adequate policies are put in place to manage and mitigate the adverse effects of all risk elements in its operations (Ebenezer et al., 2017). Each bank should develop and implement appropriate and effective systems and procedures to manage and control its risks in line with its risk management policies. Each bank should submit a copy of its Risk Management Framework (RMF) highlighting its assessment of each risk element and any amendment thereto, to the Central Bank of Nigeria and the Nigeria Deposit Insurance Corporation for appraisal. Banks should submit periodic reports/returns in respect of their risk management processes (RMP) as they relate to individual risk elements in their respective banks to the regulatory authorities as may be required from time to time.

The key elements of an effective risk management process should encompass the following: Risk Management Structure with Board and Senior Management Oversight as an integral element; Systems and procedures for risk identification, measurement, monitoring and control; Risk Management Framework Review Mechanism. A sound Risk management structure is important to ensure that the bank's risk exposures are within the parameters set by the Board. Such structure should be commensurate with the size, complexity and diversity of the bank's activities. The risk management structure should facilitate effective board and senior management oversight and proper execution of risk management and control processes. At the minimum, the structure should contain the board, board risk management committee (BRMC), senior management and risk management committee (Fernando et al., 2015)

The banking sector in Nigeria is evaluated among the sectors with the best performance in the economy (Central Bank of Nigeria, 2014). Loans and deposits are growing, while the rate of financial services is being increasingly advanced. The

Central Bank plays the leading role and has the authority to license, supervise, and regulate financial institutions in Nigeria. In the last few years, several financial institutions become bankrupt, not merely because of risk management, but also because of failures of monitoring systems and weak internal control due to weak board of directors and ineffective top management (Central Bank of Nigeria, 2014). Saifu (2015) suggest that in the last few years, excessive credits and unwarranted growth in financial asset went unchecked, thus, managing risk is not an option but a necessity for the Nigerian commercial banks. However, one thing which is very clear is the failure in risk management. Allen and Carletti (2013) alluded that systemic failure in securitization by investment banks and individuals who had pooled together to provide mortgages as risk strategy did not vet the borrowers properly and therefore quality of borrowers was not taken into consideration. This led to significant losses to insurance companies and pension funds triggering collapse of other sectors.

The core business of banks is to attract funding and invest these resources. Banks must manage risk to maintain their boundaries and fulfill their role in the economy. When banks take extreme risks, they may soon fail and go bankrupt. Risk is the probability of a negative uncertain event (Shafique et al., 2013). Banking risk is associated with the potential loss of financial products that deal with different risk factors that must be understood, identified, measured, and managed (Bessis, 2003).

1.2 Statement of Problem

Basically, four point research problems were identified as forming the broad objective of this study. Based on this, there exist knowledge gaps on the investigation of the risk management strategies and financial performance of listed banks at Nigeria Stock Exchange. The complex concept of financial performance worldwide as to its principles, measurement and its resultant effect of various risk strategies to be critically examined especially in the developing economies of the world. (Fagbemi, 2010; Obafemi et al., 2013). As a result, this study focused on bank-specific factors which empirical studies have previously unable to confirm risk management strategies impact on financial performance (Thao & Thuy, 2015).

Hence, it is still an open question whether the practicing of risk management leads to an increase in a firm's performance.

Theoretically, the composition of financial performance as to its measures remain a puzzle and controversial in banking literature. This has brought inconsistencies and mixed findings over the world. (Olaewaju, 2016; Abata, 2014). Similarly, according to Otieno (2012) and Li et al. (2014) their findings fail to support the theoretical expectation that Market risk has a positive impact on firm performance. The findings of these researchers put forward some mixed result in the premise that risk management strategy has an implication on firm performance and value.

Empirical analysis was carried out by Alawattagama (2018) in Sri Lankan Banking and finance Industry to explore the impact of credit risk diversification practices on firm performance. This study finds none of the eight key risk management functions suggested by the COSO's integrated framework to have a significant impact on firm performance. Another study by Olaewaju (2016) documented that risk assessment, risk response and information indicate a negative impact on firm performance. However, none of those impacts was significant. Obafemi et al. (2013) stated that there is a growing support for the general argument that organizations improve their performance by employing the Market Risk Hedging Strategy. Nevertheless, the findings of some other researchers highlight the fact that adoption of Market Risk Strategy has no value implication on firms. According to Pagach et al. (2010) in their study on "the effects of Market risk on firm performance, results fails to find support to the proposition that Market risk is value creating. The multitude of problems and conflicting results on the subject of risk management strategies and financial performance of banks, and to what extent do they affect banking performance, therefore, demands further examination as envisioned by this study.

Against this background, the empirical motive for examining the problems surrounding risk management and financial performance necessitated this study as clearly indicated in the broad and specific objectives one, two, three and four of this study. Consequently, there is the empirical need to examine the effect of risk management strategies and to what extent does it affect financial performance in

Nigeria. This research gap are the motivating factors to further explore and investigate risk management strategies especially in Nigeria where relevant studies remain inadequate.

1.3 Objective of the Study

1.3.1 General Objectives

The main objective of the study was to evaluate risk management strategies and their effect on financial performance of listed banks at Nigeria Stock Exchange.

1.3.2 Specific Objectives

The study was guided by the following specific objectives;

- i. To evaluate the effect of credit diversification on financial performance of listed banks at Nigeria Stock Exchange.
- ii. To establish the effect of market risk hedging on financial performance of listed banks at Nigeria Stock Exchange.
- iii. To assess the effect of credit risk insurance on financial performance of listed banks at Nigeria Stock Exchange.
- iv. To investigate the effect of capital buffering on financial performance of listed banks at Nigeria Stock Exchange.
- v. To determine the moderating effect of bank size on risk management strategies and financial performance of listed banks at Nigeria Stock Exchange.

1.4 Research Hypotheses

H₀₁ Credit diversification has no significant effect on financial performance of listed banks at Nigeria Stock Exchange

H₀₂ Market risk hedging has no significant effect on financial performance of listed banks at Nigeria Stock Exchange.

H03 Credit risk insurance has no significant effect on financial performance of listed banks at Nigeria Stock Exchange.

H04 Capital buffering has no significant effect on financial performance of listed banks at Nigeria Stock Exchange

H05 Bank size has no significant moderating effect on Risk management strategies and financial performance of listed banks at Nigeria Stock Exchange.

1.5 Justification of the Study

The drive and motivation for this research work was drawn from the dearth and limited studies available in this research field especially in Nigeria. The study is organised to unveil possible improved (otherwise) benefits of risk management strategies and financial performance in the Nigerian banking industry. Extant literature have corroborated the significant influence (otherwise) of risk management role of banks, hence the need for them to perform better in operation. As regards the study's theoretical contribution, the study will be importance to the following stakeholders: Investors in terms of the contingencies provision against potential risk from contingency theory that may enhance performance between the bank and investors relating to investment needs. It's likely to reduce the loss arisen from loan assets granted by the banks and other operational costs which usually affect financial performance of the banks. The study has added value as regards the theoretical exposition of the modern portfolio theory in terms of diversification of loan assets to reduce exposures of the bank thereby improving the banks financial performance and liquidity.

This is evident from the banks need to have good loan assets quality/credit risk management by the banks so as to avoid mismatch. Economic capital will be enhanced greatly through efficient risk management, thus leading to improved financial performance of the banks. Banks and bankers are likely to benefit greatly from this research in terms of the theoretical, conceptual and empirical analysis which the study has delved into, that have concisely captured the value of

performance for banks. For instance, the theory of financial intermediation and delegated monitoring theory will enhance bank diversification by bringing out the cost benefits accruing to a diversified intermediary and the hedging efficiency attained by adding risks. Nevertheless, the general economy is likely to benefit as regards the expansion of efficiency literature after revealing possible effect of risk management strategies and financial performance of the listed banks. The value added as provided by this study is likely to impact on prospective future researchers who can jumpstart their research based on the study's empirical results and serve as reference point to them. Also specifically the following institutions are to benefit from the research.

1.5.1 Investors

The findings from this study would provide additional knowledge to investors that will assist them on investment decision. The effect of RMS and financial performance would provide additional information that could be used by firms to leverage on capital structure. Similarly, the study has also covered various types of risks strategies such as diversification and hedging against market risk, this information is useful to investors in reducing the level of risks facing banks in Nigeria.

1.5.2 Stock Broker and other NSE players

The findings from this study will equip stock brokers and investors with additional information useful in understanding underlying issues on risk management that they need in advising their clients on prospective firms to invest. The effect of RM on financial performance uses the variables that are of interest to investors such as earnings per share, share price per share and price earnings (P/E) ratio to measure financial performance. This study is useful in development of functional risk management structures within an organization that are needed to improve capacity on risk management.

1.5.3 Board of Directors

The study will be significant to the management of listed banks in Nigeria as they will be able to gain insight on an assessment to determine the relationship of credit risk management and performance of loan portfolio. The study will provide an insight on the best credit risk management strategies listed banks should adopt in order to effectively manage and enhance profitability as well as reduce occurrence of non-performing loans and improvement of loan portfolio performance. The study will be useful to the government in policy making regarding the loan requirements and also for the supervision of banks generally. The policy makers will obtain knowledge on the best mechanisms that should be adopted to control the poor loan performance and the responses that are appropriate should they occur. This study will therefore act as a guide in adopting relevant risk strategies to manage financial performance of banks listed in Nigeria Stock Exchange..

In a nutshell, the study is expected to fill identified gaps in the literature as well as provide impetus for future research. It is also expected to expand the knowledge horizon, awareness and understanding of risk management literature of financial institutions in Nigeria. Overall, the study apart from adding value to the existing body of knowledge, it is likely to expand the literature on financial performance of the banks as well as enrich the corporate finance theory immensely.

1.6 Scope of the Study

The study focus on risk management strategies and how it has affected financial performance of listed banks at Nigeria stock Exchange. These are the banks that play a critical role in economic development of a country by mobilizing resources for investment. Also, the listed firms were chosen because they are legally obligated by law to report in their financial statements measures put in place to manage risks and also they are obligated by law to submit every year audited financial statements to NSE. This implies that their financial statements reflect fair view of financial position and therefore are more reliable than the ones of firms not listed. This study gave specific focus to concept of financial performance with a view to examining how to improve or enhance its practice in the Nigerian banking industry. This study combined theoretical considerations (Contingency theory, Modern Portfolio theory (MPT), Agency theory, and financial intermediation theory). The theories were found relevant in view of the practice of diversification of loan assets. The theory explains the benefits of bank diversification by bringing out the cost benefits accruing to a diversified intermediary and the hedging efficiency attained by adding risks. This study gave special and specific focus to concept of risk management with a view to examining how to improve or enhance its practice in the Nigerian banking industry. The study population comprised of 28 listed banks at NSE that are actually engaged in risk management process whose financial performance impacts (otherwise) on the economic development of the country. The study's period is 10 years from 2010 to 2019. The financial year 2009 mark the beginning of new guidelines for developing risk management framework for individual risk elements in the bank (CBN, 2007). Also collection of data was feasible up to year 2019 and year 2020 was restricted by global pandemic situation (COVID 19). The study covered four key risk management strategies (Diversification of loan assets, market risk hedging, credit risk insurance and capital buffer) that affect financial performance of listed banks at Nigeria stock exchange since it was not possible to look at all the factors that affect constitutes risk management strategies.

1.7 Limitations of the study

A number of constraints were encountered in the course of this study such as theoretical, methodological and empirical. However, concerted efforts were made to ensure that they did not have significant or material negative consequences on the success of the study. Firstly, the theoretical relevance of risk management and financial performance posed difficulty in the corporate finance theory except, some that were scantily provided by prior studies. The literature was even mixed with macro-economic and financial management discipline. However, studies from Ryan (2013) and Saksonova (2014) provided insights into loan portfolio management practice of banks.

Secondly, concept of risk management in terms of methodology, meaning, sources, measurement approaches, sample units, formulation of hypothesis, were part of the constraints encountered by the study. Aside these constraints, the applicability of these methods of measurement empirically contributed to the restrictions faced by this study. However, prior studies from Olarewaju and Obalade (2015) solved the problem of different approaches of measurement to investigate banking performance, provided solution to this limitation. Additionally, Fiordelisi et al. (2010) also found the impact of bank risk among large sample of commercial banks in European Union.

Additionally, the study was intended to investigate entire target population (all the listed banks at NSE), incomplete data of some entities reduced the sample to 20 banks due to balanced panel data (survey) employed. Nevertheless, effort was made to ensure that all banks with both share price and other required accounting information all through the study period was fairly considered. Also, bank accounts collected from Security Exchange Commission gave me some leeway to have adequate data for my study. As a result the data collected does not give the investigator the level of precision required in a study particularly, when a strong statistical procedures are to be applied to financial analysis data. The problem was resolved through the use of time series which enabled determination of trends on

financial performance which was compared using correlated figures of risk management strategies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this section a review of theoretical and empirical of previous studies related to the current study is conducted. Theories that inform the study are analyzed and theoretical gaps identified. Similarly, empirical studies conducted in same field as the current study are analyzed so as to bring out the methodological gaps, and contextual gaps.

2.2 Theoretical Framework

This section provides the discussions on the theoretical arguments of the study. It provides the arguments of the proponents of the adopted theories on the effect of risk management strategies on financial performance of listed banks at Nigeria Stock Exchange. This study will be grounded on Contingency theory, Modern Portfolio theory, financial intermediation and delegated monitoring theory, Agency theory and Extreme value theory to expound on the effect of risk management strategies on financial performance of listed banks at Nigeria Stock Exchange.

2.2.1 Agency Theory

Agency theory has been reported differently in the literature and historically dating back to 1960s and early 1970s when economists explored risk-sharing problems that arises when cooperating parties have different attitudes towards risk especially among individuals and groups (Williamson, 1979). The origin of agency theory could be traced to Ross (1973) on economic theory of agency while Mitnick (2006) concentrated on institutional theory aspect of Agency. Jensen and Meckling (1976) equally remain of the proponents of this agency. The theory was further developed by Grossman et al. (1980), by justifying it on the basis of government goals of safety and protection. However, a separate theory of agency did not come up until early 1970s when Ross (1973) and Mitnick (1973) presented independently agency theory.

Agency as a theory is used to describe and explain the relationships especially between the principal (owners) and the agents (managers) of businesses.

Jensen and Meckling (1976), defined agency theory as a contractual agreement under which one or more persons (principal) engage another (agent) person to perform certain service(s) on their behalf including delegation of some decision making authority to the agent. Agency theory therefore provides the means to address relationship between two or more contractual and/ or implied parties which may erupt problems. Some of the problems include adverse selection, moral hazard and agency costs. This is however different from the position of Williamson (1985). Jensen and Meckling (1976) further explored and identified the sources of agency cost from two sources majorly. Mitnick (1973), states that agency problem are in three ways as principal's problem, agents problem and policing/monitoring mechanisms and incentives. The central concern of risk management is the relationship among stakeholders that is used to determine and control the strategic direction and performance of the firm. Top managers expect their corporate level strategy to help their firm gain/maintain a competitive advantage and earn above average returns for their shareholders and themselves (Fama & Jensen, 1983).

The investments in a portfolio should be worth more than individual investment standing on their own. The central concerns for risk management strategy are which businesses should their firm be in and how to manage the business portfolio which may be in very different industry, product and geographic areas. This raises questions about the extent to which a firm should diversify and here the benefits to managers and owners can vary and potentially lead to an agency problem. Diversification generally leads to an increase in the overall size of the firm, which is positively associated with size of executive compensation. This is clearly in the interests of top managers, not only in terms of financial reward but also in terms of status and reputation. Diversification also serves to reduce risk to managers of loss of employment, earnings and risk, as the firm is less exposed to downturns in a particular industry, product and geographical location.

The desires and goals of the principal and agent usually conflicts and it may be difficult or expensive for the principal to verify agents' actions or operations as well as problem of risk preferences (Jensen & Meckling, 1976). Agency costs are inevitable within an organization whenever the principals are not completely in charge; the costs usually are spent on providing both material and moral incentives for agents to properly execute their duties or functions. This will in return, promote the interests of both parties through improved relationship that enhances operational efficiency and performance (Oyerinde, 2014). Agency problem arise due to inefficiencies in resource allocation which is limited in supply and the risk involved in allocating those resources (Mitnick, 1973). Agency problem can be minimized through contract designing so as to be competitive in line with market dictates. This measure may go a long way at managing risk associated with the resources of the firm especially to achieve improve financial performance (Jensen & Meckling, 1976).

Agency theory extends the analysis of the firm to include separation of ownership and control, and managerial motivation. In the field of corporate risk management agency issues have been shown to influence managerial attitudes toward risk taking and hedging (Fama & Jensen, 1983). Theory also explains a possible mismatch of interest between shareholders, management and debt holders due to asymmetries in earning distribution, which can result in the firm taking too much risk or not engaging in positive net value projects (Pagach & Warr, 2010). Consequently, agency theory implies that defined hedging policies can have important influence on firm value (Fama & Jensen, 1983). Managerial motivation factors in implementation of corporate risk management have been empirically investigated in a few studies with a negative effect (Roman & Tomuleasa, 2016; Ariffin, 2012). Agency theory provides strong support for hedging as a response to mismatch between managerial incentives and shareholder interests.

This theory is found to be relevant to the study in that it has addressed the need to have quality information amongst the parties to have effective bank financial performance that can be influenced through efficient risk management process. Additionally, the theory has helped to unravel the need to maximize bank resources

(assets and capital) with a view to reducing operational costs (interest expenditures) to achieve higher profitability. According to Mitnick (1973), the economic crisis worldwide has compelled governments and banks to streamline processes in terms of revenue (assets and capital) and redistributing them (loans and advances) on principle of performance efficiency. Also, the theoretical relevance of the theory to this study is premised on the need to identify the various stakeholders' responsibilities and interests towards ensuring and enhancing financial performance for the organizations which they own or operate. All the stakeholders must be informed by the managers of the activities of the firm so as to enlist their support towards the effective risk management and growth of the firm. The theory has specifically addressed specific objectives three of this study by emphasizing that reduction in cost of providing credit insurance and enhance profitability to the investors of the bank.

The theory focusses on the problems of agency from both parties but usually from the agents to the principal (Umar, 2015). Agreeably, agency theory is based on the incompleteness of contract and the separation of ownership (shareholders) and the control (management). Though the resulting problems were already mentioned by Adam Smith in the 18th century (Williamson, 1979). According to Jensen (2004), a well-designed pay packages can mitigate the agency problems between managers and shareholders. Mohammad et al. (2014) documented differently that, agency theory primarily focusses on conflict between directors and owners but not between majority and minority shareholders which pose a major problem to the applicability of the theory in developing countries (Malaysia, Nigeria, Kenya). Fernando et al. (2015) argued that high risk taking behavior or risk preferences of bank managers often leads to poor loan quality, hence shareholders must exert appropriate monitoring on managers action, implement suitable control devices to minimize possible agency conflicts. Adequate information and good monitoring mechanism to control expenses by both parties in the system must be evolved so that systematic risk does not arise. Thus, this theory provides the bases for the general and specific objectives of this study.

2.2.2 Contingency Theory

Fiedler (1958) propounded contingency theory in his work leader attitudes and group effectiveness. He postulated that the effective leadership depends not only on the style of leading but on the control over a situation. There needs to be good leader-member relations, task with clear goals and procedures, and the ability for the leader to meet out rewards and punishments. The essence of a contingency theory of RM is beyond the simple selection/correlation studies. Contingency Theory is propounded to find “fit” between contingent factors and firms’ RM practices, and to establish propositions of fit that will result in desired outcomes (Chenhall, 2006). The contingency theory of organizational structure presently provides a major framework for the study of organizational design (Donaldson, 1991). It holds that the most effective organizational structural design is where the structure fits the contingencies. It helps to understand the interrelationships within and among organizational subsystems as well as between the organizational system as an entity and its environments. It emphasizes the multivariate nature of organizations and attempts to interpret and understand how they operate under varying conditions (Morton & Hu, 2008).

On analyzing contingency planning, Paape et al. (2012) observed the emergence of a two-fold approach, based on two levels of management systems: “operational risk management,” that attend to the traditional tasks of identification, assessment, management and emergency response; “Risk Management (RM)” that is providing new visibility and coordination at the most senior levels of management on risks that may have significant consequences for the financial viability of the company. The essence of a contingency theory of RM would be to find “fit” between contingent factors and firms’ RM practices, and to establish propositions of fit that will result in desired outcomes (Chenhall, 2006). Moving towards a contingency theory of RM requires a more sophisticated understanding of not only the nature of relevant contingencies, but also the nature of RM itself. There is now a growing strand of longitudinal field of studies that tries to capture the fascinating variety of risk management practices in banking and elsewhere, deployed at different organizational levels, for different purposes, and by different staff groups even by companies (Morton & Hu, 2008).

The Categorization-Elaboration Model (CEM) by Eikenhout (2015) is the only comprehensive model of the contingencies of work group diversity which is well supported by empirical evidence (Paape & Speklè, 2012). Other approaches either received little empirical support, such as typological approaches (Paape & Speklè, 2012), or can be integrated with the CEM, such as the fault line approach (Kariuki, 2014) and the contextual framework (Joshi et al., 2011). While originally conceived as a model of work group diversity effects, there is nothing about the CEM that uniquely applies to work groups, and by implication, it may equally account for relational demography effects (Damodaran, 2013) and organizational diversity effects. Thus, we argue that the contingencies associated with social categorization, intergroup bias, and information-elaboration processes proposed by the CEM account for workplace diversity effects on social integration, well-being, and performance-related outcomes at the individual, group, and organizational levels.

Research in workplace diversity examined the moderating effects of growth-oriented, stability-oriented, and customer-oriented strategies and environments that are characterized by change, instability, uncertainty, complexity, and customer demographic diversity. While strategy variables seem particularly relevant to explain the effects of organizational diversity, it has been argued that they can also be viewed as an important contextual factor for work groups because strategy defines the amount of emphasis and resources devoted to organizational tasks (Jelic & Briston, 2001). Even so, we found only one study that examined strategy as a moderator of work group diversity effects and none that looked at relational demography; most research is in organizational diversity. On the basis of the CEM, we would expect that organizations operating in growth-oriented and customer-oriented strategic environments are likely to benefit from diverse employee populations because they might enhance the capacity of organizations to innovate and adapt, and better understand customer needs.

Drawn primarily from large-scale empirical studies, contingency theory relies on a few assumptions that have been explicitly stated, and this guide contingency research. The first explicit assumption is that there is no one best way to organize; the second is that any way of organizing is not equally effective under all conditions

(Williamson, 1979).The “theory” then asserts that, in order to be most effective, organizational structures should be appropriate to the work performed and/or to the environmental conditions facing the organization. Although the overall strategy is reasonably clear, the substance of the theory is not clear. The lack of clarity is substantially due to the ambiguous character of the “theoretical” statements. Statement from contingency theorists and researchers suggests that a particular structure should be “appropriate for” a given environment (Fama & Jensen, 1983). That organizations are more successful when their structures “conform” to their technologies (Williamson, 1979), that an organizations internal states and processes should be “consistent with” external demands.

Donaldson (2015) in international study of the Social and Behavioral Sciences, argues that the most effective structure for an organization is contingent on the structure fitting the organization's level of contingency factors. Where the structure fits the contingencies, then high performance results, whereas, where the structure misfits the contingencies, then low performance results. The main contingency factors are size, task uncertainty, and diversification. Each organization varies on its levels on these contingency factors and on corresponding structural variables. As size increases, so the fitting structure is more bureaucratic (that is, has many departments, many hierarchical levels, high specialization, high formalization, and low centralization). As task uncertainty increases, so the fitting structure is less formalized and more decentralized. As diversification increases, so the fitting structure is divisionalized, which raises the degree of bureaucratic structuring. The greater the diversification, the more autonomous the divisions and the smaller the corporate central office. Divisionalization also needs to fit the priority given to innovation versus cost reduction. Matrix structures, of various types, fit intermediate levels of diversification. Overall, large size and diversification raise the required degree of bureaucratization, with task uncertainty causing some variations to it (Chenhall, 2013).

The adoption of contingency theory is based on the following assumptions: the success of an organization depends on how it understands its environment , market risk hedging can become more efficient when designed to respond to environmental

variables and that environmental attributes are constantly changing, their implications for market risk hedging require continuous evaluation. Donaldson, 2001 stated that the contingency theory is that organizational effectiveness results from an adjustment between organizational characteristics such as structure and strategy. The strategy refers to the way the company positions itself in the market. Considering that the strategic posture of an organization can influence its Risk Management Strategies, it is necessary to understand how it interacts with the RM system (Harner, 2010). The organizational structure, according to Chenhall, 2013, represents the arrangements that influence the efficiency and effectiveness of work, the motivation of the individuals, the information flows and the control system. This particular theory support capital buffer variable as a contingency factor to absorb unexpected adverse variation in the level of liquidity of the bank.

Hence, if risk management is a way of reducing uncertainties or avoiding undesirable results, then, the success of its adoption depends on how it conforms to the contingency factors advocated by contingency theory. To study it in context of specific organizations, this can contribute to understand how it works in practice (Chenhall, 2013). Among the various types of organizations seen as a fertile field for investigating the interrelationship between contingency factors and risk management, banks represent a promising sector. This assumption is based on the premise that banks, besides being complex organizations are exposed to specific risks (Jennings, 2013).

2.2.3 Modern Portfolio Theory

Markowitz (1952) extended his work by introducing a model of portfolio theory. He theorized a relationship between risk and return. Markowitz's model of portfolio theory emphasizes on risk return trade-off in terms of mean-variance efficient portfolio, hence the introduction of the efficient frontier of various assets combination and weight. An efficient frontier of an investment domain represents a set of "efficient portfolios" that maximizes expected returns at a given level of portfolio risk, or that minimizes portfolio risk for a given expected return.

Modern Portfolio Theory is a mathematical formulation of the concept of diversification in investing, with the aim of selecting a collection of investment assets that has wholly lower risk than any individual asset (Bierc, 2003). When the prices in the stock market falls, the prices in the bond market may rise giving movement in opposite direction that has a risk reducing effect on the portfolio at large as a result of collection of both assets (Mandelbrot & Hudson, 2005). Neo-classical financial theory (NCFT) applies these two powerful options of diversification and asset allocation and came up with modern portfolio theory (MPT) and capital asset pricing model (CAPM) (Woon et al., 2011). NCFT however postulates that any internal risk management effort undertaken by the firm to reduce its idiosyncratic (firm specific) risk will be of no value to shareholders because shareholders can easily employ two risk management options and arguably at a cheaper cost, to attain the same purpose and effect through building an investment portfolios (Bierc, 2003). This argument holds true unless firm-specific risk management can prove to result in the increase of the present value of the firm's cash flow. As such, internal risk management by the firm should focus only on reducing its systematic risk by such ways of hedging or buying insurance (Bierc, 2003).

This conclusion of NCFT somehow runs counter to the initial value proposition of corporate risk management by the CFT (Tasche, 2004). For instance, Markowitz's model of portfolio theory would suggest that if managers could find ways to minimize the firm's cash flows volatility, or "total risk", then they could create value for shareholders as long as the stabilized cash flows would not come at the expense of their expected value (Woon et al., 2011). NCFT such as CAPM, which extended Markowitz's portfolio theory, demonstrated that in equilibrium, the market portfolio is the only one efficient portfolio that applies to all investors, regardless of their risk preferences. Hence, therein gives rise to the notion of beta. Thus, according to CAPM, beta risk is the only risk that investors should be concerned about in equilibrium (Chatterjee, 1999). Notwithstanding so, according to another school of thought such as the classic efficient market theory, even the management of systematic risk is futile.

The argument is that it will not add value to shareholders since the costs of such activities like hedging and buying insurance policies will completely offset the value of eliminating such systematic risk. Hence, a zero sum game ensued for shareholders (Bierc, 2003). Risks are combined into a portfolio leading to a residual risk. This residual risk is smaller than all the risks combined, making it cheaper for hedging and insuring (Tasche, 2004). The risk decrease of the portfolio is explained by the modern portfolio theory. This theory assumes that different assets in a portfolio work in opposite directions on a certain event, causing the negative movement to be cancelled out or minimized by the impact of the positive movement. This decreases the total risk of the portfolio (Eikenhout, 2015).

There is no doubt that markets are far more complex and volatile than they were in 1952. In this changed world, which presents more challenges and more opportunities, MPT could use a makeover just to hold down a job. The recent meltdown was a powerful reminder to stop obeying B-school axioms, including the models of Markowitz and his intellectual descendants. As sound as it may be academically, MPT is vulnerable to big market moves and ripe for misuse. In response, practitioners have built portfolio construction tools that they hope better reflect how markets actually behave. These efforts include fresh takes on optimization, a computer-assisted method of generating portfolios. They also involve making portfolios more resilient to turbulence by building in some recognition that the relationship between risk and return changes over time (Damodaran, 2013).

Like many theories, MPT makes a host of simplifying assumptions. One of them is that the market is perfectly liquid. MPT also assumes that there are no transaction costs, that investors can take a position of any size in any security they want and that there's no herd mentality at work. "Those assumptions probably got violated at the same time (Georgeta & Elena,2015). Much of the debate swirling around MPT concerns optimization. Traditionally, that has meant Markowitz mean-variance optimization, whereby investors generate the most efficient portfolio from a basket of assets. First, they use statistical methods to estimate expected returns, volatilities and covariance, that is, how the assets will move in relation to one another during a certain period. All of this information gets plugged into a piece of software called an

optimizer. The optimizer then shifts through every possible combination of assets and produces a graph showing a curve called an efficient frontier. Ranged along it are a series of optimal portfolios, from the lowest risk and return to the highest. While the benefits of diversification which support objective one are tough to dismiss, mean-variance optimization does not stand up so well, for a couple of reasons. It can produce questionable portfolios, and it makes no allowance for fat tails returns that fall far outside historical norms. Also known as “black swans,” these unexpected and dramatic price changes can ripple through the entire system, as they did in 2008.

Markowitz hangs his defense of MPT on the simplified version of the theory laid out in 1964 by longtime Stanford University finance professor William Sharpe, who at the time was teaching at the University of Washington. Now known as the capital asset pricing model, or CAPM, Sharpe’s “one-factor” theory assumes that all assets in a portfolio share systematic, or market risk. The source of beta returns, this common risk factor is impossible to diversify away. Each security, however, also has an unsystematic, or idiosyncratic risk, which generates alpha. Because the returns on different assets do not tend to line up exactly, the risk can be shrink through diversification. But in a crisis, market risk swamps idiosyncratic risk. As a result, Markowitz explains, everyone moves downward but not at the same distance. Just like MPT says, the more beta you have, the farther you fall.

2.2.4 Financial Intermediation Theory

Financial intermediation theory was propounded by Diamond in 1984. This theory was proposed on minimum cost of producing information useful for resolving incentive problems in which banks share gross cost advantages of information collection. The benefits of bank diversification as a result of cost benefits accruing to a diversified intermediary and the hedging efficiency attained by adding risk were explained by the theory (Jorion, 2013). By increasing the risk tolerance of banks, diversification reduces the hedging cost beyond what borrowers can achieve on their own as a result banks are able to earn more return than what is payable to the fund suppliers (depositors) and vis-a-vis reducing the chances of bankruptcy through

enhanced risk hedging effectiveness. Financial intermediation theory envisage two types of diversification; diversification by increasing the number of agents in the intermediary (sharing risks) and diversification by increasing the number of projects carried out by one intermediary (adding risk). The former approach works because each independent risk is shared by different number of agents while the latter is what Samuelson (Diamond, 1984) calls the “fallacy of large numbers”. The addition of independent risks reduces the entrepreneur risk and the fallacy of large numbers stops being a fallacy.

However, the financial intermediary envisioned by Diamond is a pure asset transformer whereby the only diversification possible is that of adding independent identically distributed projects by one agent or what he called diversification within the intermediary. This reduces the entrepreneur cost of intermediation since for all projects with less than perfect correlation; the delegation cost for projects monitored by a single intermediary would be less than the sum of delegation costs for monitoring proper subsets of them by several intermediaries through sharing risks (Bessis, 2003).

Diamond approaches diversification from a cost reduction perspective and recommends the latter approach by arguing that diversification within the intermediary would be key to possible net cost advantages due to the strong similarities between an intermediary and its depositors (Jeroh & Okoye, 2015). The theory and delegated monitoring approach explains bank diversification both in the context of risk and that of risk neutrality. In the risk neutral model, the argument behind diversification is that diversification increase the chances of the intermediary has sufficient loan proceeds to repay a fixed debt claim to depositors thus reducing the chances of bankruptcy. In the risk aversion model, on the other hand, diversification increases the financial institutions risk tolerance toward each loan, thus, allowing the risk bearing necessary for incentive purposes to be less costly.

The theory also identifies a number of conditions for a financial intermediary to be viable. First, depositors must receive an expected return per unit deposit; secondly, financial institutions must receive an expected return net of monitoring costs and

deadweight penalties incurred which is at least zero; and lastly, each entrepreneur must retain an expected return at least as high as he would by contracting directly with depositors (Ifeacho & Ngalawa, 2014). The third condition is necessary for bank diversification because if diversification does not reduce the transaction costs of monitoring to a level lower than the depositors can obtain by transacting directly with the borrowers, the bank would not be able to pay interest to depositors and retain an expected return net of monitoring costs and therefore the depositors would be better off contracting directly with borrowers (Brook et al., 2011)

The concept of value creation in credit risk insurance in the context of the value chain might serve that purpose. It is risk and risk management that drives this value creation. The absorption of risk is the central function of both banking and insurance (Cooper et al., 2006). The risk function close the gap between the supply of savings and the demand for investments as savers are on average more risk averse than real investors. Maturity risk, counterparty risk, market risk (interest rate and stock prices), life expectancy, income expectancy risk etc., are the core business of the financial industry (IMF, 2016).

Financial intermediaries scale permits a sufficiently diversified portfolio of investments needed to offer the security required by savers and policyholders, thus, can absorb risk on the scale required by the market. Financial intermediaries are not just agents who screen and monitor on behalf of savers, they are active counterparts themselves offering a specific product that cannot be offered by individual investors to savers. They use their reputation and their balance sheet and off-balance sheet items, rather than their very limited own funds, to act as such counterparts. As a result, they have a crucial function within the modern economy (Diamond, 1984).

The risk monitoring purpose is one of the major reason why we demand banks and other risk management approach of financial intermediaries rather than informational asymmetries or transaction costs (Hughes & Mester, 2015). Economies of scale and scope as well as the delegation of the screening and monitoring function especially apply to dealing with risk itself, rather than only with information. The other issue is why banks and other financial institutions are willing and able to take on the risks

that are inevitably involved in their activity. With regard to this it is important to note that financial intermediaries are able to create comparative advantages as regards information acquisition and processing their size in relation to the customer whereby they are able to manage risk more efficiently (Diamond, 1984).

2.2.5 Extreme Value Theory

Work on extreme value problem may be dated back to as early as 1709 when Nicolas Bernoulli discussed the mean largest distance from the origin when points lie at random on a straight line of length (Mitnick, 1973). Bernoulli discussed the mean largest distance from the origin when n points lie at random on a straight line of length (Johnson et al., 1995). A century later Fourier stated that, in the Gaussian case, the probability of a deviation being more than three times the square root of two standard deviations from the mean is about 1 in 50,000, and consequently could be omitted (Parahoo, 1999). The financial institutions with significant amounts of trading activity proved to be very vulnerable to extreme market movements and, in time, the measurement of market risk became a primary concern for regulators and also for internal risk control. This calls for indicators showing the risk exposure of firms and the effect of risk reducing measures. Value-at-Risk (VaR) has been established as a standard tool among financial institutions to depict the downside risk of a market portfolio. It measures the maximum loss of the portfolio value that will occur over some period at some specific confidence level due to risky market factors (Jorion, 1997). Banks and bank holding companies with an important trading portfolio are subject to market risk requirements. They have been required to hold capital against their defined market risk exposures, and, the necessary capital is a function of banks' own risk estimates.

In the history of finance, risk management has been identified as one of the most important field of interest to financial and risk Managers in the 20th century, or rather as among the three major areas of interest following the Markowitz portfolio theory and the Black-Sholes-Merton option pricing theory (Tasche, 2004). Recent years have noticed evidences all over the world and the huge development of the field of financial risk management which resulted from the global financial crisis that

emerged in 2008 which intensified the need of risk management among financial institutions and insurance companies. The Extreme value theory holds promise for advancing assessment and management of extreme financial risks. Recent literature suggests that the application of Extreme value Theory generally results in more precise estimates of extreme quantiles and tail probabilities of financial asset returns. Extreme value theory is a tool used to determine probabilities (Risks) associated with extreme events. It is used by Investors in situations where there is expectation of higher stress on investment portfolios. The EVT is also used to model the behavior of tips (Maxima) and or dips (Minima) in a series of asset returns etc.

Value-at-risk (VaR) approach was the standard measure of financial risks and other risks such as Industrial risk management etc. Basically, it used to measure the expected loss over a period of time for known distribution of for known probability and under normal market conditions. Portfolio managers, Investors, Risk managers, Claim managers etc, have become more concerned over occurrences under extreme market conditions. As a result, several alternative methods have been proposed for estimating VaR, one of which being the Extreme Value Theory (EVT). EVT methods make VaR estimations based only on the data in the tails as opposed to fitting the entire distribution and can make separate estimations for left and right tails. Proper estimation of VaR is necessary in that it needs to accurately capture the level of risk exposure that the firm is exposed to, but if it overestimates the risk level, then the firm will set aside unnecessarily excess capital to cover the risk, when that capital could have been better invested elsewhere (Yibing et al., 2013). Extreme value theory helps in determining the minimum and the maximum capital that should be set aside to cover the market risks. To achieve this goal the banks need to manage the market risk by managing the financial leverage. This study applies Extreme Value Theory in calculating Value-at-Risk (VaR) of portfolios consisting of foreign exchange exposures of different countries.

This theory addresses the issue that traditional VaR models assume normality of the return distribution. Empirical evidence confirms the stylized facts that financial asset returns are typically negatively skewed and fat-tailed. Moreover, risk management concerns itself with the distribution of the tails, or events in the extremes of the

distribution. Estimation of magnitude and the likelihood of extreme events should be given greater attention than central tendency characteristics (Ariffin, 2012). Thus, Extreme Value Theory in computing an "Extreme VaR" directly focus on the behavior of the tail of return distribution. The modeling is done on daily exchange rates returns of Asian countries from January 24, 2004 to January 31, 2010.

The main attraction of Value-at-Risk as a risk indicator is that it is able to compress all market risk factors into a single number. In its simplicity, it generates a lot of intuitive appeal to risk managers and other finance practitioners as it succinctly describes the risk of holding a portfolio of assets. VaR is widely accepted as the modern measure of market risk that indicates the maximum potential loss in the value of a portfolio with a given probability over a given time horizon. It has become a key risk metric since the Basel Committee required banks to cover losses in their trading portfolios over a 10-day horizon, 99 percent of the time (BCBS, 2006).

Insurance companies, financial institutions and any other business firms should conduct what is call self-evaluation on whether they are playing within the risk free boundaries by applying the random walk technique in determining the extreme points. EVT concentrates on evaluating the memory less time T at which the company is assumed to reach the highest return, or at which the company will achieve weak minimum return. At either point, it is said to be unsafe for the profit oriented company to operate (Harner, 2010). The extreme value theory is highly employed in financial Industry particularly in financial risk management when the company or firm wants to set out the risk free demarcations to operate or play around, and in the situations where the company wants to conduct self-performance evaluation, making forecast over a period of time and making any economical based decisions (Edwards, 2004). It is essential for Insurance Companies, Financial Institutions and any profit oriented firm to conduct an evaluation as to when the company is expected to earn a maximum returns or highest profit together with the question how much is that maximum return value.

On the other hand, it would be of important interest for the company to know when it is expected to be ruined so that the required but optimal measures can be adopted against the crisis and also to rescue from loss of potential shareholders and against bad reputation to customers (Auta, 2010). Returns evaluation or financial risk management and time at which the firm is expected to achieve the maximum/minimum returns (profit/loss) are fundamental tasks to the company and to all profit oriented firms (Risk/Claim managers) as this will help them to identify their risk free operating limits in the sense that; it is too risky for the company to operate at extreme points. For managerial purposes therefore, returns evaluation / assessment has a greater importance to managers and other decision makers to know their risk free operating boundaries (Greunig et al., 2015).

2.3 Conceptual Framework

Conceptual framework provides a snapshot of the objectives of this study. It considers the theoretical and conceptual issues surrounding research work and forms a coherent and consistent foundation that will underpin the identification and development of existing variables (Kothari, 2004). A conceptual framework is made up of variables. A variable is defined as a measurable characteristic that assumes different values among units of specific population (Mugenda, 2003). Kothari (2004) define a variable as a concept that can take different quantitative value such as weight, height, or income. The key variables in this study were categorized as independent variables and dependent variable.

Mugenda (2003) explain that the independent variables as predictor variables because they predict the amount of variation that occurs in another variable while dependent variable is a variable that is influenced or changed by another variable. A dependent variable varies as a function of the independent variable or variables changes in the study The conceptual framework attempts to bring into focus the following variables; the independent variables.

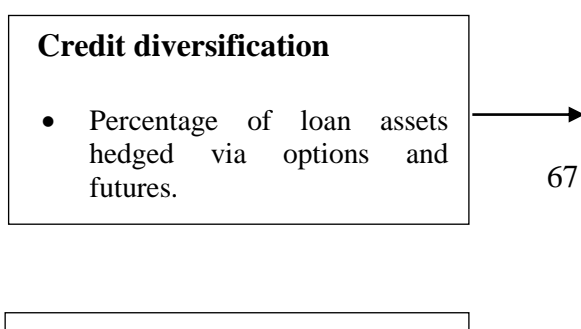


Figure 2.1: Conceptual Framework

The identified explanatory variables of risk management are: diversification strategy which has the measurement of the ratio of loan asset to private sector and loan asset to government sector to total asset; credit risk insurance strategy is measured by the credit risk insurance cost per annum; market risk hedging measured by value of options and futures per annum; capital buffer strategy is measured by the risk weighted assets while bank size measured by market shares considered as the moderating variable. The moderating effect of bank size can be felt in terms of the largeness or otherwise of (total amount of market share of turnover in the banking industries) which may influence the strength of financial performance of the banking operations generally.

Prior studies made use of various ratios and methods in evaluating the financial performance of banks worldwide. For instance, Pancheva (2014) and Olarewaju et al. (2015) used ratio analysis while Obafemi et al. (2013) used data development analysis. Shyu et al. (2014), however adopted the use of two-stage approach and stochastic frontier analysis in their study. Even the use of ordinary least square have been employed by prior studies as efficient (Nwite, 2014). The study is conceptualized as shown in figure 2.1

2.3.1 Credit Diversification

Credit diversification is defined as the process by which firms extend the range of their credit portfolios across different economic sectors to eliminate idiosyncratic risks (Jonathan, Mwau & Mulwa, 2017). Banks as financial intermediaries play a cardinal role in an economy by mobilizing savings, reducing costs of financial transactions and managing risks (Santomero, 2014). Careful management of banks' credit portfolios is essential for their stability as a significant amount of bank revenue is from interest income generated from lending.

The financial crises of 2007/2008 emphasizes the need for banks to actively measure and control their credit exposures to ensure minimal credit risk of loan portfolios (Basel 3 Committee on Banking Supervision, 2014). In pursuit of superior performance, banks by choice may specialize their lending in a few economic sectors to capitalize on managerial expertise and to reduce agency problems (Stomper,

2006). Banks may also diversify their credit portfolios across different economic sectors to eliminate idiosyncratic risks (Jonathan, Mwau & Mulwa, 2017). Both choices have implications for bank credit risk and profitability. As explained succinctly by Boeve et al. (2014) a bank may specialize its lending in a few sectors to improve its screening and monitoring abilities, which reduces credit risks but this increases the banks' susceptibility to downturns in those sectors. Diversification of the credit portfolio across different economic sectors can also weaken banks' incentives to monitor and monitoring effectiveness as they diversify into new sectors that they have little or no expertise in (Winton, 2015).

The impact of diversification on firms' performance depends on many factors (Igbal et al., 2012). Management decision about extent to diversifying is another factor that needs to be considered while evaluating the firms' performance due to diversification. The diversification strategy, according to Palepu (1985) is an important component of the strategic management of a firm, and the relationship between a firm's diversification strategy and its economic performance is an issue of considerable interest to managers and academics.

While investigating the effects of sectoral diversification on the Chinese banks' return and risk, Chen, Wei, Zhang and Shi (2013) and Chen, Shi, Wei, and Zhang (2014) used panel data on 16 Chinese listed commercial banks during the 2007 to 2011 period. They measured diversification using Herfindahl-Hirschman index (HHI) and a risk adjusted HHI where the measure was adjusted for risk using the betas for every sector. Financial performance was measured using Return on Assets (ROA) and Return on Equity (ROE) while the bank's monitoring effectiveness was measured using the absolute value of non-performing loans. The study reported a significant positive influence of concentration on bank returns and profitability. Concerning the banks risk as a proxy of monitoring effectiveness, a significant positive relationship was reported between portfolio concentration and bank's risk. These findings imply that sectoral diversification is associated with reduced return and risk.

In attempt to show how diversification affected the performance of banks, Thao and Thuy (2015) investigated the effect of sectoral and geographical credit diversification on the performance of forty (40) Turkish banks between 2007 and 2011. They used return on assets and return on equity to measure bank performance and Herfindahl-Hirschman Index to measure bank credit diversification with the number and amount of credits banks allowed borrowers being control variables. The study reported statistically significant negative relationship between diversification and both ROA and ROE. The researchers attributed this negative diversification-performance outcome to the increase in costs that is associated with diversification which more than offsets the expected benefits of diversification.

Chen and Lin (2014) examined the effect of diversification on risk and return of Taiwan domestic commercial banks using unbalanced panel data from 1997 to 2009. Returns were measured using ROA, ROE and Net Interest Margin (NIM) while risk was measured using a ratio of non-performing loans to total loans (NPL), the ratio of loan loss provision (LLP) and a Z-score measure of insolvency risk. Diversification was assessed as revenue diversification and credit diversification and measured using HHI. The study reported a significant negative effect of loan diversification on all three profitability measures. However, credit diversification improved the NPL ratio and therefore reduced a bank's risk.

In Tehran, Rehman et al. (2015) investigated the effect of credit portfolio diversification on ROA ROE and credit risk among seven stock exchange listed banks for the period 2009 to 2014 period. Credit diversification was measured using the Herfindahl-Hirschman index while credit risk was measured as the ratio of total deferred debt over total assets with performance being measured using returns on assets and returns on equity. The study observed a statistically insignificant relationship between credit diversification and credit risk which was also the case for both performance measures. This implied that credit portfolio diversification was not beneficial to banks' risk and therefore monitoring efficiency nor did it benefit the banks performance.

Umar (2015), investigated the relationship between loan diversification and risk profile and profits of cooperative banks using secondary data from a sample of 19 district central cooperative banks for ten financial years from 2002/03 to 2011/12. The study measured credit diversification using the Herfindahl-Hirschman index while risk was measured by a ratio of non-performing loans to total assets and return as the average yield on assets. The study reported a negative and significant relationship between diversification and returns but no relationship between diversification and risk. This point to a diversification discount on bank performance but which does not benefit the banks' monitoring effectiveness.

Jennings (2013) investigated the impact of loan portfolio sector concentration on credit risk using a unique data set on German banks' sector specific loan exposures to the real economy and the corresponding write-offs and write-downs for the period 2003 to 2011. The study reported, on average, lower loan losses for banks specialized in certain industries with the loss rate of a given industry in a bank's loan portfolio being lower if the bank had major exposures to that industry. Additionally, they reported lower standard deviation of the loan losses for more focused banks. This implies that diversification increased bank loan losses and therefore doesn't aid the banks monitoring effectiveness. However, Jennings did not investigate the performance implications of loan portfolio concentration.

Using bank level data and fixed effects regression, Saunders et al. (2016) investigated the effect of credit concentration on credit risk in Zambia. Bank concentration was measured using the Herfindahl-Hirschman index while credit risk was measured using the logarithm of non-performing loans. Similar to Jennings (2013), the study reported an inverse relationship between banks' credit concentration and risk suggesting that banks with more concentrated credit portfolios tend to have lower credit risk. This implies that portfolio diversification doesn't benefit the banks monitoring effectiveness and therefore risk.

2.3.2 Market Risk Hedging

Market risk hedging techniques generally involve the use of financial instruments known as derivatives. The two most common derivatives are options and futures. (PWC, 2012). There are some researchers who assert that the effective implementation of hedging activities enhance operating efficiency that leads to enhance firm performance. Banks should have risk measurement, monitoring and control functions with clearly defined duties that are sufficiently independent from position-taking functions of the bank and which report risk exposures directly to senior management and the board of directors. In order to carry out its responsibilities, the board of directors in a bank should approve strategies and policies with respect to interest rate risk management and ensure that senior management takes the steps necessary to monitor and control these risks (Gordon, 2015).

Market Risk Hedging (MRH) has been widely discussed by both researchers and practitioners as a holistic and effective approach to managing the wider range of risks faced by business MRH. It is expected that effective risk management practices enable business managers creating and protecting long term MRH value and assuring the long term stability and growth. Especially, in the context of global financial crisis (2008) and corporate scandals and high profile corporate failures (Eikenhout, 2015). The concept of MRH gained an increased attention among corporate managers. Prior to the emergence of the concept of MRH as a holistic approach to manage the risk, market risk hedging used to manage their risk factors on “case by case” basis which said to be a traditional and less effective approach. While the banking system tends to expand in size, its performance is unstable, and lots of risks arise and need to be resolved like bad debt, potential bankruptcy of banks. One of the urging strategic solutions is to establish and upgrade risk monitoring of commercial banks (Salehi, 2008). Market Risk Hedging becomes an important self-defense system against risks, which should enhance banks’ performance. The concept of Market Risk Hedging (MRH) as a financial and strategic approach to manage the risk facing by a business, is expected to enhance market risk hedging performance.

COSO RM (2013) framework is the most widely accepted RM framework. As there are inconsistent definitions of the concept of risk management across various industries, COSO attempted to develop a consistent risk management definition by signing a contract with the public accounting firm Price Waterhouse Cooper (PWC) and proposing a RM framework. The COSO RM framework is the most popular definition of RM that is used in accounting literature (Beasley et al., 2005). It started in the US after the corporate fraud-related failure of the US Corporation Enron led to the passage of the Sarbanes-Oxley Act (SOX) of 2002. Specifically, SOX Section 404 required US listed companies to use a control framework in their internal control assessments that provides specific requirements, which correlate with COSO's internal control framework concept in order to implement both appropriate internal control and financial reporting transparency. When COSO's internal control developed into COSO RM, this new framework became the primary framework used by US enterprises and became accepted worldwide (Gordon et al., 2009). Therefore, COSO RM (2004) has eight components, including internal environment, objective setting, event identification, risk assessment, risk response, control activity, information, and communication and monitoring. The second dimension is slices. COSO internal control (1992) has three entity objectives, including operations, financial reporting and compliance. The COSO RM (2004) framework added a strategic objective into the new framework. Consequently, COSO RM (2004) is determined to be effective in four categories of objectives, including strategic, operations, reporting and compliance, respectively. The third dimension is vertical columns. The control of COSO internal control (1992) exists within a designated function or activity. Meanwhile, COSO ERM (2013) is applied to multiple levels of the enterprise, from entity level to individual division, business unit and subsidiary.

Focus on the market risk hedging in private and public sector has increased significantly since the late 1990's - early 2000's due to major national and international corporate accounting scandals which raised global awareness and caused stakeholders' trust for publicly traded companies to plunge substantially (Clinton, Pinello & Skaife, 2014). Most well-known examples of corporate fraud and corruption are Enron and WorldCom, two large companies that went bankrupt in the

early 2000's due to manipulation of accounting and financial reports in order to improve their performance and attract funding (Pfister, 2009).

Liebenberg and Hoyt (2013) stated that the presence of market risk control strengthens the firm's financial performance and adds value to the firm. In this context it is believed that such environment facilitates a culture of risk aligned decision making that will positively affect financial performance. Hedging activities that are designed to address the risk factors identified involves the interest rates and foreign exchange hedging activities established by the management to ensure that risk responses are effectively implemented. There are some researchers who assert that the effective implementation of risk hedging activities enhance operating efficiency that leads to enhanced firm performance. Munene (2013) results established a significant relationship between market risk hedging and financial performance. Eniola and Akinselure (2016) state that effective monitoring and controls significantly improve financial performance by helping the organization to significantly reduce fraud perpetration.

Beeler et al. (2014) states risk hedging and controls provide an independent appraisal of the quality of managerial performance in carrying out assigned responsibilities for better revenue generation. Control activities usually strengthen the firm's risk hedging functions, which in return enhances the efficiency and effectiveness of the operations affecting positively on the firms' performance (Munene, 2013). Saunders et al. (2016) states that risk-hedging involves risk management and control systems. Clinton et al. (2014) noted that it is not clear to what extent different levels of focus on risk based audit influences directly or indirectly an organization's risk management and internal control practices.

The COSO framework (2013) identifies five main elements of control systems against which the review should take place. These include Control environment, Risk assessment, auditing control activities, information and communication and monitoring. There is a general expectation that institution and enforcement of proper control systems will always lead to improved financial performance. The framework also found out that properly instituted systems of control improve the reporting

process and also give rise to reliable reports which enhances the accountability function of management of an entity. Auditing controls are put in place to ensure safe custody of all companies' assets; to avoid misuse or misappropriation of assets and to detect and safeguard company's resources against probable frauds.

In July 2002, the United States Congress passed the Sarbanes-Oxley Act (SOX) in an effort to reduce public concern over a number of high profile corporate failures in the US. Pfister (2009) documented that firms reporting control weaknesses have more complex operations; have experienced recent changes in organizational structure; are at increased exposure to accounting risks; and have fewer resources to invest in internal control. Furthermore, Beeler et al. (2014) indicated that firms with material weaknesses have a lower earnings quality than those that do not report material weaknesses. Additionally, Pfister (2009) showed a negative market reaction to firms that had reported material weaknesses in internal control per the requirement of Sarbanes-Oxley Act, Section 302.

2.3.3 Credit Risk Insurance

Credit risk could be reduced by reducing the risk of default by passing the responsibility of credit collection to the insurance company. This will reduce loss of credit repayment to the banks and therefore has a positive effect on the financial performance of the banks. This has the potential of increasing Returns on Equity, Return on Asset and Price Earnings Ratio. Credit insurance is one management tool that has gained relevance among managers in addressing today's business dynamics (Jae et al., 2000). It entails insurance of a business function (Jae et al., 2000; Dominguez, 2006; Isaksson & Lantz, 2015). It is the replacing of in-house provided activities by subcontracting it out to external agents. Consequently, the management and development of innovations activities become the responsibility of an agent external to the firm.

Jennings (2013) refers to credit insurance as the distribution of insurance products through banking networks; in other words, as the collaboration between banks and insurers to distribute insurance products to bank customers. Yazid et al. (2012) find that banking and insurance entities have more similarities than differences,

characteristics that may favour joint production and business synergies. Sev (2009) applied the expert panels and the analytical hierarchy process (AHP) to explore the most preferred alternative alliances between banks and insurance companies from executive management perspectives, supervisory authorities, and customers, respectively. Yazid et al. (2012) adopted the modified Delphi method to construct the framework of mutual fund performance and the AHP model to design an assessment method for mutual fund performance. Credit risk insurance avails organizations the opportunity to concentrate her core competencies on definable preeminence business area and provides a unique value for customers. Dominguez (2006); Großler et al. (2012) note the fact that present day insurance is no more limited to credit risk alone.

As noted by Jennings (2013) and Dominguez (2006) insurance activities also includes critical areas: design, manufacturing, risk management, distribution, information system. Outside Nigeria, notable companies which have this practices in place are among others Kodak Company who subcontracted its computing operations to International Business Machines (IBM); the result of which was higher quality computing system and operation at Kodak for less money than it was spending (Sev, 2009). Kargi (2011), investigated the impact of credit risk on the financial performance of Nigerian banks. Further, the study established that banks' profitability is inversely influenced by the levels of loans and advances, non-performing loans and deposits. This therefore exposes them to great risk of illiquidity and distress. Credit risk management was observed to have a significant impact on the profitability of banks. Another strand of studies has documented a negative relationship between credit risk and bank performance. A decrease in bank performance is observed when the level of credit risk goes up (Casu et al., 2006).

Some extant studies support a negative relationship between credit risk insurance and profitability. Kirogo et al. (2014) examined nonperforming loans and established their negative outlook on performance of banks. They reasoned that banks must deal with non-performing loans in order to perform well through various strategies such as debt factoring. Pancheva (2017) also reported a negative relationship between return on assets (ROA) and non-performing loans. Credit risk was found to be a vital predictor of bank's financial performance.

In the same vein, Roman and Tomuleasa (2016) Academy of Accounting and Financial Studies examined the impact of credit risk insurance on financial performance of commercial banks in Sri Lanka and found that the return on equity was negatively related to non-performing loans. To the contrary Alawattegama (2018) documented no relationship between non-performing loans and profitability, as the findings revealed that profitability of the banks were not influenced by nonperforming loans, suggesting that there were other variables at play to impact financial performance.

Mwau and Mulwa (2017) contended that high interest rates were the biggest problem during recession of 2007-08 even after the introduction of the National Credit Act which was signed into law by the President of South Africa in 2005. This caused over-indebtedness which ultimately led to default. An increase in interest rates makes repayment tough for borrowers (Wambui, 2013). Interest rate variations have financial stability implications, due to the fact that banks tend to accept higher risk exposure and have an increased risk appetite when interest rates are low, which in turn fuels inflation (González-aguado, 2014).

Inflation does not discriminate and affects performance of all banks negatively regardless of size (Ifeacho & Ngalawa, 2014). An economy that is doing well is synonymous with improved bank performance and closely linked to growth (Kumar & Dibakar, 2018). Shyu et al. (2014) refer to a similar study, which showed credit risk has a positive effect on bank profitability. The lending growth strategy, if not carefully assessed, has a negative effect on profitability of banks (Shyu et al., 2014). Banks tend to become risk aggressive in efforts to attain more market share (Kumar et al., 2018). Growth at the expense of appropriate credit assessment puts in jeopardy the ability to pay loans. This affects even adequately capitalised banks.

2.3.4 Capital Buffer

Capital Buffer (CB) is a measure against risk expressed in terms of capital. A bank may, for instance, wonder what level of capital is needed in order to remain solvent

at a certain level of confidence and time horizon. Capital Buffer is calculated internally by the company, sometimes using proprietary models and risk weighted average. The resulting number is also the amount of capital that the firm should have to support any risks that it takes (Berger et al., 2015). In other words, economic capital may be considered as the amount of risk capital from the banks' perspective; therefore, it differs from Regulatory Capital (RC). RC requirement measures (BCBS, 2006). Banks are expected to reserve enough capital at risk, which is the minimum amount of available capital to buffer the loss from investment beyond the expected loss. The value of capital at risk is generally known as economic capital (EC). This capital is fundamentally meant for taking investment decisions, while regulatory capital sets a minimum capital for types of risk in a bank under different rules and regulations (Isaksson & Lantz, 2015).

Economic capital is highly relevant because it can provide key answers to specific business decisions or for evaluating the different business units of a bank. It also provides an instrument for comparing regulatory capital (Allen et al., 2010) Profit per unit of risk can be used as a basis for sharing Economic capital in a bank. Further, economic capital allows an adequacy assessment of the bank's overall capital. Economic capital is mainly used for internal risk management purposes, but has different applications. Depending on the objectives of the tool and availability of data, a different methodology is required. The relevance and usefulness of economic capital depends on the extent to which senior management realizes the importance of the economic capital measures (BCBS, 2006).

One of the major challenges in capital buffer calculation is risk aggregation (Dawood, 2014). Capital buffer typically covers credit risk, market risk (including interest rate risk), operational risk, concentration risk and is sometimes extended to business/strategic risk, counterparty risk, insurance risk, model risk etc. The individual risk components are often estimated while ignoring potential interaction effects between them. Besides the interaction effect, also differences in horizons, confidence levels etc. might bias the calculations (Berger et al., 2015). At the same time most banks acknowledge that capital buffer is currently not used to its full potential, and that it often has the same use as regulatory capital. In future, they

expect to use it for identifying concentrations in the portfolio and for measuring and managing risk (BCBS, 2006)

The amount of available capital in excess of the required capital at risk is a measure determining the solvency of the bank, its ability to keep the promise to repay the funds to its own creditors (Gordon et al., 2015). In addition, it helps banks to stay competitive by making the cost of funds cheaper than lower-rated banks. Berger, Herring and Szego (2015) discussed the role of bank capital in value creation and pointed out that banks hold capital in excess of regulatory requirements to create competitive advantage. Allen, Carletti, and Marquez (2010) provided empirical evidence suggesting that a bank is undercapitalized relative to social-welfare optimizing levels, although it holds capital in excess of regulatory capital. It shows that the undercapitalized capital of the financial system leads to financial crises. Funding liquidity shortage due to bank credit deterioration leads banks to cut lending. Hence, loan supply and capital sufficiency is closely related. On the contrary, profitable lending and the low cost of raising capital increase a bank's risk taking capacity and help the bank build up capital to create more business opportunity (Calomiris & Kahn, 1991). The empirical results supporting this argument include the work by Olusanmi et al. (2013). Therefore, capital adequacy is crucial for the stability of the bank's on-going operations at the micro level.

In an investigation of how economic capital affected bank performance during financial crises, Berger et al. (2015) found a direct association and considerable impact of economic capital on bank profitability. They noted that while operating at international level, banking regulators demand high level of economic capital to make sure that the banks are more capable to take extra risks associated with global trading. According to Grace et al. (2015) there is a straight connection between the core capital held and the earnings of the local banks. They asserted that more capitalized banks are more profitable because they have sufficient financial resources to invest in high return investments which generate higher returns for the banks. Capital plays a vital role in the performance of a bank, as the banks that have higher capitals perform well as compared to undercapitalized ones. A direct association between economic capital levels and the bank profit was concluded in a study of

European commercial banks by Olila et al. (2016). A significant direct link between the core capital and profit of banks was also found by Manab et al. (2013).

Generally, banks are expected to absorb losses from their normal earnings. But there may be some unanticipated losses which cannot be absorbed by normal earnings. Economic capital comes in handy on such abnormal loss situations to cushion off the losses. In this way, capital buffer plays an insurance function (Auta, 2010). Adequate capital buffer in banking is a confidence booster. It provides the customer, the public and the regulatory authority with confidence in the continued financial viability of the bank.

2.3.5 The Bank's Size

The Herfindahl index (also known as Herfindahl–Hirschman Index, HHI, or sometimes HHI-score) is a measure of the size of firms in relation to the industry and an indicator of the amount of competition among them (Eikenhout, 2015). Named after economists Orris C. Herfindahl and Albert O. Hirschman, it is an economic concept widely applied in competition law, antitrust and also technology management. It is defined as the sum of the squares of the market shares of the firms within the industry (sometimes limited to the 50 largest firms), where the market shares are expressed as fractions. The result is proportional to the average market share, weighted by market share. As such, it can range from 0 to 1.0, moving from a huge number of very small firms to a single monopolistic producer. Increases in the Herfindahl index generally indicate a decrease in competition and an increase of market power, whereas decreases indicate the opposite. Alternatively, if whole percentages are used, the index ranges from 0 to 10,000 "points". For example, an index of .25 is the same as 2,500 points (Eikenhout, 2015).

The major benefit of the Herfindahl index in relationship to such measures as the concentration ratio is that it gives more weight to larger firms. The measure is essentially equivalent to the Simpson diversity index, which is a diversity index used in ecology; the inverse participation ratio (IPR) in physics; and the effective number of parties index in politics. Discussions of the role of firm size in explaining firm performance have been ongoing in the fields of business organization and industrial

economics. Early research, notably by Jelic et al. (2001) and Kakani et al. (2001) emphasizes the importance of scale economies and other efficiencies in larger firms. On the other hand, the structure-conduct performance paradigm highlights the importance of market concentration and conduct in explaining profitability. In particular, Barton et al. (2012) argues that the advantages of larger firms stem from their market power and greater access to capital markets.

With regard to the sources of competitiveness and profitability of firms, the relationship between market share and profitability is probably the most widely studied single phenomenon in management research (Lartey et al., 2013). For the past three decades, bodies of conceptual and empirical studies on the market share – profitability relationships have been conducted. Scholars argue that the market share reflects the current competitive position that a firm attains in the marketplace, so that firms with high market shares are considered to better satisfy customers' needs and, therefore, enjoy a competitive advantage against their smaller competitors (Fosu, 2013).

Since the first published study reporting a positive market share–profitability association, the nature of the relationship between market share and business profitability continues to be an important subject to research in economics. The debate regarding the underlying relationship has been fueled by inconsistencies in the magnitude of the market share-profitability relationship, the statistical significance of this relationship, and the direction of the relationship reported across studies and across models within the same study. Brooks et al. (2011) notes that the majority of studies on the topic find a linear positive relationship between market share and financial performance. Numerous studies have attempted to measure the determinants of bank profitability in the EU banking system, (Gibcus & Zoetermeer, 2003). Much of the research on the banking system in Bulgaria is related to its efficiency. There are no studies analyzing the market share – profitability relationship.

Sudanarao (2017) conducted a study on the efficiency of conventional and Islamic banks in Indonesia using the ratio of operational costs to operating income (BOPO).

He found that Islamic banks were more efficient. Conventional banks' BOPO was higher than 80 % since 2005, while that of Islamic banks was under 80 % since 2008. Even though ideally the BOPO should range between 60 % and 80 %, conventional banks do not fulfill their revenue targets due to their high costs. Another finding regarding the efficiency of shari'ah banking in Indonesia was reported by Feiguine et al. (2008), who used the DEA method. They revealed that shari'ah banks underperformed in the 2009–2015 period, and managers were incompetent to use their input resources effectively even though they had achieved a fairly optimal operation before. In other words, Islamic banks in Indonesia operated inefficiently during said period. From the various findings in bank efficiency studies in Indonesia in different periods of observation, it can be concluded that banks in Indonesia, still today, do not operate efficiently. Consequently, further research is needed regarding the factors that may cause bank efficiency (Jeroh, 2015).

Studies into factors that cause bank performance have been carried out before, but the results showed inconsistencies in the variables (Hanim, 2016). Glantz, (2013) examined small and large-scale banks in Italy. The results of their research indicate that inefficiency is inversely correlated with the strength of capital and positively related with the level of non-performing loans. Their analysis also showed that there is no clear relationship between asset size and bank efficiency.

In contrast, Pagach (2010) examined 364 banks in 10 countries that were new members of the European Union. They found that almost all the banks had increased their efficiency during the 1994-2005 period. Bank size, market concentration, and economic situation, according to them, are the factors that determine efficiency. Allen et al. (2010) examined 26 banks in Ghana during the 2004–2011 period and revealed that the variable interbank competition determines bank efficiency in Ghana. In addition to the level of competition, they found that company size, leverage, and non-interest income are other variables that may produce bank efficiency.

The results of those studies show that efficiency research is still focused on financial aspects, while non-financial ones have not been widely investigated. One of those

non-financial aspects is intellectual capital (IC), which has been defined as an asset that can create value to help companies achieve and maintain their competitive advantage.

2.3.6 Financial Performance

Financial Performance is based on how well a bank is performing over a period of time and is expressed as its profitability or losses incurred over the time under consideration (Jeroh & Okoye, 2015). Banks that perform very well are considered to be equipped to withstand stress or resist negative shocks occurring in their environment. Thus, contribute immensely to the stability of the financial system of the country (Carletti & Marquez, 2010). Return on Assets (ROA) shows the ability of a bank to generate profits on the management of its assets. This is the key ratio normally used by the bank to measure profitability of the bank.

Performance indicate a well doing or otherwise while financial performance is likened to positive or negative financial result. Financial performance is a subjective measure of how well a firm can use assets from its primary function of business to realise revenues. It refers to a firm's overall financial health over a given period (Oluitan & Ashamu, 2015). Many times, it is instructive to analyse the financial performance of a firm to get a clear picture of the firm's financial performance. Bank financial performance analysis shows a bank's operating and financial characteristics of its financial statements. The goal of such analysis is to determine the efficiency and performance of bank's management, as reflected in the financial records, management account and other reports (Oyerinde, 2014).

Georgeta and Elena (2015) investigated potential factors of influence on corporate financial performance. The analysis was conducted on Romania's case and included a sample of 46 companies listed on the Bucharest Stock Exchange, within 2009-2013 period. In the first part of the analysis the companies have been classified using factor analysis and further, based on it, we have performed a cluster analysis using SAS program. Subsequently, selected variables were tested using multivariate

regression models for unbalanced panel data. The results are contradictory regarding the impact of company size. Based on the accounting approach we obtained a positive impact determined by the number of employees, while based on the market approach, performance is negatively correlated with total assets. In terms of indebtedness a negative relationship was revealed. At the same time, the relationship regarding transparency and disclosure in reporting was not statistically validated.

2.4 Empirical Literature

This section contains review of previous literature related to the effect of various enterprise risk management strategies on firm financial performance. Empirical review was done to identify the research and knowledge gaps in this field of enterprise risk management strategies and firm financial performance.

2.4.1 Credit Diversification and Financial Performance

In Yibing et al. (2013) the effects of credit diversification on the Chinese banks' return and risk from the aspect of sector was investigated. Panel data on 16 Chinese listed commercial banks during the 2007–2011 period is used for the study. We construct a new diversification measure, taking systematic risk of different sectors into consideration by weighting them with their betas and compare the results with those of more conventional measure HHI. It was found that sectorial credit diversification is associated with reduced return and also decreased risk at the same time, which however, contradicts existing findings in developed countries such as Italy and Germany, and also in emerging economies such as Brazil and Argentina.

Adzobu (2015) conducted a research to test whether diversification of credit portfolios across economic sectors leads to improved profitability and reduced credit risks for Ghanaian banks that have been characterized by high non-performing loans in recent times. Static and dynamic estimations, namely Prais-Winsten, fixed and random effect estimators, feasible generalized least squares as well as the system generalized methods of moments are employed on the annual data of 30 Ghanaian banks that operated between 2007 and 2014 to determine the effect of loan portfolio diversification on bank performance. The

study shows that loan portfolio diversification does not improve banks' profitability nor does it reduce banks' credit risks. The study focuses on a single banking system in Africa largely as a result of data limitation. The study emphasizes the need for banks to perform a careful assessment of the effects of their lending policies geared toward increased sectoral diversification on their monitoring efficiency and effectiveness. This study is to find effect of enterprise risk management on financial performance of listed banks at NSC.

Doaei et al. (2014) focused on credit diversification and financial performance in Bursa Malaysia. The study was done among 102 manufacturing firms listed in Bursa Malaysia during 2006 to 2010. Two regression models were run with return on assets (ROA) as a dependent variable. Also, the main independent variables are total product diversification (TPD), related product diversification (RPD), unrelated product diversification (UPD), international diversification (ID). The results showed product diversification and unrelated diversifications are not significant; however, related diversification and international diversification have negative impact on financial performance. This research failed to consider sectoral diversification of credits and was based on product diversification.

Chen and Lin (2014) examined the effect of diversification on risk and return of Taiwan domestic commercial banks using unbalanced panel data from 1997 to 2009. Returns were measured using ROA, ROE and Net Interest Margin (NIM) while risk was measured using a ratio of non-performing loans to total loans (NPL), the ratio of loan loss provision (LLP) and a Z-score measure of insolvency risk. Diversification was assessed as revenue diversification and credit diversification and measured using HHI. The study reported a significant negative effect of loan diversification on all three profitability measures.

Credit diversification, however, improved the NPL ratio and therefore reduced a bank's risk. This study was based on Taiwan economy which is more developed than Nigerian economy. Herfindahl-Hirschman index (HHI) was used to measure while this study will use ratio of non-performing loan to total loan. Iqbal, Hameed and Qadeer (2012) conducted a study on impact of diversification on firms' performance.

The data was collected through secondary research and Stock Exchanges sites were the source of information to collect the data of the companies. Total 40 companies were selected on the basis of Specialization Ratio (SR). Companies whose information were available and remained in the same category for the entire 5 years (2005-2009) were included in sample. The results of this study showed that there is no positive relationship between diversification and firms' performance. All firms are performing equally whether they are highly diversified firms, moderately diversified firms or less diversified firms with respect to their return and risk dimensions. The time context for this study is a period of 10 years. Both banks and NSC are the sources of data.

Adamu et al. (2011) conducted a study on evaluation of the impact of product diversification on financial performance of selected Nigerian construction firms. Financial statements from seventy construction firms were analysed. The specialization ratio method was used to measure and categorize the firms into undiversified, moderately diversified and highly diversified firms, and profitability ratios were used to measure the group-wise performance of the firms. The Student t-test was used to test the relationship between the extent of diversification and performance. The findings reveal that undiversified firms outperform the highly diversified firms in terms of Return on Total Assets and Profit Margin. This study was based on financial industries, listed banks and external return measurement of performance, P/E ratio will be used in also.

Santarelli and Tran (2013) conducted a study on diversification strategies and firm performance. The study applied parametric and semi-parametric approaches to control for sample selection and endogeneity of diversification decision in both static and dynamic models. After controlling for industry fixed-effects, empirical evidence from firm-level data showed that diversification had a curvilinear effect on profitability: it improves firms' profit up to a point, after which a further increase in diversification is associated with declining performance. This implies that firms should consider optimal levels of product diversification when they expand product offerings beyond their core business.

Other worth-noting findings include: factors stimulating firms to diversify do not necessarily encourage them to extend their diversification strategy; firms which are endowed with highly skilled human capital are likely to successfully exploit diversification as an engine of growth; while industry performance does not influence profitability of firms.

Faisal et al. (2011) conducted a research in Pakistan. This study is conducted to find out the main determinants of banks profitability considering the bank specific variables. The analysis was conducted on 16 banks on the basis of availability of data over the period 2000 to 2010. This study uses fixed effect model and random effect model to examine the impacts of net interest margin, profit to asset ratio, bank size, loan growth, non-interest earning, overhead expenses, taxation, insider lending, operating expenses, non-performing loans, return on asset ratio and deposit to asset ratio. The empirical results show a strong association between some banks specific variables and their profitability.

The variables of deposit to asset ratio, deposit to loans ratio, loans to asset ratio, insider lending, non-performing loans, net interest margin, tax, non-interest income and return on asset are the main determinant of banks profitability in the analysis. Furthermore, the banks are divided into two groups according to their market capitalization i.e. large and small banks. LNG is significant at 1% with positive value (3.56734) indicating that with loan growth, the bank's capacity to earn more in the market enhances. In case of small banks, the variable of loan growth is insignificant. Hence, the non-performing loans are seriously reducing the profitability of banks in small banks.

2.4.2 Market Risk Hedging and Financial Performance

Kirogo et al. (2014) conducted a research in Nakuru town in Kenya on the effect of market risk hedging on financial performance. Inferential and Descriptive statistics was used to analyse the data. Since the population was a small number of 52 management employees in 27 commercial banks census survey was employed in the study. Data was collected through the use of questionnaire. The analysis of the result was presented through mean, standard deviation and percentages. It was concluded

that there were positive relationship financial performance of the commercial banks and market risk hedging.

Risk assessment enables the commercial banks to detect risks on time and concentrate on high risk areas leading to increased transparency and accountability and enhanced financial performance of insurance companies. Thus the study has found a strong association between market risk hedging as a strategy and financial performance of commercial banks. The study will be conducted in listed banks which is basically money market as against capital market of insurance firms.

Tahir and Razali (2012) conducted a study on the use of risk hedging by Australian companies. The purpose of this study was to explore the voluntary use of interest rates hedging by Australian publicly listed companies and to identify factors that lead listed banks to have a risk management function. To test the predictions, the study combined data from a survey of listed banks with information from corporate annual reports. The study also provided descriptive information on the use of risk management strategy. The result indicated that only one-third of the sample companies use risk hedging strategy. While size appeared to be the dominant driver, there is also a strong association between hedging strategy and the level of commitment to risk management. However, the study found only weak support for an association between the use of information processing and strong corporate performance. This study was based on Australian economy which is more developed than Nigerian economy and also effect of RM on financial performance of listed banks.

Al-Matari et al. (2014) study focused on the effect of the market risk hedging and firm performance. This study attempted to propose a structure of the relationships between the market risk characteristics (MRC); the professional qualifications of the chief risk executive of the risk management department (RMD), size, experience, and qualification; and firm performance. The presence of an internal audit department is significant as it is considered as the main element in employing accounting systems and this, in turn, assists in evaluating the department's work. The risk management section is deemed as the core of business accounting as it is the

section that keeps track of all businesses risk associated with the sector. The risk management efficiency assists in developing the company's work but the financial performance reports present a weak association.

Ziaee (2014) conducted a study on the effect of market risk hedging on the performance of listed companies in Tehran Stock Exchange. This study sought to examine the relationship between market risk hedging and financial performance of financial companies in Iran. For this population the financial manager is accepted in Tehran Stock Exchange and 2008 to 2012 have been selected. Distribute and collect the questionnaires they reached the conclusion that audit quality could not affect the financial performance of companies. This study examined the effect of risk management strategies on financial performance of listed banks in Nigeria with a secondary data sourced from audited financial report.

Norris, Shazia and Marta (2010). In *Advanced information Systems Engineering*, they research on managing financial performance and credit risk management. While such efforts are often supported by information technology (IT) and information systems (IS) tools, there is evidence that the current solutions are inadequate and do not fully address the needs of organizations. Often such discrepancy stems from a lack of alignment between the needs of the industry and the focus of academic research efforts. In this paper, we present the results of an empirical study that investigates challenges in credit risk management, derived from expert professionals in the Australian banking industry. The results provided insights into problematic areas within the risk management domain, as related to regulations and IT compliance management solutions. By relating the identified challenges to existing activity as a result of shortages of professional experts in IP field of industries.

Allen et al. (2013) confirmed the existence of a positive and significant relation between the use of currency derivatives and firm value for a sample of American firms. The authors found a nearly 4.87% hedging premium. A study by Carter et al. (2006) on effect of commodity price hedging by American airline companies showed that hedging with relation to oil prices in the airlines industry is positively related to firm value and the hedging premium reaches over 5%. The authors showed evidence

that the greatest benefit of hedging in this sector would be the reduction in underinvestment costs because the fuel price is highly correlated to the investment opportunities in the sector. The study also showed that firms can survive from following appropriate hedging strategies where the “intensity” of hedging is positively associated with the firm value.

Nwite (2014) investigated challenges facing the use of financial derivatives in hedging interest rate risk by commercial banks in Kenya. The study investigated five commercial banks two big banks, one medium and two small banks as per Central Bank of Kenya commercial banks classification. According to the results from the effort by commercial banks in Kenya to employ the use of derivatives for purposes of hedging against interest rate risk, are mainly hampered by the financial institution policy and market trading platform technology. Though the Central Bank of Kenya has adequate structures at hand to hedge interest rate risk using derivatives among commercial banks in Kenya, the banks’ financial institution policies and trading platforms hampered the hedging interest rate risk using financial derivatives.

Bierc (2013) noted that participants in the stock market utilized stock futures and options in respect to their portfolio strategies. The researcher however found out that futures stock market compared to that of other financial derivatives such as interest rate, stock index futures and options led to positive growth and liquidity of underlying stock market. Though the study focused on two financial derivatives, it does show a relationship between equity hedging practices and firm performance. Price Water House Coopers (2012) in their survey found out equity prices was one of the most areas that managers considered to be part of market risk. Jorion (2013) in his study identifies that the central bank plays an intervening role in the economy of a country due to its autonomy, political and economic independence.

Gordon (2015) found no statistical evidence of relationship between central bank performance and the degree of financial market development. However, in line with Krahnert (2016) found similarity in the sense that the strength of the private banking sector was positively correlated with meeting targets more consistently, since the soundness and financial strength of private banks are both negatively correlated with

inflation deviations. Reviewed studies have also shown mixed association between hedging and firm performance.

2.4.3 Credit Risk Insurance and Financial Performance

In a research to explore credit risk insurance strategy among financial firms, and to test how these strategy can be linked to financial performance (Return on Investment and Return on Equity), Isaksson and Lantz (2015) applied multiple regression on the data collected through a stratified sample of 700 small (<50 employees) insurance using insurance cost ratio, and realized that, there is no significant relationship between the strategies (Backoffice activities, Primary activities, Accounting activities, and Support activities) and financial performance measured in terms of return on investment (ROI) and return on equity(ROE). This research however, did not delve in the effect of credit insurance strategies on banks performance. Also, the research was carried out in Sweden whose business environment is better established and so different from that of Nigeria.

Gyemang et al. (2014) used a descriptive approach to analyze and evaluate the impact of credit risk insurance in the banking industry in Ghana. Questionnaires were administered to fifty (50) respondents comprising core management staff and other key heads of the departments and the main staff. Insurance cost to total loan granted was used as measurement. At the end of the research, they concluded that, banks have been concentrating on their core functions in the areas of leasing and advances services and have insured most of their non-core functions and there is a positive relationship with financial performance. This research was carried out with a very limited sample of only 50 respondents and also, did not point out clearly the various strategies embarked upon by the organizations.

Yeboah (2013) examined the relationship between credit risk insurance and organizational performance in the services sector using SPSS to correlate the variables and data gotten from a population of 50 firms operating in the banking and insurance sectors of the economy of Ghana reported that, there is no statistically significant correlation between credit risk insurance and organizational productivity, there is statistically significant correlation between credit risk insurance and quality,

there is statistically significant correlation between risk insurance and competitive advantage. This research however fails to consider the effect of the strategy on organizational profitability.

Akewushola and Elegbede (2013) examined the axiomatic relationship between loan risk insurance strategy and organizational performance in Nigeria manufacturing sector. They adopted a stratified sampling technique to arrive at 120 sample elements for the study. Some of the top and middle level managers of Cadbury Nigeria Plc and Nestle Foods Plc responded to the questionnaire administered and were interviewed to further elicit information on the key variables. Data obtained were analyzed using Regression analysis, the researchers realized that, firms that insured their loan facility experienced reduced average cost, increased sales turnover and profitability, enhance expertise, improve service quality, reduce staff strength, streamline the production process, reduced administrative burden and save time for core activities. The research however, is limited to the manufacturing sector of Nigeria. This research gives a very good background for the assessment of the effect their insured bank facility had on the performance of their enterprises and this will be conducted in financial industry.

Mugera (2013) conducted a study on the effect of foreign exchange risk management on the value of firms listed at the Nairobi Securities Exchange. Data was gathered for a period of five years from the year 2008 to the year 2012 based on twenty nonfinancial companies listed at the NSE. To test this, Tobin's Q model was employed in calculating firm value and the study has found that hedging foreign exchange risk does not significantly contribute to firm value. The study found that on average foreign exchange risk management does not contribute significantly to firm value. The data used for this research will be based on 10 year period while multiple regression analysis will be applied for the test. The study was conducted in financial firms, banks.

Suraju and Hamed (2013) examined insurance services as a strategic tool for organizational performance in the Nigerian food, beverage, and tobacco industry,

used two estimators. This research considered insurance as a generic strategy instead of pointing out specific insurance strategy embarked upon by these organizations.

2.4.4 Capital Buffer and Financial Performance

Brooks (2011) aimed to find out influence of financial leverage of automotive cluster companies on shareholders' return and market capitalization by using statistical tools in Indian. They took the sample of seven major automotive public companies. The study covered five years' time period from 2006 – 2007 to 2010-11. Linear simple regression was used to analyze the data by SPSS IBM-19 version by taking independent variables as financial leverage and the dependent variables are shareholders' return and market capitalization. The results indicate that there is no significant influence of financial leverage on shareholder's return and market capitalization. The study also concludes that there might be other non-quantitative factors which may lead to nullify the impact of financial leverage on shareholders return like recession, saturation of auto industry, competition and government policy. The research was carried out in Indian whose business environment is better established and so different from that of Nigeria. Moreover, this study will be carried out in the financial industry, listed banks.

Akhtar et al. (2012) demonstrated that economic capital has got a positive relationship with financial performance". Hence, the companies in the fuel and energy sector may enhance their financial performance and can play their role for the growth of the economy while improving at their optimal capital structures. In their study they employed a sample of 20 listed public limited companies from Fuel and Energy sector listed at Karachi Stock Exchange (KSE). The study aimed at measuring the relationship between economic capital and the financial performance. To test the hypothesis, the main variables used in the study consist of a dependent variable which is financial performance of fuel and energy sector while an independent variable financial leverage in fuel and energy sector. This present study is in financial sector of the economy, also in a less developed country.

Saber (2013) investigates the effect of financial leverage and environmental risk on performance of firms of listed companies in Tehran Stock Exchange. The variables

of free cash flow per share and return on equity were dependent variables while economic capital and economic risk were used as the independent variables for 95 firms during 2005 through 2011. Panel data and multiple regressions were used to test the hypotheses. Findings indicated that there is a negative relation between financial leverage and free cash flow per share. Also relationship between economic capital and economic risks, and free cash flow per share is positively significant. The study found a positive significant relationship between financial leverage and return on equity. The independent variables in this study comprises of ERM strategies and ROE as the independent variable. The country of study is Nigeria with less developed commercial activities.

Espireh et al. (2013) investigated the association between capital structure and financial performance of 380 companies listed on Tehran Stock Exchange (TSE) for a period of 11 years from 2001- 2013, using the pooled data regression technique. The result showed that debt to common equity was significantly negatively associated with return on capital, while short-term debt to common equity is significantly positively associated with it. Results also indicated that debt to asset ratio has a significant negative relationship with ROA. However, the result also confirmed that no significant relationship between financial leverage (debt to asset ratio, short-term debt to asset ratio, long-term debt to asset ratio and long-term debt to common equity) and all financial performance variables. This study investigates the effect of ERM strategies on financial performance of listed banks at Nigeria Stock Exchange for a period of 10 years.

Fosu (2013) examines the relationship between capital structure and firm performance, paying particular attention to the degree of industry competition, using panel data comprising of 257 firms in South Africa with period 1998 through 2009. The results indicated that financial leverage has a positive and significant effect on firm performance. Also, it was found that product market competition enhances the performance effect of leverage. To conclude this empirical survey of literature, it appears that there is no consensus on the relationship between financial leverage behaviour and firm performance using some corporate performance measures (profitability and firm size) in Nigeria. Towards this end, this study investigated

financial leverage behaviour and firm performance with evidence from publicly quoted companies in Nigeria.

2.4.5 Bank Size and Financial Performance

Bank size in this study can be defined by percentage of market share of turnover in the banking industry. The larger a bank is, the better the influence size can exert in the industry and make enormous impact on the interest of its stakeholders (Adebiyi, 2016). The size of any organization remains an important factor to consider in business operations especially as regards how large or small a banking institution is in the industry. Bank size as employed by this study is to demonstrate its moderating influence and effect on the financial performance of the banking institution especially with a view to controlling and managing the cost/expense and income/revenue in practice. Market share of banking industry turnover was used by this study as a proxy of bank size to capture the possible risk advantages associated with size (economies of scale) (Kariuki et al., 2016).

Atif et al. (2015) conducted a research to investigate the moderating effect of firm size in the relationship of firm growth and firm financial performance. For this purpose, 50 financial firms concerning to different sectors were targeted to get the data for year 2012. The data has been collected from the financial statements of the companies, listed in Karachi stock Exchange, for year 2012. Before application of the regression analysis, the unit root test, variance inflationary factor (VIF) have been applied to check the stationary of the data and to resolve the problem of multi-co-linearity if exist. The researcher used the regression equation. For empirical analysis, the cross sectional secondary data has been gathered from 50 firms listed in KSE for year 2012. Afterwards, the results were obtained with findings that interaction term (size*growth) has significance effect on the firm performance, furthermore, by adding this interaction term, the explanatory power of the model (R^2) is also showing the significant change, which support the hypothesis of the research. Therefore, the hypothesis of the research that the firm size has moderating effect between the relationship of firm growth and firm performance was accepted on the basis of the statistical results.

Kirogo (2014) conducted a study to evaluate the relationship between firm size and financial performance. This research was carried out using a correlational design. The target population of this study was all the 43 commercial banks in Kenya as at 31st December 2012. The panel data to be used was data from 1998 to 2012. This study used secondary data which was collected from Central Bank of Kenya and bank themselves. Firm size was measured using net assets, total loans, total deposits (measured in Kenya shillings) and number of employees. Financial performance was measured using Return on Assets (ROA). Data which was collected was analyzed using correlation and regression statistics. Analyzed data was presented in tables. Study findings indicate that there is moderate correlation between three of the studied factors of bank size which include total deposits, total loans and total assets.

In Kioko (2010), relationship between three of the independent variables, namely, total loans, total deposits, and total assets and the dependent variable (financial performance- ROA) of commercial banks were all found to be statistically significant. Total deposits and total loans had relatively stronger effects on financial performance compared to total assets. There was no significant relationship between number of employees and financial performance for commercial banks in Kenya. The study recommends that in order for commercial banks to increase their performance (profitability) there is need from commercial banks to increase size by increasing various aspects of customer base, net assets, deposit liabilities and market share.

Hapsari (2018) proposed to measure the effect of Loan to Deposit Ratio and Non-Performing Loans Ratio toward Financial performance proxied by Return On Assets (ROA) with firm size proxied by total asset used as a moderating variable. The population in this research is commercial banking in Indonesia during 2012- 2016 periods. Samples were taken by purposive sampling method and obtained 65 data from 13 banks of Business Group Commercial Banking Bank (BUKU) 3 and 4. Moderating Regression Analysis with absolute difference method was used to examine the research. The result showed that Loan to Deposit Ratio has a positive effect toward financial performance, Non-Performing Loan has negative effect

toward financial performance, while Size is not moderating both the effect of Loan to Deposit and Non-Performing Loan toward financial performance.

In order to evaluate the effect of bank size on financial performance of banks in Bangladesh, the study of Saha et al. (2013) could be considered. The study aims to investigate the potential effects of firm size and firm characteristics such as age and independent director on profitability of banking companies listed on Dhaka Stock Exchange (DSE) in Bangladesh. In this study, fifty (50) annual reports of 10 banking companies which were active in DSE between the years 2011-2015 are analyzed. As indicators of firm profitability, Return on assets (ROA) and Return on equity (ROE) was used whereas Total assets, Capital requirement and Number of branches was utilized as indicators of firm size. Multiple regression analysis was developed to identify the factors that affect firms' profitability. The results of empirical analyses showed that firm size positively affects profitability. Besides firm size, others firm specific factors such as age and independent director on board are negatively influencing firms' profitability of the firms operating in Bangladesh banking industry. The results should not be generalized as the sample was based on only banking companies listed on DSE in Bangladesh. The study based on only two financial performance indicators i.e.; ROA and ROE.

In a bid to evaluate the effect of bank size to determine whether small sized or large sized banks influence the financial performance of banks in Australia, the study of Tasche (2004) was also considered. The study concentrated on investigating the influence of efficiency, effectiveness and risk in the Australian banking industry for the period from 2000-2010 using 6 banks as sample. It employed a three-stage DEA technique to measure sources of profitability which are risk, efficiency and effectiveness. The study made use of DuPont financial ratio analysis method to determine inputs and outputs variables of the DEA model. The variable of profitability was decomposed for its clear understanding result into three components. Findings indicate that, the effectiveness of the large sized banks is greater than the small sized banks. Contrarily, the small sized banks are able to achieve higher performance scores. It was also revealed by the study that, some banks gain their profits due to taking higher risk rather than others which might not

take for a sustainable longer term. The result clearly shows that bank size (large or small) have significant effect on the diversification and economic capital of risk management strategies of such bank in terms of its total number of employees. This empirical evidence has been supported by studies from Lawal (2018) and Maina (2013).

In a different empirical attempt in another economy, Ebenezer et al. (2017) investigated the determinants of financial performance in the Nigerian banking industry. Data were collected from secondary source of the CBN for the study for 19 selected banks for the year 2009. Three performance efficiency measures of constant returns to scale (CRS), variable returns to scale (VRS) and scale efficiency models used by employing the data envelopment analysis (DEA) approach. The entire estimation process was done by DEA frontier software. The findings reveal that, bank size and bank age are positively related to bank performance efficiency, while board independence and ownership structure are negatively related to bank performance in Nigeria. The result implies that, strong and efficient resource management were lacking in the employment of cost inputs and outputs of the banks.

2.5 Critique of Empirical Studies

This subsection presents the issues for further research and investigation as highlighted from the various studies reviewed on risk management strategies and financial performance. Critical review of the extant empirical studies in terms of objectives, variables, methodology, conclusions and research gap revealed a lot of related methodology issues, demanding further research.

Doaei, Ahmad and Ismail (2014) focused on diversification and financial performance in Bursa Malaysia. The study was done in 102 manufacturing firms listed in Bursa Malaysia during 2006 to 2010. The finding of this study could not be applied to Nigeria since Nigeria and Malaysia have different socio-economic and political settings. Doaei, Ahmad and Ismail (2014) clearly failed to demonstrate the theories on which the hypotheses tested were based as well as its shortness in sample size which could impede its logical relevance. Similarly, Maina (2013) on the other hand failed to demonstrate any theoretical foundation on which to anchor its

submissions, notwithstanding the establishment of the specification effects in the study. The study was conducted on the relationship between product diversification and financial performance of commercial banks in Kenya. The objective of this study was to establish the relationship between product diversification and financial performance of commercial banks in Kenya.

In addition, Adamu et al. (2011) did not provide any theoretical construct to base its empirical evidence as well as the short period of study. They conducted a study on evaluation of the impact of product diversification on financial performance of selected Nigerian construction firms. The context of this study was construction firms which ignored the financial firms. Kirogo et al. (2014), demonstrated a high level of compliance with extant empirical findings but lacked any theoretical foundation. This could provide a ground to puncture the empirical effect of its results on bank financial performance. As a result, these studies were found to have failed in establishing the nexus between the various explanatory variables employed and the response variable of the studies.

According to Gujarati et al. (2010) and Greene (2012), Housman specification should be performed to detect specification errors when ordinary least square is employed in line with the Classical Linear Regression Model (CLRM) standard. Despite the multi-dimensional approaches demonstrated by Ziaee (2014), it failed to establish normality test for the parametric data distribution employed, hence its results generalization could be punctured due to heterogeneity problem.

Brooks, (2011) also failed to observe the Gauss- Markov theorem in its study of cross boarder and multilevel framework. The failure of the study to establish diagnostic checks on which efficiency and consistency of the regression estimates were based could affect its findings. Isaksson and Lantz (2015) equally failed to demonstrate the specification effects of the balanced panel data employed in their studies which could form the bases for empirical validation. Mugeru (2013), failed also in the specification effects test for its study. Bank specific, industry and macroeconomic factor attributes needs to be established to avoid falling into heteroscedasticity and time specific error, which could have impact on findings and

its validity (Greene, 2012). Gyemang et al. (2014) clearly failed to demonstrate the unique firm attributes required in the study which could affect the efficiency and consistency of its findings.

According to Gujarati and Porter (2010), Classical Linear Regression Model assumptions should be observed for relevant diagnostic tests in order to have efficiency and consistency in the regression estimates where OLS is employed in a study. This will give assurances, that the estimation model is fit and indicates that it is best linear unbiased estimate (BLUE). Gyemang et al. (2014), was found to have failed the OLS assumptions and appropriate diagnostic checks as well as the possibility of variable measurement problem, hence this could affect the validity of their submissions. Also, the issue of heterogeneity was observed in Suraju and Hamed (2013) study that employed 4 estimation methods of regression models of pooled OLS, fixed and random effect modelling and Tobit censored regression were employed at the same time. This is at variance with Gujarati (2010) stating that OLS has minimum variance that depicts best linear unbiased estimators which are expected to form bases for establishing statistical findings.

Finally, the existing studies have shown weak or low consideration empirically in the investigation of risk management strategies and financial performance as clearly demonstrated in the western world not as a result of lack of research interest but for lack of understanding of the theoretical, conceptual and empirical constructs of the subject matter of risk management in banking. For instance, Fosu (2013)'s period of study could be punctured for shortness of evaluation for risk management activities in the banks. Furthermore, the state of our financial markets and financial service industry may have contributed to this empirical dearth in Africa and Nigeria in particular. Some of the studies reviewed showed weak consideration for examining the role of management of risk but concentrated on bank performance mostly ignoring the possible effect of variables like credit risk diversification, credit risk exposure, hedging against credit exposure and capital buffering (Gweyi, & Karanja, 2014).

2.6 Research Gaps

Roles of financial institutions in the economic process are strategic. It represents the heart of the national economic life and the nucleus of the economic survival around which other sectors are tangential. The centrality of the banking sector also makes the sector to attract much attention in research. However, there is a knowledge gap on the effect of risk management strategies and financial performance especially in financial sector. Therefore, this study intends to address this research and knowledge.

Studies have been conducted on the financial performance of financial sector in Nigeria. These include Olajide et al. (2011) who investigated the impact of financial sector reforms on banks performance in Nigeria. Oluitan et al. (2015) on the other hand investigated the effect of recapitalization on bank performance in Nigeria. Abdul-Qadir and Kwanbo (2012) study focused on corporate governance and financial performance of banks in the post-consolidation era in Nigeria. Eniola and Akinselure (2016) on their part focused on dividend policy and financial performance of financial sector in Nigeria. The above mentioned studies shows that some works has been done in this area, however there is a research gap on the effect of risk management strategies and financial performance of listed banks in Nigeria. This has not been intensively explored.

Suraju and Hamed (2013) considered risk insurance as a generic strategy instead of pointing out specific credit risk insurance strategy embarked upon by these organizations; Akewushola and Elegbede (2013) limited theirs to the manufacturing sector of Nigeria and also did not specially outline and assessed the effect of various strategies on banks profitability. The research by Isaksson and Lantz, (2015) is very pertinent here. He did a study on the specific credit risk insurance strategies and their effect on SMEs financial performance. This research however, was done measuring financial performance in terms of return on investment (ROI) and return on equity (ROE) leaving out profitability and price earnings ratios (P/E) which is the main focus of most banks businesses. The effect of RM adoption of economic capital is dependent upon whether the firm decides that it needs to lower its risk exposure in these areas, or whether the firm decides that because of RM, it can afford to bear

more financial risk. Thus the impact of capital buffer management adoption on financial performance is unclear.

Suraju and Hamed (2013)'s research considered risk insurance as a generic strategy instead of pointing out specific credit risk insurance strategies embarked upon by these organizations; Akewushola, and Elegbede (2013) limited theirs to the manufacturing sector of Nigeria and also did not specially outline and assessed the effect of various strategies on SMEs profitability. The research by Isaksson and Lantz, (2015) is very pertinent here. Isaksson and Lantz, (2015) did a study on the specific insurance strategies and their effect on SMEs financial performance. This research however, was done measuring financial performance in terms of return on investment (ROI) and return on equity (ROE) leaving out profitability which is the main focus of most banks businesses. Banks, especially in developing countries like Nigeria, focuses on their profitability and so measures their successes primarily based on the difference between the money spent on a project and that realized. This informs the essence of replicating such a research in Nigeria and also focusing on profitability rather than other performance measures. This has created a gap which this research sought to fill.

2.7 Summary of the Literature Review

From the theoretical review, five theories have been advanced that explain the adoption of risk management practices in organizations. The theories are Contingency theory, Modern Portfolio theory (MPT), Agency theory, financial intermediation theory and Extreme value theory. The reviewed theories are then critiqued for relevance to specific variables. The chapter also explored the conceptualization of the independent and the dependent variables by analyzing the relationships between the two set of variables. The empirical review shows a number of studies that have examined the impact of Risk management on financial performance. The results show mixed results and therefore inconclusive. Further studies have measured Risk management theory strategies using different methods which may not significantly explain the effects of risk management on financial performance. However, there is a knowledge gap on the effect of risk management

strategies and financial performance especially in financial sector. Therefore, this study intends to address this research and knowledge.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides details about the methodology adopted to assist in achieving the research objectives. It details research design, research population, sample and sampling techniques, data collection instruments, data collection procedures, pilot testing and data processing and analysis. In this study, the methodology refers to how the research was done and its logical sequence.

3.2 Research Philosophy

Literature highlights two major research philosophies, namely positivist also known as scientific and interpretivist or subjectivism. Positivists believe that reality is stable and can be observed and described from an objective viewpoint (Levin, 1988), without interfering with the phenomena being studied. This often involves manipulation of reality with variations in only a single independent variable so as to identify regularities in, and to form relationships between some of the constituent elements of the social world. Positivism is said to be in the realm of theory, where the data is theory driven and design to test the accuracy of the theory (May, 2002). Predictions can be made on the basis of the previously observed and explained realities and their inter-relationships.

Subjectivism or interpretivists contend that only through the subjective interpretation of and intervention in reality can that reality be fully understood (Kothari, 2004). The study of phenomena in their natural environment is crucial to the interpretivist philosophy, coupled with the acknowledgement that scientists cannot avoid affecting the phenomena they study (Kothari, 2004). Subjectivism focuses on the meaning the individuals give to their environment and not the environment itself. This adopts a positivistic philosophical perspective. It utilized an empirical setting to investigate the theoretical relational paths drawn from literature and test them through hypotheses. The conceptual framework sought to quantify the

data for the purposes of explaining the causal relationships. This study was based on the premise that knowledge was founded on facts and that no abstractions or subjective status of individuals is considered.

This study therefore, sought to derive a quantitative perspective, which holds that there is an objective reality that can be expressed numerically, with explanatory and predictive power (Neuman, 2006). Positivism argues for continued use of the most logical, dominant, or relevant framework and that the objective reality exists beyond the human mind (Hjorland, 2004). This study adopted a positivistic philosophy as it aimed to offer explanations on the sourced data. This approach also comprised of quantitative research tools and techniques.

3.3 Research Design

Eriksson and Kovalainen (2008) explain that research design is a plan that guides the research in the process of collecting, analyzing and interpreting observations; the researcher's blueprint for the methods and instruments used in collecting data and evaluating it, in order to respond to the research questions of the study. The study used longitudinal cross sectional survey research design. The longitudinal survey design is justified on the grounds that the data will be collected over more than one time period and cross sectional design was justified on grounds that data of different financial firms were also collected at a defined period. In addition, longitudinal study permitted the collection of data for firms at specific time across a certain period of time (Cooper & Schindler, 2006). Nevertheless, longitudinal research design cannot eliminate competing explanations and, as a result, does not absolutely establish a causal relationship or allow causal claims. The study used cross sectional survey since data for the study variables was collected at a specific point in time.

3.4 Target Population

Parahoo (1999) defines population as the total number of units from which data can be collected such as individuals, artifacts, events or organizations. Burns (2003) describe population as all the elements that meet the criteria for inclusion in a study. The study's target population includes all the 28 listed banks in Nigeria stock

exchange (Appendix 1). The study was to collect data from 2010 to 2019 for 28 listed banks. The reason was non availability of required data for the study in other banks. The study focussed on listed banks since they are consistent in reporting their annual financials hence the data was easily accessible as NSC mandatorily require filing of these published information annually (Neuman, 2006).

3.5 Sampling Frame

Kothari (2004) defines a sample as a proportion of population to be researched and a selected respondent representing the population. The population of interest in this study were the 28 listed banks at Nigeria stock exchange. Since the target population is small the study adopted a census survey to include all the population in the sample. Mugenda and Mugenda (2003) alluded that when the population is too small, census is the most preferred method. Another reason for using this approach is to enhance the validity in data collection because it will include certain information which will enrich the study (Saunders & Lewis, 2009).

3.6 Sample size and Sampling technique

Sampling technique refers to the process of collecting raw and unprocessed information that can be processed into meaningful information, following the scientific process of data analysis (Gall, Gall & Borg, 2007). The main sources of data collection in this study was secondary data which was obtained vide the collection of the banks audit report, financial statements and annual reports for the years 2010 to 2019. The data were collected using census method over all the population of the study as they are not more than 28 listed banks of Nigeria Stock Exchange. I was able to get required information from 20 listed banks which was considered sufficient for the purpose of the study.

3.7 Data Collection Procedure

Research authorization letter was obtained from Jomo Kenyatta University of Agriculture and Technology Board of Post Graduate School. This was forwarded to the relevant commission in Nigeria to allow use of secondary data from the Banks

and Nigeria Stock Exchange (NSE). Data for dependent variable (financial performance) and independent variables (Risk management strategies) was collected from secondary sources using secondary data collection sheet. The record survey sheets were used to collect data. Secondary data sources such as financial statements which comprises of income and expenditure accounts, and position statements. The financial statements provided data that were needed to determine financial performance (dependent variable). The Capital Market Authority (CMA) regulations require listed firms to publish their final audited accounts every financial year (Neuman, 2006). The analysis of financial statements was done for ten years (2010-2019). The secondary data collection sheet was necessary because the annual reports, figures relevant to the study had to be calculated for the purpose of this study unlike in the format provided by the NSE.

3.8 Data Processing and Analysis

Descriptive and inferential statistics was used to analyze the panel data collected. Descriptive statistics include mean and standard deviation. Inferential statistics on the other hand include multiple regression and Pearson's product Moment Correlation analysis (Khotari, 2004). Panel regression model was employed to establish the effect of risk management strategies and financial performance of listed banks in Nigeria for the period between 2010 and 2019. The financial year 2010 mark the beginning of new guidelines for developing risk management framework for individual risk elements in the bank (CBN, 2007). Also collection of data was feasible up to year 2019 and year 2020 was restricted by global pandemic situation (COVID 19). Pearson's Product Moment Correlation analysis was used to test the association between the study variables. Analysis of the panel data collected was conducted with the help of STATA version 10.

3.9 Panel Model Specification

The model specification of the study was to examine the risk management strategies on the financial performance of the listed banks at Nigeria stock Exchange. It is the modified version of Olarewaju et al. (2015) panel data regression models. The study used panel data to carry out the research analysis for 10 years starting from 2010 till

2019. The study examined the data in order to know which model will be adopted from fixed effect and random effect model. In the case of fixed effect model, it was assumed that the variables that have effect on firm performance vary over time but have fixed effect across the entire period under study. Assumption of the fixed effect model include homogeneity of the estimates across the entities and the error term between the entities μ_{it} is equal to zero. A fixed effect model assumes correlation between error term μ_{it} and the predictor variables. However, in the case of a random effect model, the variation across entities is assumed to be random. The error term between the entities μ_{it} is equal to zero and is estimated (Guharati, 2003). However, this study adopted the employment of Olarewaju et al. (2015) version, based on the usage of the modified inferential statistical analysis and discussion by the study. The pool panel least regression models are presented in the equations below:

The regression model without a moderating variable is presented as Model I thus:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \varepsilon_{it} \quad 3.1$$

$$Y_{it} = \beta_0 + \sum_{j=1}^4 \beta_j X_{jit} + \sum_{p=1}^s \gamma_p Z_{pi} + \delta_t + \varepsilon_{it} \quad 3.2$$

j and p are used to differentiate between different observed and unobserved explanatory variables

Z_p = variables responsible for unobserved heterogeneity (and dependence on y)

⇒ Since they are unobserved, they can be summed as C_i

$$C_i = \sum_{p=1}^s \gamma_p Z_{pi}$$

Therefore, we have:

$$y_{it} = \beta_0 + \sum_{j=1}^4 \beta_j X_j + c_i + \delta_t + \varepsilon_{it}$$

The model with a moderating variable is presented as Model II below:

$$y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 M + \beta_3 (X * M) + \varepsilon_{it} \dots \dots \dots 3.3$$

Substituting M for Z_{it} Therefore,

$$y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 Z_{it} + \beta_3 (X * Z_{it}) + \varepsilon_{it}$$

Where: β_0 = Intercept of the model

$\beta_1 - \beta_4$ = Parameters to be estimated

X_{i,t} = Variables of Interest (CD. MRH. CRI. CB.)

Z_{i,t} = Bank size (moderator) measured by the turnover of market share of each bank for bank *i* in year *t*

i = refers to the individual banks of the study (20)

t = refers to the time in years (10)

$\varepsilon_{i,t}$ = Error or Stochastic term

Where:

y_{it} = Financial Performance

CD_{i,t} = Credit Diversification

MRH_{i,t} = Market Risk Hedging

CRI_{i,t} = Credit Risk Insurance

CB_{i,t} = Capital Buffer

According to Adjei-Frimpong (2014), studies across the world have documented various methods and approaches to measure bank financial performance majorly concentrating on the developed world. One of the studies cited by Adjei-Frimpong (2014) was: Ifeacho et al., 2014 for South Africa; documented that the two most widely used approaches are the structural approach and non-structural approach. Olarewaju et al. (2015), posited that the accounting approach using the financial ratio, price earnings ratio has the following attributes of popularity, simplicity, easy understanding and comparability as measurement parameter over others and good for financial performance measurement.

The approach adopted for the dependent variable is justified based on the following: firstly, it is a ratio that complies with the definition of financial performance which is share price over earnings per share by the bank. This implies that total income with other securities gains (losses) which are generated from loans and advances and other income makes the earnings of the bank while the market capitalization of the bank determined the share price. Secondly, the ratio may capture the effect of all the independent variables (risk management strategies) on financial performance (dependent variable) as they impact directly on banking operations.

Generalized least square regression model adopted is increasingly being used in many fields especially in social sciences (Greene, 2012). Using this panel regression model, the regression analysis was validated using the fixed effect and random effect estimation through the Hausman test to indicate the degree of relationship and influence among the variables, their pattern of behavior and their performance at 5% significance level.

Table 3.1 below demonstrated type of study variables, measurement, data collection method, type and level of analysis. Panel least regression model adopted is increasingly being used in many fields especially in social sciences (Greene, 2012). Using this panel regression model, the regression analysis was validated using the fixed effect and random effect estimation through the Hausman test to indicate the degree of relationship and influence among the variables, their pattern of behavior and their performance at 5% significance level.

3.10 Operationalization and Measurement of Variables

The main objective of this study is risk management strategies and financial performance. The standard guides from the relevant theories and existing empirical studies on the selection of variables for the estimated models and consistent with Olarewaju et al. (2015) modified version adopted by this study. The study variables were measured primarily with information obtained from the CBN statistical bulletins, financial statement and annual reports of deposit money banks. Therefore, the study adopted price earnings ratio as the dependent variable and credit diversification, market risk hedging, credit risk insurance and capital buffer as the independent variables. Bank size, proxy by market share was used as moderator. These variables are discussed below:

Table 3.1 contains a list of the various study variables, their operational definitions, and the measurements used to estimate these variables. Constructs of each item of the variable was measured by scale as summarized below:

Table 3.1: Operationalization and Measurement of Study Variables

Category	Variables	Data source	Proxy	Measures
Independent Variables	Credit diversification	X1, Panel & Secondary	• Total loan Assets Diversified	Loan asset to private & Govt sectors per annum
	Strategy Market risk hedging	X2, Panel&Secondary	• Option & Futures Derivatives	Value of Option & Futures Derivatives/Yr.
	Credit risk insurance Strategy.	X3, Panel&Secondary	• CreditRisk Insured per Annum	Credit risk insured cost/Yr.
	Capital Buffer Strategy	X4, Panel&Secondary	• Riskweighted asset Capital	RWA/Total Capital
Dependent Variable	Financial Performance	Y, Panel&Secondary	• Price Earnings ratio	Price/Earning
Moderating Variable	Bank Size	Z, Panel&Secondary	Market Share	Market Share of industry Turnover

3.11 Model Diagnostic Tests.

Gujarati and Porter (2010) in their submission said that the GLS model possesses strong theoretical construct or abstraction (properties) as summarized in the Gauss-Markov theorem. Therefore, to test for the validity of GLS, the following tests were performed. Normality, Stationarity, Cointegration, Multicollinearity, Autocorrelation and Hausman test for Random and Fixed Effects.

3.11.1 Stationarity Test (Dickey-Fuller Unit Root Test)

In stationarity Test. Based on the nature of the data of cross sectional and time series, there is the need to test for stationarity. Unit root tests were used to detect non-

stationarity for all the variables (Gujarati & Porter, 2010). If variables are non-stationary, the tendency for the estimates to change over time exists. The study employed Levin- Lin- Chu (2002) unit root test. The choice of this test was based on the fact that it is best suitable for most micro and macro time series data with 2 hypotheses as ρ_i identical and negative because ρ_i is fixed across i . It also function well as test statistic when N is between 10 and 250 and when T is between 5 and 250 hence suitable for the study since $N=15$ and $T=10$. There are assumptions that the summary statistics of our data are consistent. We refer to this expectation as the time series being stationary. These assumptions can be easily violated in time series by the addition of a trend, seasonality, and other time-dependent structures. If the calculated tau value is less than the critical value in the table of critical values, then we have a significant result; otherwise we accept the null hypothesis that there is a unit root and the time series is not stationary.

The hypotheses for the unit root test are given below. The decision rule says that if $p > 0.05$, accept the null hypothesis.

H_0 : Series has unit roots (Series is not stationary)

H_1 : Series has no unit roots (Series is stationary)

3.11.2 Hausman Test for Random and Fixed Effects:

In a panel model, the individual effect terms can be modelled as either random or fixed effects. If the individual effects are correlated with the other regressors in the model, the fixed effect model is consistent and the random effects model is inconsistent. On the other hand, if the individual effects are not correlated with the other regressors in the model, both random and fixed effects are consistent and random effects is efficient. To decide between fixed or random effects, Hausman test for random effect and fixed effect was carried out using STATA software. The hypotheses for the test are stated next.

H_0 : Random effect would be consistent and efficient

H_1 : Random effect would be inconsistent

The random and fixed effects estimates ought to be close when both are consistent and distant when random effects are not efficient. Housman test is based on this distance. Therefore, if the distance is large, the null that individual effects are uncorrelated with the other IVs (aka random effects preferred) is rejected. Conversely, if the distance is small, the null is not rejected, and random effects are preferred because it is more efficient (Kothari, 2011). Hypothesis: The specified model is either random effect or fixed effect in the panel data estimation.

Table 3.2: Panel Data Diagnostic Tests

Test	Test Used	Decision Rule
Stationarity Test	Dickey-Fuller Root Test for stationarity	Unit for If $p > 0.05$, series has unit roots (Series is not stationary), otherwise, series has no unit roots (Series is stationary)
Cointegration Test	Augmented Dickey-Fuller (ADF) co-integration Test	Reject null hypothesis if $p < 0.05$, that is, there is the existence of co-integration among individual units of the study (Co-integration equations exist), otherwise, no existence of co-integration among individual units of the study (No co-integration equations)
Random or fixed effects	Housman specification test	If p value > 0.05 , use random effects model.

(Gujarati & Porter, 2010).

3.12 Descriptive Statistics

Descriptive analysis is the first step in the data analysis. Descriptive statistics is concerned with the development of indices from the raw data, whereas quantitative analysis was done to determine the correlation and significance of the relationship between the independent and dependent variable. The descriptive statistics show the mean and percentages. The data was described using charts, line graphs and tables.

3.13 Test of Hypotheses For Panel Data

In a study, one may face with a problem of determining which of the X's should be included in the estimation of Y and which should be excluded. In other words, one needs to determine which variables influence Y. The study tested the hypotheses using panel regression analysis to establish the effect of risk management strategies on the firm performance of listed banks in Nigeria stock exchange by using p-value approach at 95% level of confidence. If the calculated p-value > 0.05 , null hypothesis is correct as indicated in Table 3.3

The decision was taken by testing the significance of each of the partial regression coefficient i.e test:

$$H_0 : \beta_j = 0$$

Vs

$$H_1 : \beta_j \neq 0, j = 1, 2, 3, \dots, k$$

The critical value is

$$Z_{crit} = Z_{(n-k-1)} (\alpha/2)$$

We reject H_0 if and only if $Z_{cal} \geq Z_{crit}$

If H_0 is not rejected, it means that the corresponding X_j should be omitted from the equation, meaning that it (X_j) has no influence on Y. Otherwise, it should be retained.

Cooper and Schindler (2006) pointed out the use of multiple linear regression analysis in three types of situations: first, it is often used to develop a self-weighting estimation equation by which to predict values for a dependent variable (DV) from the values of several independent variables (IVs). Second, it is used where there is need to control for confounding variables to better evaluate the contribution of other variables and thirdly to test the hypotheses and to estimate population values. Based on this, multiple linear regression analysis is chosen since model for predicting the

dependent variable is required, effects of each variable on Y was to be determined and there was need to test the hypothesis in order to reject or accept.

Table 3.3: Research Objectives, Hypotheses and their Analytical Tools

No	Objectives	Hypotheses	Data Required,	Analytical Tools
1	To evaluate the effect of credit diversification on financial performance of listed banks at Nigeria Stock Exchange	H₀₁: Credit diversification has no significant effect on financial performance of listed banks at Nigeria Stock Exchange	Continuous time series data collected from the banks and NSE. Panel and secondary data	Descriptive statistics, Panel regression, Correlation Coefficients. $RM = \beta_0 + \beta_1 X_{1it} + \epsilon_{it}$
2	To establish the effect of market risk hedging strategy on financial performance of listed banks at Nigeria Stock Exchange	H₀₂: Market risk Hedging strategy has no significant effect on financial performance of listed banks at Nigeria Stock Exchange	Continuous time series data collected from the banks and NSE Panel and secondary data	Descriptive statistics, Panel regression, Correlation Coefficients. $RM = \beta_0 + \beta_2 X_{2it} + \epsilon_{it}$
3	To assess the effect of Credit risk insurance Strategy on financial performance of listed banks at Nigeria Stock Exchange	H₀₃: Credit risk insurance Strategy has no significant effect on financial performance of listed banks at Nigeria Stock Exchange	Continuous time series data collected from the banks and NSE Panel and secondary data	Descriptive statistics, Panel regression, Correlation Coefficients. $RM = \beta_0 + \beta_3 X_{3it} + \epsilon_{it}$
4	To evaluate the effect of capital Buffer Strategy on financial performance of listed banks at Nigeria Stock Exchange	H₀₄: Capital Buffer Strategy has no significant effect on financial performance of listed banks at Nigeria Stock Exchange	Continuous time series data collected from the banks and NSE Panel and secondary data	Descriptive statistics, Panel regression, Correlation Coefficients. $RM = \beta_0 + \beta_4 X_{4it} + \epsilon_{it}$
5	To determine the moderating effect of Bank size on the effect of risk management strategies on financial performance of listed banks at Nigeria Stock Exchange.	H₀₅: Firm size has no significant effect on the relationship between the RM strategies and financial performance of listed banks at Nigeria Stock Exchange	Continuous time series data collected from the banks and NSE. Panel and secondary data	Descriptive statistics, Panel regression, Correlation Coefficients. $RM = \beta_0 + \beta_1 X_{it} + \beta_i X_{it} * Z_{jt} + \epsilon_{it}$

Decision Rule: Accept null hypothesis (H_0) if calculated $p > 0.05$

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the analysis of data, interpretation of results and discussion of findings from various analyses carried out on balance panel data in line with the specific objectives and stated hypotheses of this study. The unit of analysis was the listed banks in Nigeria stock exchange within 2010 and 2019. Specifically, the study examined the effect of risk management (RM) strategies on financial performance of listed banks in Nigeria stock exchange. This study focused on credit diversification, market risk hedging, credit risk insurance and capital buffer endogenous variables. To ascertain whether or not there exists moderation effect on the studies of the nature, bank size was used as moderator variable to investigate its effect on the relationship between RM and financial performance of the listed banks in Nigeria stock exchange.

4.2. Response rate

Secondary data was collected for this study in its raw form extracted from published audited financial statement as submitted to Nigeria Stock Exchange. The target population for the study was 28 banks listed in Nigeria stock exchange. Since census technique was used for the study and the entire banks listed in the Nigeria stock exchange was taken as the population, secondary data was collected with respect to credit diversification, market risk hedging, credit risk insurance, capital buffer and bank size to measure firm performance across a period of 10 years (2010-2019) which produced a panel data. Out of 28 banks listed in the Nigeria stock exchange, the researcher was able to get data from 20 banks which resulted to 71.43% response rate. Given the submission of Beauvais, Stewart, Denisco and Beauvais (2014) who argued that any response above $\frac{1}{2}$ of the sample is adequate and considered such as a good response rate. However, a response rate that is below 0.4 of the sample is considered as insufficient and inadequate (Runnels & Thomas, 2006).

Table 4.1: Valid Sample

No. of Banks	Response	Response Rate
28	20	71.43%

Njoroge (2016) submitted that accounting data is publicly acceptable as a standardized method for collecting public information subject however, to its limitation of the currency of a dynamically propelled situation. The data collected shown in the data collection matrix were processed, analyzed, interpreted and presented in tables and figures with the employment of Stata statistical package version 10. The statistical analysis include model diagnostic tests, descriptive statistics, correlation coefficients and the panel least regression analysis for the study. This was adopted because the study made use of balanced panel data. The study presents both the descriptive statistics and the inferential analysis in the chronological order as follows.

4.3 Descriptive Statistical analysis

This study as stated in chapter three, adopted a census technique comprising of 20 listed banks out of the target population of 28 to make 71% of the population. The size adopted is in line with the submission of Saunders et al. (2009), stating that, a sample that is greater than or equal to 50% is considered appropriate, more so where the population is highly skewed or possesses outliers. Additionally, prior empirical studies have documented the use of different sample size in various studies. For instance, prior studies employed the use of low sample size: (Ifeacho & Ngalawa, 2014) while relatively higher sample were employed in the studies of Dawood (2014). The variables under study are: credit diversification strategy, market risk hedging strategy, credit risk insurance strategy, capital buffer strategy as independent variables, bank size as moderating variable and financial performance as dependent variable. The study used ratios for credit diversification, credit risk insurance, market risk hedging and capital buffer strategies. Financial performance was measured as price earnings ratio.

4.3.1 Credit Diversification

Credit obtained diversification was one of the risk management tools measured through the ratio of loan assets diversified in a particular year. Credit diversification ratio was by dividing total value of private loan diversified in a particular year to total loan granted to the customers in that year. Table 4.2 indicated the highest mean of 0.2875 in 2010, the maximum of 0.8815 in 2019 with a minimum is 0.0123. This is an indication that the proportion of loan granted to this sector is lower relatively to government sector with positive effect in the financial performance of the banks. This could be as a result of government policy to withdraw money from the economy circulation in order to curtail rate of inflation in the period under study, thus, instability in the economy especially in the financial sector, the banking industry, could be addressed and controlled. The highest value of standard deviation of 0.22816 confirmed that the diversification of loan assets between the banks cut across lower number of listed banks. This is consistent with studies from Salehi, (2008) and Thao et al. (2015). The highest coefficients of variation of 1.6289 showed that there is relative degree of dispersion to mean in the distribution of bank loan assets among the listed banks. This suggests that loan asset quality of the banks is not adequate as confirmed by its mean value.

This finding concurred with Chen and Lin (2014) whose study attributed the diversification to private sector to instability in the economy. In another study, Iqbal, Hameed and Qadeer (2012) opined that increased in private loans is attributed to downturn of liquidity as well as global economic crisis. This results also agreed with the findings of Adamu, Zubairu, Ibrahim and Aqeel (2011) and is explained by (Modern Portfolio theory of mathematical formulation of the concept of diversification in investing as propounded by Markowitz (1952) which postulated that an efficient frontier of an investment domain represents a set of “efficient portfolios” that maximizes expected returns at a given level of portfolio risk, or that minimizes portfolio risk for a given expected return. This indicates the direction of the government policy under the period of the study to have more control on the injection of fund to the economy systems and to maintain a low level of credit risk default of the private sector.

Diversification of loan assets to government sector reduce level of risk undertaken by the banks, thus, improving financial performance of the listed banks. The findings of this study concurred with the findings of Oyerinde (2014) who reported that public lending loan is positively related to bank performance. In practice, where the proportion of non-performing loans are high in the income generated, this tells on the credit-risk exposure aspect of the bank (Dawood, 2014). This can make the bank to be more vulnerable to toxic asset accumulation if unchecked or undetected early enough. Consequently, it may be suggested that this scenario can affect financial performance of the listed banks under this study and at large the entire banking industry.

Table 4.2: Credit Diversification.

Year	Observation	Mean	Maximum	Minimum	Std. Dev.	CoV
2010	20	0.287551	0.672883	0.128004	0.153031	0.53218733
2011	20	0.261174	0.608977	0.115835	0.138509	0.53033227
2012	20	0.236349	0.548756	0.104363	0.125366	0.53042746
2013	20	0.261208	0.548707	0.104403	0.10784	0.41285106
2014	20	0.247931	0.579215	0.110209	0.132066	0.5326724
2015	20	0.273769	0.636986	0.121193	0.144454	0.52764922
2016	20	0.273769	0.636986	0.121193	0.144454	0.52764922
2017	20	0.09805	0.583999	0.012327	0.159717	1.62893422
2018	20	0.140071	0.834284	0.017609	0.228168	1.62894532
2019	20	0.135992	0.881507	0.018606	0.220465	1.62116154

Note: CoV means coefficients of variation while Obs means no of observations

4.3.2 Market risk Hedging strategy

Market risk hedging strategy was one of the variables used in this study to measure risk management (RM). Ratio of loan assets hedged through options and futures in the year were used to collect the data analysed for the study. The indicator of market risk hedging strategy was the percentage of loan assets hedged in a particular year. This was obtained by obtaining the value of loan asset hedged through options and

futures in the year relative to the total loan assets granted by the banks under study. Table 4.3 showed that the lowest mean of 0.5845 was recorded in year 2012 and the highest was 0.6688 in 2018. The standard deviation was observed to be between 0.1053 and 0.1155 between the year 2010 and 2019 respectively which indicated a wider dispersion in loan granted to private and government sector of the banks and confirmed by the coefficient of variation (0.187) which was the highest in 2010. The mean value indicates an average level of compliance with market risk hedging activities by the generality of banks amongst the listed banks under study. Thus, there is a high level of risk in providing financial services and this could affect efficiency in economic development of a country where the banking subsector serves as the pivot of the financial industry. (Umoren & Enang, 2016).

The result as shown by the standard deviation that the banks have wider dispersion spread of the use of options and futures to hedge against interest from the loan and overdraft facilities given to the customers. The mean value suggest that the bank could hedged against credit risk loan portfolio a little bit above 67% which automatically affect the quality of loan assets. According to studies documented by (Oyerinde, 2014; Umar, 2015), high non-performing loans as a component of loan asset can negatively affect bank financial performance and efficiency. Muraina (2018) concurred that credit risk affect significantly banks profitability and improve financial health of banks. This was also attested to by Faisal, Melati, Lim and Hashim (2011), who found out in a study that there is a strong association between market risk hedging and financial performance of insurance companies.

The implication of the standard deviation suggest that 10% of all the banks were involved in this practice. This fluctuation in the market risk hedging activity level can be attributed to lack of adequate bank supervision by the regulatory authority in Nigeria.

Table 4.3: Market Risk Hedging

Year	Observation	Mean	Maximum	Minimum	Std. Dev.	CoV
2010	20	0.612221	0.756751	0.252232	0.115513	0.18868
2011	20	0.594312	0.812301	0.351423	0.104146	0.17524
2012	20	0.584541	0.723302	0.357123	0.091736	0.15694
2013	20	0.620500	0.814514	0.491401	0.094839	0.15284
2014	20	0.630587	0.856617	0.500513	0.099972	0.15854
2015	20	0.653271	0.855512	0.523145	0.079809	0.12217
2016	20	0.653231	0.850033	0.522897	0.079809	0.12218
2017	20	0.666440	0.856612	0.534559	0.092075	0.13816
2018	20	0.668318	0.858769	0.588127	0.091456	0.13685
2019	20	0.635532	0.864401	0.511505	0.105355	0.16577

Note: CoV means coefficients of variation while Obs means no of observations

4.3.3 Credit Risk Insurance

Credit Risk Insurance (CRI) was another variable used in this study to measure risk management strategy (RMS). It was obtained by taking adjusted percentage of loan assets issued by the bank as cost of insurance. According to Isaksson and lantz (2015), CRI was used in their study by using the cost of insuring the total loan. Likewise in the study of outsourcing of credit risk insurance strategy among financial firms, the use of CRI as a variable was argued by Gyemang, Akins, Asibey and Broni (2015) who asserted a positive relationship between insurance cost of securing the loan granted to customers and bank performance. Hence, this study adopted the methods employed by previous study.

Table 4.4 shows the descriptive statistics for credit risk insurance CRI as a predicting variable for the listed banks with a minimum value of 0.00106 in 2017 and a maximum value of 0.019031 in 2012 with a highest mean value of 0.06057 and standard deviation of 0.029932 in 2011 respectively. This statistics depict that there is a narrow degree of variability in the credit risk insured level of the banks and the finding is consistent with (Berihun-Engida, 2015; Muraina, 2018). This result was also confirmed by the coefficients of variation (0.6380), suggesting that the banks' corporate resources were inefficiently managed. The mean value suggest that the banks could not maintain the credit risk insurance of their loan asset portfolio above 6% which automatically affects the quality of risk insured. Comparing this finding

with other previous study, it was noticed that the findings of this study correlate with the findings of Gyemang, Akins, Asibey and Broni (2015). But disagree with the findings of Isaksson and Iantz (2015) who concluded that, there is no relationship between credit risk insurance strategy and financial performance. The implication of the standard deviation of 3% suggests that all the banks are not involved in this practice. It also suggests that, the amount declared as loan assets insured may not be adequate to the level of the resources committed, especially in terms of the total loan asset of the banks.

The standard deviation also suggest that the banks' corporate credit were inefficiently managed. Adeusi et al. (2014), documented that, financial gains accrues in relation to the level of operational activity and the reasonable risk taken by banks. It is possible that lack of adequate control of expenses or high total overheads cost may have been responsible. The mean and standard deviation suggests that inadequate credit risk insurance are being done and it spreads throughout the listed banks. This situation has been corroborated by Olarewaju (2016).

Table 4.4: Credit Risk Insurance

Year	Observation	Mean	Maximum	Minimum	Std. Dev.	CoV
2010	20	0.014081	0.036314	0.003735	0.008982	0.63788083
2011	20	0.060571	0.117428	0.019066	0.029932	0.49416387
2012	20	0.060465	0.117228	0.019031	0.029881	0.49418672
2013	20	0.053141	0.103014	0.016729	0.026256	0.49408178
2014	20	0.050051	0.092551	0.015026	0.025621	0.51189786
2015	20	0.048527	0.08973	0.014569	0.02484	0.51187998
2016	20	0.048527	0.08973	0.014569	0.02484	0.51187998
2017	20	0.004009	0.010341	0.001063	0.002558	0.63806436
2018	20	0.004582	0.011818	0.001215	0.002923	0.63793103
2019	20	0.005896	0.015219	0.001565	0.003761	0.63789009

Note: CoV means coefficients of variation while Obs means no of observations

4.3.4 Capital Buffer (CBS)

Also in Table 4.5, capital buffer (CB) within the study period shows a minimum value of 0.013148 in 2010 and a maximum value of 0.093523 in 2011 with the highest standard deviation of 0.046358 in 2019. The highest mean value of 0.087728 shows that the liquidity position of the banks is fair especially in line with the CBN requirements. The standard deviation of 0.046358 suggests further that the banks holds a moderate level of liquid assets which could have been invested amongst the bank under study. The degree of dispersion for capital buffering was high within the industry as shown by the standard deviation. This is also confirmed by coefficient of variation of 0.5289. However, a caution should be taken by the banks that high capital buffering impacts negatively on the profitability, which further confirms why they have low performance. In the contrary, Lartey et al. (2013) stated that the relationship between liquidity and profitability is weak for the Ghanaian banking system. Ebenezer et al. (2017) documented that, capital adequacy and liquidity have positive effect on bank profitability. This result suggests that the banks maintained reasonable buffer capital adequacy level for the period of study. In reality and in relation to the listed banks, this suggests that for every N1 worth of total asset of the banks, N0.8 worth of economic capital was provided for by the banks.

The capital buffer position of the banks may have been influenced by the policies of the CBN such as the economic stabilization, stable oil revenue and exchange rate system as witnessed in the economy. Affirming the importance of liquidity, Mohamed (2015), found that liquidity has significant impact on performance and efficiency statistically while Ibrahim et al. (2017), documented otherwise liquid assets have a negative effect on profitability of banks. The statutory capital buffer level of banks is usually 30% (CBN, 2010). The result further shows that, there was improved risk provision level and improved spread or variability of economic capital across the banking sector. (Berger et al., 1995)

This finding is in line with Saber (2013) who reported that there is a significant positive relationship between maintaining adequate capital buffer to manage the credit risk and return on equity. Bringing this close to the economy of the nation, this

finding suggested an increase in the loan facilities thereby increase supply of funds to the economy which has a positive impact to improve general downturn in the economy system with associated increase in risk.

Table 4.5: Capital Buffer (RWAC)'N Billion

Year	Observation	Mean	Maximum	Minimum	Std. Dev.	CoV
2010	20	0.027268	0.068318	0.013148	0.014331	0.52556
2011	20	0.037295	0.093523	0.017993	0.019685	0.52782
2012	20	0.035709	0.089619	0.017225	0.018883	0.5288
2013	20	0.040971	0.010282	0.019795	0.021647	0.52835
2014	20	0.037863	0.094906	0.018259	0.019956	0.52706
2015	20	0.050582	0.012679	0.024377	0.026648	0.52683
2016	20	0.050582	0.012679	0.024377	0.026648	0.52683
2017	20	0.054805	0.013762	0.026467	0.028987	0.52891
2018	20	0.082258	0.020643	0.039705	0.043443	0.52813
2019	20	0.087728	0.022012	0.042347	0.046358	0.52843

Note: CoV means coefficients of variation while Obs means no of observations

4.3.5 Bank Size (BZ) Descriptive Statistics for Bank Size as the moderating variable of the study

Bank size in this study was used as a moderator variable. Market share was used to proxy the bank size (Kioko, 2010). Some previous study had used total assets to measure the bank size. In this study, the average market share of sales in the industry was used. Also, previous studies had used the average number of employees to measure the firm size (Diamond, 2014). Table 4.6, shows the descriptive statistics of effect of moderating variable, bank size, between the relationship of risk management strategies and financial performance of listed banks at Nigeria Stock Exchange over the period under study. This showed a minimum value of 0.3114 and a maximum value of 0.9343 with a highest mean value of 0.8321 and a highest standard deviation of 0.1439. This implies that the size of the banks measured by the market share have good spread amongst the banks and it could be suggested that the banks are faring well as regards the performance of the market shares in the market

(83%). The result from the coefficient of variation also confirmed the good spread amongst the banks within the industry.

The values for bank size through this procedure are within the acceptable threshold of normality (Gujarati, 2010). It may be deduced that, large sized banks with relatively enhanced risk monitoring procedures are more effective and efficient than small sized banks as it was documented by Olarewaju, (2016). It further reinforces the belief that the listed banks with a mean value of 0.8321 are operating with average dispersion in the banking industry; hence this suggests moderate credit losses and stability especially as regards total loan granted for the period 2009-2018. In a nutshell, the results reveal that for every 100 percent service turnover in the industry, the banks under study holds 83 percent market share. Thus, contributed positively to the financial performance of the banks during the period.

Table 4.6: Bank Size (market share)

CS	Observation	Mean	Maximum	Minimum	Std. Dev.	CoV
2010	20	0.762421	0.934339	0.311446	0.143904	0.18874611
2011	20	0.739997	0.009086	0.436025	0.129743	0.17532909
2012	20	0.728162	0.896965	0.436025	0.114284	0.15694859
2013	20	0.77301	0.009086	0.498314	0.118149	0.15284278
2014	20	0.785468	0.058918	0.622893	0.124544	0.15856025
2015	20	0.813498	0.058918	0.622893	0.099425	0.12221911
2016	20	0.813498	0.058918	0.622893	0.099425	0.12221911
2017	20	0.829693	0.058918	0.622893	0.114706	0.13825114
2018	20	0.832185	0.058918	0.622893	0.113935	0.13691066
2019	20	0.791697	0.071375	0.622893	0.131250	0.16578312

Note: CoV means coefficients of variation while Obs means no of observations

4.3.6 Descriptive Statistics for Financial Performance (FP)

The dependent variable in this study was financial performance (FP). Price earnings ratio was obtained by dividing the price of share by earning per share. This was in line with the study of Kumar, Mallika and Dibakar (2018) who calculated PE as price of share by earnings per share. The descriptive statistics of financial performance (price earnings - PE) is as shown in the Table 4. 7. According to the table, the

maximum price earning was in year 2019 at N54.99 per share and the minimum was in the year 2011 at N1.41. The highest mean value of 0.001844 indicates that the average financial performance for banks was about N 18.44 per share in the year 2018 which may be considered relatively low for that period as a result of poor performance of the bank in that year due to tight economic condition during the period when the banks had to comply with strict monetary policy guidelines issued by the central bank of Nigeria (CBN) (Umoren et al., 2016). The standard deviation between 0.001044 and 0.001379 through the years under study which showed that there is relatively low degree of dispersion to mean in terms of financial performance level of the banks and that they have low degree of variability. This suggests that the performance level of all the listed banks is fair but needs improvement across the banking industry. This is consistent with studies from Mugeru (2013) and Thao et al. (2015).

Table 4.7: Financial Performance using Price Earnings (FPPE)(’10,000)

Year	Observation	Mean	Maximum	Minimum	Std. Dev.	CoV
2010	20	0.001407	0.004148	0.000232	0.001044	0.742
2011	20	0.001692	0.005177	0.000141	0.001351	0.79846
2012	20	0.001401	0.004131	0.000231	0.00104	0.74233
2013	20	0.001471	0.004334	0.000242	0.001091	0.74167
2014	20	0.001098	0.003239	0.000181	0.000815	0.74226
2015	20	0.001212	0.003574	0.000199	0.0009	0.74257
2016	20	0.001212	0.003574	0.000199	0.0009	0.74257
2017	20	0.001194	0.003521	0.000197	0.000886	0.74204
2018	20	0.001418	0.004226	0.000236	0.001061	0.74824
2019	20	0.001844	0.005493	0.000307	0.001379	0.74783

Note: CoV means coefficients of variation while Obs means no of observations

Trend analysis of the Independent Variables for the period covered by the study (2009-2018)

Credit Diversification Trend Analysis

To fully understand the trend of the credit diversification ratio of the listed banks for the period of 2010 to 2019, trend analysis was done and presented in figure below. Figure 4.1 shows the overall mean of private loan asset to total loan ratio of all the banks under study. The trend shows the total private loan in terms of total loan granted. From the Figure 4.1, the highest mean ratio was observed in the years 2015 and 2016 and came down drastically in 2017. The graph showed that there was a rise in the diversification level for banks of between 5% to 30% in the year 2010 to 2017, indicating that banks were able to control risk associated to loan granted to this sector. The trend indicates that private loan assets were at its peak of 30% in 2010 due to the liberalized policies of the CBN as shown in the graph for all the 20 banks (Lamido, 2009). After 2016, the private loan asset ratio nosedived till 2019. This result indicates that the sampled banks would have been able to reduce their risk by about 20% efficiency without affecting level of output for the period. This can be accounted for as a result of the CBN's tight and stringent policies such as mandatory implementation of code of corporate governance for all banks.

Also, the banks having a wider dispersion and spread of loan assets across their customers within the industry. For instance, the mean value suggest that the banks could maintain the diversification of their loan portfolio a little above 50% which automatically affects positively their financial performance. This was also attested to by Faisal, Melati, Lim, and Hashim (2011), who found out a strong association between some banks specific variables such as lending to the public institutions and their profitability. The highest mean ratio was observed in the year 2019 as against what was observed in the year 2017 downward.

Market Risk Hedging Trend Analysis

Figure 4.1 shows the overall mean of banks hedging activities during the period under study, the trend line was plotted over the period of study. From Figure 4.1, the

trend started climbing up in the year 2012. This was an implication of what was happening in the banking sector at that time in Nigeria. It was a period of advent stringent new supervision control policy during which the banking supervisory authority, CBN laid much emphasis on risk hedging in order to manage the risk attached to loan and advances, thus, reducing the level of irrecoverable debts and improve the financial performance of banks. This was also attested to by (Kirogo, Ngahu and Wagoki (2014) who found out in a study that there is a strong association between market risk hedging and financial performance of insurance companies. The level of activities was seen nose-diving from 2010 till 2012. Then it began to climb until 2018 when it started to regress. It was observed that in all, the level of hedging activities were above 50% but had not been consistent. This fluctuation in the market risk hedging activity level can be attributed to lack of adequate bank supervision by the regulatory authority in Nigeria.

Credit Risk Insurance Trend Analysis

Investigating further, the trend line of the ratio of credit risk insurance was plotted over the period of 2010 and 2019. The findings are presented in Figure 4.1. The trend indicated a huge increase in the cost of insurance from 2010 to 2011. This trend continued until 2012 when the trend started regressing till 2016. This was an implication that there was an increase in the value and amount of loan giving out to customers during these periods, thus increase in cost of insurance which was subsequently reduced as reflected in the trend between 2012 and 2016 as a result of reduced average cost of insurance due to increase in the amount of loan assets over the period. This corroborate the findings of Akewushola and Elegbede (2013) who reported a reduced average cost, increased sales turnover and profitability, enhance expertise, improve service quality, reduce staff strength as a result of insuring banks' loan assets.

Capital Buffer Trend Analysis

The trend is shown in Figure 4.1. shows the trend analysis for capital buffer. It was plotted over the period of 2010 and 2019. The trend indicated a steady increase from 2010 till 2019. Even though a slight variation was noticed along the line from 2010

that notwithstanding the value kept increasing. The implication of this was that there has been consistent increase in risk weighted average capital in order to ensure that the bank stays solvent as the banks' loan assets increase from past periods given its risk profile. Thus the more loan assets risk is secured the better the loan profile with positive effects on the financial performance.

This finding is in line with Saber (2013) who reported that there is a significant positive relationship between maintaining adequate capital buffer to manage the credit risk and return on equity. Bringing this close to the economy of the nation, this finding suggested an increase in the loan facilities thereby increase supply of funds to the economy which has a positive impact to improve general downturn in the economy system with associated increase in risk.

The trend of Bank size was also investigated. The trend is shown in Figure 4.1. It was plotted over the period of 2010 and 2019. The trend indicated a steady growth in the firm size over the period covered by the study (2010 – 2019). Aligning this finding with previous studies, it was observed that it was in agreement with the findings of Atif Abbasi, Qaisar Ali Malik(2015) but disagree with the findings of Kioko (2010) which asserted that total deposits and total loans had relatively stronger effects on financial performance compared to total assets. The implication of this finding was that Bank Size proxy by average market size influence the relationship between risk management strategies and financial performance of the banks

Trend analysis of the financial performance (Dependent Variable) for the period covered by the study (2009-2018)

In order to fully understand the direction of the financial performance of the banks for the period of this study, trend analysis is presented to demonstrate the level of movement of this important measurement proxy by price earnings ratio. Hence, Figure 4.1 depicts the overall mean of price earnings ratio trend analysis for listed banks at Nigeria stock Exchange used for this study. The trends indicate the level of financial performance achieved in terms of market capitalization, earnings management and general optimization of risk management in banking operations.

It was plotted over the period of 2010 and 2019. The trend indicated a downward slope from 2011 consistently over the year till year 2014 when it picked up a bit. However, since 2016, it has been on the rise. This indicated that the investors had lost confidence on future growth of the banks until 2017 when a higher P/E ratio was recorded which showed that investors were willing to pay a higher share price today because of growth expectations in the future. Aligning this finding with previous studies, it was observed that it was in agreement with the findings of Nduku, Kimundi and Gillian (2015) but disagree with the findings of Kumar, Mallika and Dibakar (2018) The implication of this finding was that inability of the bank management to employ a robust systems of risk management during the downward trend period had affected the performance of the banks negatively while improvements was subsequently recorded in the later period. Also, the graph showed that there was a rise in the earnings level for banks of between 35% to 45% in the year 2010 to 2012, indicating that banks were able to control operating cost in banking operations marginally especially interest on deposit and personnel (Olawajaju et al., 2015). The trend indicate that financial performance was at its peak of 45% in 2011 due to the liberalized policies of the CBN as shown in the graph for all the 15 banks (Lamido, 2009). After 2013, the price earnings ratio continue to rise till 2015. This result indicates that the listed banks would have been able to increase their input by about 55% efficiency without affecting level of output for the period.

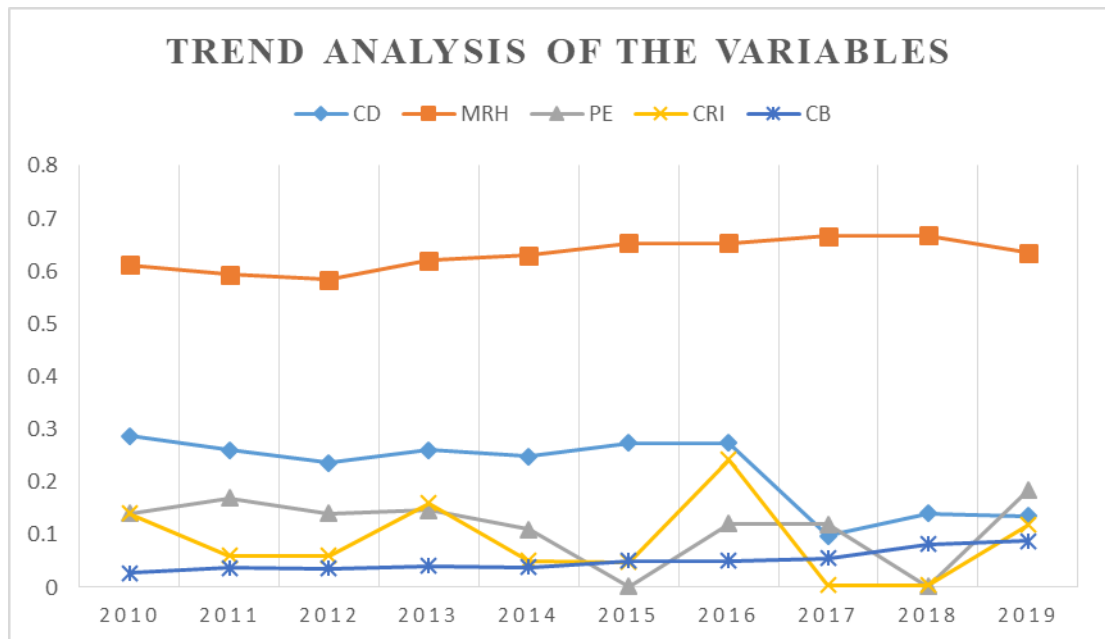


Figure 4.1: Graphical charts showing the trends of the Independent Variables (CD,MRH, CRI and CB) and Dependent variable (PE)

4.4. Model Diagnostic Tests Results and Discussion

The panel data collected for the study has both features of cross sectional and time series characteristics. The attributes of panel data hereby poses several estimation and inference problems that usually affect cross-sectional and time series data. To know the best estimation test to adopt for this type of study, diagnostic tests are used to identify the best model, hence Hausman test was applied on the study's panel datasets to ensure best estimation technique and ensure the validity and reliability of the data. These include unit root test, autocorrelation test and test of stationary. The results and the interpretations are as follows

4.4.1 Normality Test

Normality of the model for the study was done through Jarque-Bera (J-B) test. This is necessary to ascertain whether or not the residuals of the model follow normal distribution. The hypotheses in the J-B test stated as follow:

H_0 : Data are normally distributed

H₁: Data are not normally distributed

The decision rule as stated in Table 3.2, indicated that if p-value is greater than alpha value of 0.05 (the level of significance), then we fail to reject the null hypothesis. The results of the J-B test for the study are presented in Figure 4.2. The normality test indicated that residual of the model follow normal distribution with J-B value of 3.5547 with a p-value of 0.1691 which is greater than alpha value of 0.05 level of significance. Hence, the normality assumption cannot be rejected meaning that the sample distribution is not significantly different from the population and that the sample represents normal distribution.

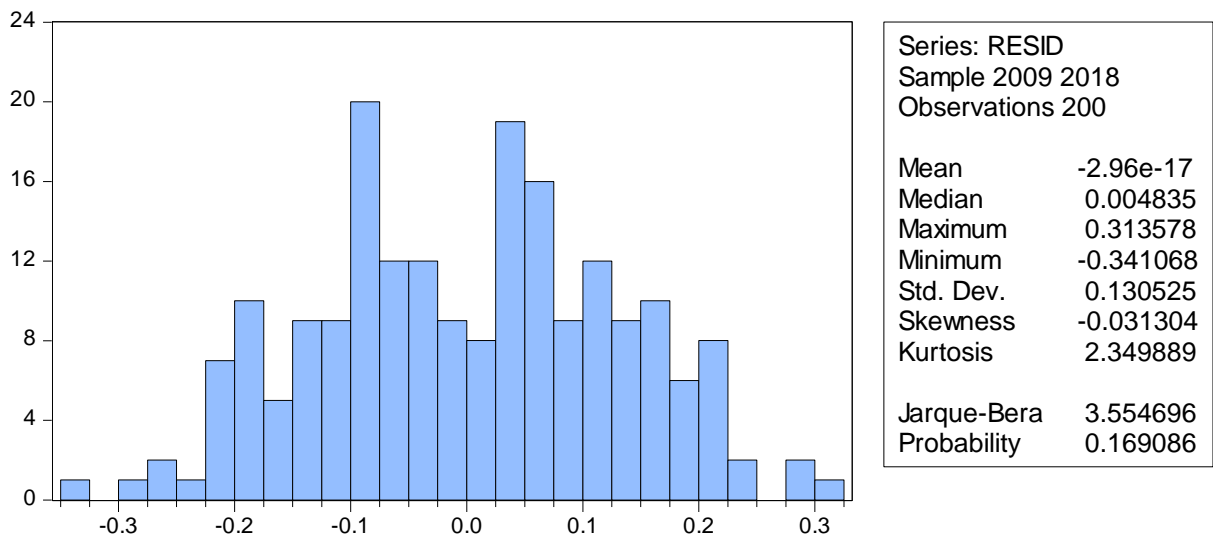


Figure 4.2: Normality Test using Jarque-Bera Approach

To investigate further, the normal Q-Q plot approach was used to check the sample size biasness to test for its statistical significance from relatively large samples of normal distribution. The results of Q-Q plot revealed the same results as that of J-B test as shown in Figure 4.3. The conclusion from the results presented in Figure 4.3 was that most of the data collected were closer to normality line. It is therefore of note that the firms' financial performance ratio follow normal distribution. In line with the assertion of scholars, this type of data is suitable for all types of statistical analysis (Saunders, Lewis, & Thornhill, 2016).

Therefore, the normality tests (J-B and Q-Q approaches) carried out indicated that residual of the model follow normal distribution with J-B value of 3.5547 with a p-value of 0.1691 which is greater than alpha value of 0.05, at the 5% level of significance. Hence, the normality assumption cannot be rejected meaning that the sample distribution is not significantly different from the population and that the sample represents normal distribution. So, the study failed to reject the null hypothesis and concluded that the model is normally distributed.

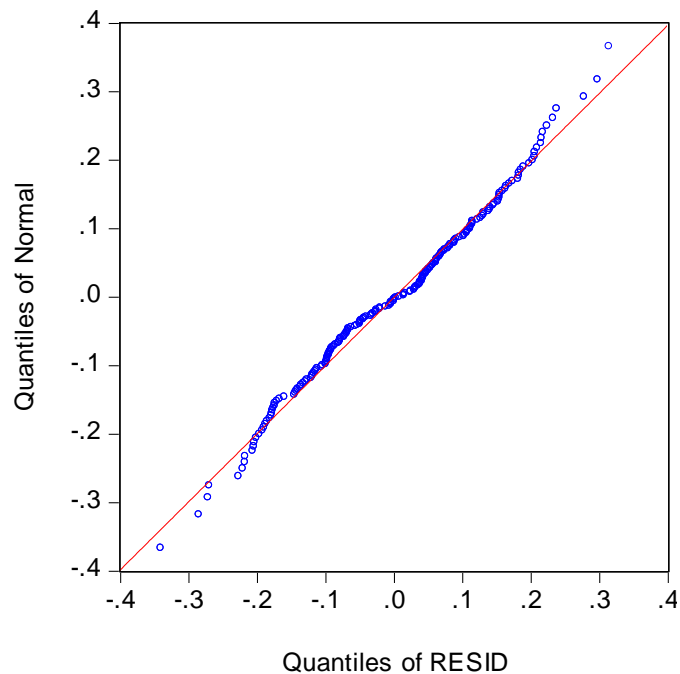


Figure 4. 31: Normality Test using Normal Q-Q Plot Approach

4.4.2 Panel Unit Root Test Results

Panel unit root test was performed to investigate whether or not the series for the study follow a random walk (that is, non-stationary). Among various tests available, Augmented Dickey – Fuller (ADF) test for the level with Akaike Info Criterion (AIC) was used with the aid of E-View statistical software version 8 to detect the possible stationarity. The hypotheses for the unit root test are given below. The decision rule says that if $p > 0.05$, accept the null hypothesis.

H₀: Series has unit roots (Series is not stationary)

H₁: Series has no unit roots (Series is stationary)

The results are presented in Table 4.8. The results indicated that credit diversification of loans, market risk hedging, credit risk insurance and capital buffer series are stationary since their p-values less than 0.05 and their corresponding absolute t-statistic is greater than ADF critical values at 5% level of significance. Hence, we conclude that the series in credit diversification of loans assets, market risk hedging, credit risk insurance and capital buffer series are stationary. However, it was noticed that capital buffer and bank size series are not stationary because their p-values were greater than 0.05 and their corresponding absolute values are less than the ADF critical values at 5% level of significance. Hence, for series, we failed to reject the null hypothesis and conclude that the capital buffer and bank size series are not stationary. In view of this conclusion, differenced test was performed on all the series to ascertain at which lag are those series not containing unit root.

Table 4.8: Panel Unit Root Test Results

Variable	Statistic ^a	Critical values ^b	Prob. ^c
Credit Diversification –CD	-5.68996	-3.43257	0.0000
Market Risk Hedging – MRH	-4.25415	-3.43391	0.0045
Credit Risk Insurance Strategy – CRI	-3.69587	-3.43391	0.0250
Capital Buffer Strategy – CBS	-2.60868	-3.43378	0.2770
bank Size –FZ	-2.47459	-3.43378	0.3404

^a *tau*-Statistics

^b Augumented Dickey-Fuller test statistic at 5% level of significance

^c MacKinnon (1996) one-sided p-values

Since capital buffer and bank size series are not stationary because their p-values were greater than 0.05 and their corresponding absolute values are less than the ADF

critical values at 5% level of significance, Augmented Dickey – Fuller (ADF) test for the differenced with Alkaike Infomation Criterion (AIC) was conducted. The results were summarized in Table 4.9. It was observed that at first differenced, all the variables under study became stationary because all their p-values are less than 0.05 and their corresponding absolute t-statistic was greater than ADF critical values at 5% level of significance. Hence, we conclude that all the series are stationary (that is, variances and covariance do not vary systematically overtime) at first differenced. With the results, the resultant regression will not be spurious but is fit for prediction, forecast and hypothesis testing.

Table 4.9: First Differenced Panel Unit Root Test Results

Variable	Statistic^a	Critical values^b	Prob.^c
D(CD(-1))	-5.19997	-3.43257	0.0001
D(MRH(-1))	-6.64445	-3.43429	0.0000
D(ICRI(-1))	-4.88599	-3.43429	0.0005
D(CB(-1))	-3.92298	-3.43378	0.0129
D(FZ(-1))	-4.13676	-3.43378	0.0067

^a *tau*-Statistics

^b Augumented Dickey-Fuller test statistic at 5% level of significance

^c MacKinnon (1996) one-sided p-values

4.4.3 Co-integration and Granger Causality Tests

The results from panel unit root test performed indicated that data series in the study is stationary at first differenced and that no unit root exists as the variance and covariance are of order one at first differenced. Consequently, there is the need to probe further to ascertain the long-run relationship among the co integrating variables. To do this, this study carried out Augmented Dickey-Fuller (ADF) co-integration Test. The hypotheses for the test are stated next.

H₀: No existence of co-integration among individual units of the study (No co-integration equations)

H₁: There is the existence of co-integration among individual units of the study (Co-integration equations exist)

The results of the test estimation of co-integration are presented in Table 4.10. The results indicated that there is existence of co-integration among the variables on the long-run because the probability value (p=0.0000) is less than the critical value (alpha value). Since $p < 0.05$, then there is enough evidence against the null hypothesis, hence, it was rejected at 5% level of significance.

Table 4.10: Co-integration Tests Results Output – ADF Test

	t-Statistic	Critical value	Prob.
Augmented Dickey-Fuller	-5.572873	0.05	0.0000
Residual variance	4.94E-08		
HAC variance	3.21E-08		

The results in Table 4.10 were further confirmed by the value of coefficient of determination (R^2) which was 53.75% and standard error of 0.074364 which depicts the level of variability within the model as presented in Table 4.11. Durbin-Watson statistic for the overall period of the model was within the acceptable benchmark of 3. The result of this study is agreed with the findings of previous studies which have averred that price variables are granger causal and is characterized by co-integration which has the ability of bi-directional causality between variables used in the study (Lawal, 2018; Olila, Wanjau, Pambo, Chimoita, & Odipo, 2016).

The outcome of the existence of co-integration led to the next test which was to ascertain the causality and existence of causal relationship between the variables under study. Considering the results in Table 4.11, the coefficients were in negatives, which suggest that the variables granger cause each other on the reverse which is acceptable in stationary order (1) of the model (Olila, Wanjau, Pambo, Chimoita, & Odipo, 2016). The importance of this is noted in the likelihood of causality influencing the predictability of leaving one bank to the other (Lawal, 2018). These results are also in line with the submission of Gujarati (2010) on co-integration

methods, who averred that the causality relationship must be at least to one direction if there exists at least a long-run relationship between variables in all the groups.

The co-integration is possible according to Lawal (2018) because of the nature of products being sold by banks being homogeneous and also they operate in the same market under the same settings and regulations. The results of Granger Causality Tests are presented in Appendix V.

Table 4.11: Augmented Dickey-Fuller Test Equation Results Output

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID(-1)	-0.654214	0.074364	-8.797403	0.0000
D(RESID(-1))	-0.202486	0.064915	-3.119236	0.0022
R-squared	0.537484	Mean dependent var		-1.91E-05
Adjusted R-squared	0.534556	S.D. dependent var		0.000245
S.E. of regression	0.000167	Akaike info criterion		-14.54555
Sum squared resid	4.40E-06	Schwarz criterion		-14.50711
Log likelihood	1165.644	Hannan-Quinn criter.		-14.52994
Durbin-Watson stat	1.490217			

Note: *Statistical significance level = 0.05*

According to Olila et al. (2016), co integration test are important since it help to identify the number of co integrating vectors in the system. The pairwise granger causality test result as shown in Appendix III suggest that there is evidence of long run granger causality in all the variables identified by this study. This is possible because banks sell homogenous product known as banking service and at the same time within the same financial market or industry. Furthermore, the low level of the financial market and the attendant agency problem may be responsible for the granger causality results output. This result is arrived at after necessary adjustment for the lags has been made in the observations of the time series data.

4.4.4 Hausman Specification Test for Fixed or Random Effect

Hausman specification test was used to address estimation and inference errors usually associated with panel data. The central assumption in random effects estimation is the assumption that random effects are uncorrelated with the independent variables (Hausman, 1978). Hence, it is necessary to address inherent problems associated with panel least square regression model analysis which are estimation and inference problems. In order to address these problems, that is to know whether or not the intercepts vary among entities across the years or not, Hausman Specification Test was used being one of the common ones to compare the fixed and random effects estimates of coefficients. The decision rule state that if the p-value of Hausman test result is greater than 0.05 level of significance, H_0 is accepted, otherwise, fixed effect option will be considered appropriate. The implication of this is that inference is made about the population if random effect is observed; otherwise, inference is restricted to the sample under study. The hypotheses for the test are as given below.

H_0 : Random effect model appropriate

H_1 : Fixed effect model appropriate

The results as shown in Table 4.12 indicate a statistically significant p-value of 0.0000 with Chi-Square value of 58.036396 for the overall model. With this, the null hypothesis of random effect model cannot be accepted. Hence, there is no need of using random effect model for this study but fixed effect model for the panel least square regression models.

Table 4.12: Correlated Random Effects - Hausman Test

Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	58.036396	5	0.0000

4.4.5 Autocorrelation Test

In line with the research design of this study and the nature of data collected for the study, autocorrelation test was carried out. The Durbin-Watson d statistic value was used for the study. According to the decision criteria of the test, whenever a Durbin-Watson (d) equal 2, it means there is no autocorrelation. If d is less than 1, it suggests the existence of positive autocorrelation. Furthermore, whenever $d > 2$ is an indication of negative autocorrelation.

The result in Table 4.13 indicates that there is no problem of autocorrelation with the data because the d statistic is within the threshold of around 2. Which is an indication that error terms are stochastic (random). With the critical value obtained from Durbin-Watson d statistic table (AppendixVII), $k = 5$ (number of regressors without the intercept), $n = 200$, $\alpha = 0.05$, $d_L = 1.718$, $d_U = 1.820$, $d = 1.8875$, which value is greater than $d_U = 1.820$, the null hypothesis cannot be accepted, hence the conclusion that there is no autocorrelation. It also suggests that there is no specification bias with the model which could have led to regression estimation inefficiency. It is noteworthy to state that the regression estimations and standard errors are efficient while R^2 , t and F tests statistics could be regarded as reliable.

Table 4.13: Durbin-Watson d Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Credit Diversification(CD1)	0.004153	0.000685	6.063889	0.0000
Market Risk Hedging Strategy	1.85E-05	0.000448	0.041385	0.9670
Credit Risk Insurance Strategy	0.002545	0.001427	1.782895	0.0762
Capital Buffer Strategy	2.85E-06	1.37E-07	20.87302	0.0000
Bank Size	-0.000650	8.95E-05	-7.259360	0.0000
R-squared	0.706258	Mean dependent var		0.001379
Adjusted R-squared	0.698687	S.D. dependent var		0.001056
S.E. of regression	0.000580	Akaike info criterion		-12.03810
Sum squared resid	6.52E-05	Schwarz criterion		-11.93915
Log likelihood	1209.810	Hannan-Quinn criter.		-11.99806
F-statistic	93.28865	Durbin-Watson stat		1.887574
Prob(F-statistic)	0.000000			

4.4.6 Multicollinearity Test

All variables in this study was subjected to multicollinearity test. This was to check for possible multicollinearity among the variables of interest for the study. The multicollinearity test was done using variance inflation factor (VIF). The analysis was done with the aid of E-view version 8 statistical package and Microsoft Excel. Multicollinearity is detected whenever $VIF \geq 10$. Also, if the tolerance level is below 0.1, then there is a problem of multicollinearity among the variables. The correlation coefficients of all the variables were used in the analysis. The results were presented in Table 4.14.

Going by the results on Table 4.14, all the VIF falls within the threshold for the study and hence, the conclusion that no serious problem of multicollinearity among the data set used in this study. The implication of this is that each of independent variable can singly explain part of the variability in the dependent variable and the combined effect of the predictors can be known within the overall model of fitness of this study.

Table 4. 14: Multicollinearity Test Results Output

Variable	Tolerance	VIF
Credit Diversification	0.851798189	1.173987
Integrated risk monitoring & Control strategy	0.855378578	1.169073
Credit Risk Insurance	0.803206400	1.245010
Capital buffer strategy	0.824955226	1.212187
Bank Size	0.810251956	1.234184
Mean VIF		1.206900

4.4.7 Homoscedasticity Test

Variance of the error terms is expected to be constant (homoscedasticity) however, this is not always the case with time series data. When this happen then there is heteroscedasticity. It is when the size of error term differs across values on

independent variables. If it is present in a series of data, and the data is used to fit regression, the standard error will be biased, and the regression will be spurious and incorrect conclusion about the significance of regression coefficients will be reached. Hence the need to test for the presence of heteroscedasticity. In order to achieve this, Breuch-Pagan-Godfrey heteroscedasticity test type was used for detecting the presence of heteroscedasticity. If heteroscedasticity is present in a series, it is a serious problem in OLS because one of the assumptions of the OLS is that all residuals (error terms) are from a population which has constant variance. The hypotheses for the test are as stated next.

H₀: The data is homoscedastic in variance

H₁: The data is heteroscedastic in variance

The results of the test are presented in Table 4.15. The results were based on the pooled unstructured/undated data loading option of EView software. The value of Observed R-square and its corresponding p-value of Chi-square ($p < 0.05$) is significant. This suggests that the null hypothesis of data is homoscedasticity in variance (that is there is no heteroscedasticity) cannot hold and is rejected. To remove the heteroscedasticity, log transformation was done to all the variables and the test was performed again, it was noticed that the model did not improve. This indicated that the assumption of OLS in this respect has been violated by the dataset for this study. Hence, the model is not desirable because the regression output cannot be relied upon for forecasting, hypothesis testing or estimation.

Table 4.15: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	7.727005	Prob. F(5,194)	0.0000
Obs*R-squared	33.21514	Prob. Chi-Square(5)	0.0000
Scaled explained SS	47.22126	Prob. Chi-Square(5)	0.0000

Table 4.16: Panel Data Diagnostic Tests

Test	Test statistics	P-value	Decision	Remark
Normality	Jacque-Bera value of 3.5547 and Q-Q plot	p=0.1691 (p>0.05)	Data are normally distributed	OLS assumption not violated
Panel Unit Root	Augmented Dickey – Fuller	Vary between 0.000 and 0.3404 at level	CD, MR, and CRI are stationary but CB and FZ not stationary at level	OLS assumption not violated for all variables
Panel Unit Root	Augmented Dickey – Fuller	p<0.05	CD, MRH, CRI, CB and FZ are stationary at first differenced	OLS assumption not violated
Co-integration and Granger Causality Tests	Augmented Dickey-Fuller (ADF) co-integration Test	P<0.05	Co-integration equations exist	OLS assumption violated
Autocorrelation	Durbin-Watson d statistic	d = 1.887574	No problem of autocorrelation	OLS assumption not violated
Multicollinearity	Variance Inflation Factor (VIF)	All VIF less than 2	No multicollinearity	OLS assumption not violated
Heteroscedasticity	Breusch-Pagan-Godfrey	P<0.05	The data is heteroscedastic	OLS assumption violated
Fixed or Random Effect	Hausman Specification Test Chi-square (df=5)	P<0.05	Fixed effect appropriate	OLS assumption not violated

Test	Test statistics	P-value	Decision	Remark
	58.036396			

4.5 Generalized Least Squares Univariate Model

4.5.1 Test of Hypotheses with Inferential Statistics

Consequent upon the violation of some of the assumption of OLS, Cross-sectional dependence, presence of heteroscedasticity, and cointegration in the fixed effect model, the OLS model was considered inefficient for drawing conclusions on the effect of risk management strategies on financial performance of listed banks at Nigeria stock exchange. In view of this, a generalized least square (GLS) model was therefore considered and adopted for the study to correct the violations. The GLS fitted allow for heteroscedastics errors, cross-sectional dependence and fitted an estimated coefficient for first order differenced in order to correct the violations (Olaewaju, 2015).

The study comprise of 20 listed banks which is significantly higher in terms of percentage from the target population of 28 listed banks in Nigeria. This represents about 71.% of the population which serves as good representative of the banking system in Nigeria; hence generalizations can validly be made from this sample. This agrees with the submission from Saunders et al. (2009).

The selection of the banks was purposively done due to the availability of the financial data from the individual website/financial statements and CBN bulletins. This empirical evidence further confirmed the peculiarity of missing data problem especially in developing economies for empirical studies in relation to targeted study population (Castellacci & Natera, 2011). The following subsections present the test of hypotheses, the statistical analysis and the discussions for all the predictor variables of this study.

4.5.2 Effect of Credit Diversification on Financial Performance of Listed Banks at Nigeria Stock Exchange Nigeria

Hypothesis 1:

H₀: Credit Diversification has no significant effect on Financial Performance of Listed Banks at Nigeria Stock Exchange.

The first objective of the study was to evaluate the effect of credit diversification on financial performance of listed banks at Nigeria Stock Exchange. The GLS was fitted to empirically determine the effect of credit diversification on financial performance of listed banks at Nigeria Stock Exchange. The first indicator was percentage of private loan asset diversified. The results of which were as presented in Table 4.15. The Wald Chi-square statistic of 3.30 with p-value was found to be 0.069 for credit diversification which is greater than the alpha value =0.05. The implication of this was that the GLS model fitted is generally insignificant and that the estimated coefficients of the explanatory variables are jointly equal to zero. This means that private loan assets diversification has insignificant effect on the financial performance of the listed banks at Nigeria stock Exchange. However, the R² of .17% for credit diversification as individual predictor indicate that the variable is statistically insignificant in this model. Thus, CD explained about .17% of the variations in financial performance. It was also confirmed by the descriptive statistics result with the mean value of about 54% indicating a high degree of variability amongst the banks with wide dispersion of 81% and coefficient of variation of 1.49 respectively. This suggests that the low level of risk practices across the banks under investigation. This result was similar to the findings of Adzobu (2015). However, it contradicts the findings of Yibing et al. (2013). The equation generated from the model fitted is given next.

Table 4.15: Inferential Statistics of FP and Credit Diversification

Model 1 as equation 1: $FP_{it} = \beta_0 + \beta_1 CD_{it} + \beta_2 MRH_{it} + \beta_3 CRI_{it} + \beta_4 CB_{it} + \varepsilon_{it}$

Variables	Coefficient	Std. Error	P> z
Intercept	.0014687	.0002409	0.000
Credit	-.0004029	.0002218	0.0693
Diversification			
R ²	0.0017		
Wald Chi 2 =3.30			

4.5.3 Effect of Market Risk Hedging on Financial Performance of Listed Banks at Nigeria Stock Exchange

The second hypothesis was subjected to further inferential statistics to determine whether that the explanatory power of the variable is significant statistically. Specific objective two of the study provided for the formulation of second hypothesis which is presented and analyzed below:

Hypothesis 2:

H₀: Market Risk Hedging has no significant effect on Financial Performance of listed Banks at Nigeria Stock Exchange.

The second objective of the study was to establish the effect of market risk hedging strategy on financial performance of listed banks at Nigeria Stock Exchange. The GLS was fitted to empirically determine the effect of market risk hedging strategy on financial performance of listed banks at Nigeria Stock Exchange. The indicator was market risk hedging strategy. The results of which were as presented in Table 4.16. The Wald Chi-square statistic was 5.44 with the p-value of 0.0196 for market risk hedging strategy which is less than the alpha value =0.05. The implication of this

was that the GLS model fitted is generally significant and that the estimated coefficients of the explanatory variables are jointly equal to zero. The result also show that there is a strong relationship between Market Risk Hedging and Financial Performance with R^2 of 0.8326 meaning that it accounted for about 8% of the variation in the model. This means that market risk hedging strategy has significant effect on the financial performance of the listed banks at Nigeria stock Exchange.

This result was similar to the findings of Faisal, Melati, Lim, and Hashim (2011). However, it contradicts the findings of Al-Matari, Al-Swidi and Fadzil (2014). The equation generated from the model fitted is given next. A contrary submission was made in South Africa, Ifeacho et al. (2014) found that market risk is positively related to return on equity Furthermore, contrary finding was documented by Muraina (2018), that market risk hedging had a positive and significant influence on profitability while credit ratio had a negative and significant relationship with profitability.

Table 4.16: Inferential Statistics of Financial Perform and Market Risk Hedging

$$\text{Model 2 as equation 2: } FP_{it} = \beta_0 + \beta_1 CD_{it} + \beta_2 MRH^* + \beta_3 CRI_{it} + \beta_4 CB_{it} + \varepsilon_{it}$$

Variables	Coefficient	Std. Error	P> z
Intercept	.0017763	.0002693	0.000
Market Risk Hedging	-.0006285	.0002694	0.020
R ²	0.8326		
Wald Chi 2	5.44		

4.5.4 Effect of Credit Risk Insurance on Financial Performance of Listed Banks at Nigeria stock Exchange

Hypothesis 3:

H₀: Credit risk insurance has no significant effect on financial performance of listed banks at Nigeria Stock Exchange.

The third objective of the study was to assess the effect of credit risk insurance on financial performance of listed banks at Nigeria Stock Exchange. The GLS was fitted to determine the effect of credit risk insurance on financial performance of listed banks at Nigeria Stock Exchange. The results of which were as presented in Table 4.17. The Wald Chi-square statistic was 3.03 with the p-value of 0.082 for credit risk insurance which is greater than the alpha value =0.05. The implication of this was that the GLS model fitted is generally insignificant and that the estimated coefficients of the explanatory variables are jointly not equal to zero. Also, From Tale 4.18, the coefficient of correlation 0.0003 shows that the two variables, (FP) and (CRI) are not correlated. Hence, Credit Risk Insurance has statistical insignificant effect on financial performance of listed banks in Nigeria. This means that credit risk insurance has insignificant effect on the financial performance of the listed banks at

Nigeria stock Exchange. This result was similar to the findings of Isaksson and Iantzi (2015). However, it contradicts the findings of Gyemang, Akins, Asibey and Broni (2015). According to Onuona (2014) who submitted that, corporate resources must be efficiently controlled, since bank size, market risk and operational expenses significantly affect financial performance.

Table 4.17: Inferential Statistics of FP and Credit Risk Insurance

$$\text{Model 3 as equation 3: } FP_{it} = \beta_0 + \beta_1 CD_{it} + \beta_2 MRH^* + \beta_3 CRI_{it} + \beta_4 CB_{it} + \varepsilon_{it}$$

Variables	Coefficient	Std. Error	P> z
Intercept	.001432	.0002383	0.000
Credit Risk Insurance	-.0015009	.0008618	0.082
R ²	0.0003		
Wald Chi 2	3.03		

4.5.5 Effect of Capital buffer on Financial Performance of Listed Banks at NSE

Hypothesis 4

Ho: Capital Buffer has no significant effect on Financial Performance of Listed Banks at NSE.

The fourth objective of the study was to investigate the effect of capital buffer on financial performance of listed banks at Nigeria Stock Exchange. The GLS was fitted to determine the effect of capital buffer on financial performance of listed banks at Nigeria Stock Exchange. The results of which were as presented in Table 4.18. The Wald Chi-square statistic was 47.25 with the p-value of 0.0000 for capital buffer which is less than the alpha value =0.05. The implication of this was that the GLS model fitted is generally significant and that the estimated coefficients of the

explanatory variables are jointly equal to zero. This means that capital buffer has significant effect on the financial performance of the listed banks at Nigeria stock Exchange. It was confirmed that capital buffer has a mean value of (23%) with a spread between the maximum and minimum values (5% & 68%). The standard deviation also confirmed that there was wider dispersion of capital buffer management by the banks, thus impacting on the general financial performance of the listed banks.

This result was similar to the findings of Saber (2013). However, it contradicts the findings of Brooks (2011). This result varied significantly with the study of Berihun-Engida (2015) stating that holding capital buffer has a negative significant impact on bank size and loan growth for banks in Ethiopia. Even though same measurement metrics used by the study is employed by this study. From a different environment, the findings from Lartey et al. (2013) supported the positive relationship that existed between capital buffer and financial performance in Ghana.

Table 4.18: Inferential Statistics of FP and Capital Buffer

$$\text{Model 4 as equation 4: } FP_{it} = \beta_0 + \beta_1 CD_{it} + \beta_2 MRH^* + \beta_3 CRI_{it} + \beta_4 CB_{it} + \varepsilon_{it}$$

Variables	Coefficient	Std. Error	P> z
Intercept	.0009682	.0001132	0.000
Capital Buffer	8.21e-07	1.19e-07	0.000
R ²	0.5725		
Wald Chi2	47.25		

4.5.6 Moderating Effect of bank size on the relationship between RMS on Financial Performance of Listed Banks at Nigeria Stock Exchange.

Hypothesis 5:

Ho: Bank Size has no significant moderating effect on the relationship between Risk Management Strategies and Financial Performance at Nigeria Stock Exchange.

To achieve this objective, the researcher fitted a panel data model that assessed the moderating effect. The moderating effect was assessed by first generating the interaction variables between the moderator - bank size and the independent variables. The moderating variable and the interaction variables were then added to the multivariate model and the effect of the addition assessed. Since the comparison of the new model was to be made with the first model without the interactions, a similar model estimation technique was adopted. The researcher thus fitted a GLS model including the moderator and the interaction terms in the model. The effect of risk management strategies on the financial performance of listed banks at Nigeria Stock Exchange was moderated through bank size proxy by percentage of market share held by this study. This is done with an attempt to unearth the strength and the intensity of the effect of bank size (percentage of market share held) on financial performance of the listed banks. The result from the panel regression model as shown in Table 4.21 revealed that the coefficients of determination, R^2 show that about 57 percent (56.67) of the variability in the model has been explained by the explanatory variables while the remaining 43 percent unexplained variations are being accounted for by the error term.

As revealed by the result output from Table 4.19, the coefficient of correlation of -0.00078 show that the two variables, FP and bank size are negatively correlated. Hence, bank size has significant effect on the effect of risk management strategies on financial performance of listed banks at Nigeria Stock Exchange since p-value is less than 0.05 (p-value = $0.000 < 0.05$).

Based on the statistical analysis, bank size demonstrates negative significant moderating effect statistically, therefore, there is fair statistically established intensity

or strength or significant association within the variables of the independent and the response variable (coefficient of .006438, standard error of .0001104). This finding is consistent and concurred with the studies of Mugeru (2013) and Oyerinde (2014), whose studies indicate a negative significant moderating effect of bank size on bank risk management strategies and banking performance especially when considering the contextual business environment where each bank operates. On a contrary submission and inconsistent with this findings, Rehman et al. (2015) and Adjei-Frimpong et al. (2014), employed bank size (natural log of total asset) in their studies and documented that bank size had a positive impact on profitability and cost efficiency.

Table 4.19: Moderating effect of bank size on the relationship between RMS and FP of listed banks at Nigeria Stock Exchange.

$$\text{Model 5 as equation 5: } FP_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Z_{it} + \beta_3 X_{it} * Z_{it} + \epsilon_{it}$$

Variables	Coefficient	Std. Error	P-value
Intercept	.0064388	.0001104	0.000
Bank Size	-.0007817	.0007537	0.000
R ²	0.5668		
Wald Chi2	114.99		

X_{it} and Z_{it} represents both the predictors ($X_{it} = CB, MRH, CRI$ and CB) and the moderating variable is the percentage of bank Market Share (Z_{it}).

Table 4.20: Summary of the Hypothesis Testing

Hypothesis	Coefficient	t- statistic	P> z 	Decision
H₀₁ Credit diversification has no significant effect on financial performance of listed banks at Nigeria Stock Exchange	.0009033	3.17	0.002	Accept
H₀₂ Market risk hedging has no significant effect on financial performance of listed banks at Nigeria Stock Exchange	.0062812	4.531	0.000	Rejected
H₀₃ Credit risk insurance has no significant effect on financial performance of listed banks at Nigeria Stock Exchange	.0054875	3.6100	0.000	Accept
H₀₄ Capital buffer has no significant effect on financial performance of listed banks at Nigeria Stock Exchange	2.59e-06	17.700	0.000	Rejected
H₀₅ Bank size has no significant effect on the relationship between the ERM strategies and financial performance of listed banks at Nigeria Stock Exchange		422.59*	0.000	Rejected

* *Wald chi2(5)*

4.5.7 A Comparative analysis of the Moderating and Non-Moderating Effect of Bank Size on FP of Listed Bank at Nigeria Stock Exchange (NSE)

In other to fully understand and expatiate more on the effect of moderation of bank size (BS) between the independent variables and the dependent variable of FP (known as model 1) as well as its non-moderating effect (known as model 2) in a comparative analysis, the following statistical results of the model output for the two models are hereby presented below:

From the Table 4.21, the regression model indicate that bank size have no moderating effect on financial performance at 0.05 level of significance. The coefficient (β) of credit diversification to bank size =.0001015 implying that an increase of a proportion in total amount diversified of loan asset diversified to private

sector may have negligible effect on the financial performance of the banks. This could be in form of bad or delinquent loans or non-performing loans remain at the same level as a result of poor credit risk administration. The standard error support that there is close variability among the banks in the industry. The t-statistic of -0.09 also attest to the negative correlation of bank size effect on the financial performance of the listed banks even as statistically significant (Adeusi et al., 2014).

Table 4.21: Comparative Statistics of CD on FP with and without moderation

S/N	Parameters	Without moderation (Model 1)	With moderation (Model 2)
1	Coefficient (β)	.0001015	-.0000221
2	Standard Error	.000273	.0002394
3	P-value	0.710	0.926
4	Overall sig. (Prob>Chi2)	0.0000	0.0000
5	t-statistic	0.37	-0.09
6	Wald chi-square	55.51	114.99

The Table 4.22 depicts that with the p-value of 0.025 at 0.05 level of significance indicate that the relation between market risk hedging and financial performance is statistically significant. However, the coefficient of -.000701 implies that an increase of a unit of options or futures derivatives used by the banks to hedged loan assets risk might cause a decrease in price earnings ratio for the banks. It can be interpreted that increasing the rate of market risk hedging of the banks may or may not improve financial performance because if the amount spent on hedging of the loan assets of the banks are increased above the regulatory requirement, it may automatically not improve the financial performance especially where the overheads expenses are not adequately controlled (Rehman et al., 2015). The t-statistic and the standard error confirm that the variation and dispersion of the result cut across the banks in a decreasing rate from -2.25 to -2.04.

Table 4.22: Comparative Statistics of MRH on FP with and without moderation

S/N	Parameters	Without moderation (Model 1)	With moderation (Model 2)
1	Coefficient (β)	-.0007011	-.0005539
2	Standard Error	.0003119	.0002714
3	P- value	0.025	0.041
4	Overall sig. (Prob>Chi2)	0.0000	0.0000
5	t-statistic	-2.25	-2.04
6	Wald chi-square	55.51	114.99

From the Table 4.23, the coefficient of .0015005 indicate that there is a positive relation between credit risk insurance (CRI) and financial performance (FP) meaning that a unit increase in credit risk insurance level of the banks will have an equivalent increase in the performance ratio by 0. 0015 units for the banks through improved performance especially in loan asset quality that generates substantial income for the bank. Empirically therefore, financial performance has a direct relationship with bank credit risk insurance, market risk hedging and capital buffering structure of banks (Adeusi et al., 2013; Chenhall, 2006). It suggests that the higher the financial performance, the higher the advantage to be gained from insuring the bank loan assets. This result is confirmed by the t-statistic of 0.46 when bank size is introduced and controlled optimally.

Table 4.23: Comparative Statistics of CRI on FP with and without moderation

S/N	Parameters	Without moderation (Model 1)	With moderation (Model 2)
1	Coefficient (β)	.0015005	-.000469
2	Standard Error	.0011304	.0010144
3	P- value	0.184	0.644
4	Overall sig. (Prob>Chi2)	0.0000	0.0000
5	t-statistic	1.33	0.46
6	Wald chi-square	55.51	114.99

Table 4.24, indicate the t-statistic and Wald chi square for the moderating effect of bank size and capital buffering show a significant effect statistically (10.20; 114.99; p- value=0.000 < 0.05). The implication of this is that a positive relationship exists between capital buffering and financial performance with the two models. The intensity of introducing bank size from the model output could be felt when more quality loan assets are maintained by the banks, and a drastic reduction in bad loans or increase in loans repayment are made, leading to increase capital buffer stock (Gweyi, & Karanja, 2014; Ariffin, 2012;). Again, there is the likelihood to increase the quality of total loan assets of the banks while the t-statistic also showed little improvement for the banks during the period.

Table 4.24: Comparative Statistics of CB on FP with and without moderation

S/N	Parameters	Without Moderation (Model 1)	With moderation (Model 2)
1	Coefficient (β)	9.35e-07	1.69e-06
2	Standard Error	1.35e-07	1.65e-07
3	P-value	0.000	0.000
4	Overall sig. (Prob>Chi2)	0.0000	0.0000
5	t-statistic	6.95	10.20
6	Wald chi-square	55.51	114.99

The chi square and the overall correctness in the model as shown in Table 4.25, show that bank size as a moderator has an overall significant effect on the relationship between changes in the risk management strategies and the overall financial performance ratio in the industry. It suggests that all the predictor variables significantly influenced the performance level of the banks. With or without moderation, the two models are statistically significant (p-value=0.000 < 0.05) at 95% degree confidence intervals. The moderation influence could be felt by a difference of about 5% which is statistically significant. Between 89% and 61% it can be suggested that larger banks can effect more risk management strategies in the

industry than smaller banks due to size. The t-statistic support the result with an improved performance from 4.93 to 8.54 suggesting that the strength of the correlational relation was higher under moderation than when no moderation is introduced.

Table 4.25: Comparative Statistics of the Overall Model Fitness for the moderating effect of BS on the effect of RMS on FP with and without moderation

S/N	Parameters	Without moderation (Model 1)	With moderation (Model 2)
1	Coefficient (β)	.0012787	.0064388
2	Standard Error	.0002592	.0007537
3	P-value	0.000	0.000
4	Overall sig. (Prob>Chi2)	0.0000	0.0000
5	t-statistic	4.93	8.54
6	Wald chi-square	55.51	114.99
7	R square	0.885	0.609

From the above Table 4.26, it clearly depict that bank size has a statistical significant effect on FP with the Wald chi square = 114.99 and probability > chi square = 0.000. From the overall model fitness, it can be concluded that the moderating effect of bank size showed significant intensity or strength on the dependent variable with the following explanations. For instance, bank size indicated a positive effect on financial performance ratio indicating an direct relationship between the two variables. This is confirmed by Aduralere (2019), that bank size has a positive effect on return volatility. Furthermore, Table 4.22 indicated a weak linear negative relationship between (FP and CD); (CD and BS) suggesting that the operational efficiency of the sampled banks have not been adequate. It indicates that an inverse relationship exist between (CD and BS); (MRH and BS) meaning that banks credit loans to private sector are in high proportion to the loan facility to the government

sector. The study from Adzobu, (2015) corroborates it that, high diversification of loans to private sector can act as a significant source of bank failure. This suggests that the intensity and the strength exhibited by bank size on loan asset quality is that the larger the size the better the total loan assets of the banks. There is the likelihood that loan assets quality would have been impaired or low as a result of high non-performing loans as a result of poor credits diversification in the credit portfolio of these banks (Damodaran, 2013; Umar, 2015) (Beta coefficient= - .0004029 to - .0003566; t-statistic= -1.82 to 1.44).

For market risk hedging, with or without moderation, this variable is found to be significant statistically (p-value= 0.007 < 0.05). This suggests that the intensity of the effect of bank size on the risk hedging activities of the banks is low compared to the level of financial performance attained during this period under the two models. For the variable (MRH), it suggests that the total options and futures derivatives used in risk hedging activities of the banks is low compared to the level of bank exposures in terms of loan and advances / commitments undertaken during the period while for (BS), it suggest that the total loan assets of the banks is small comparatively to the level of the economic activities present in the economy.

As regards the credit risk insurance as a predictor variable on financial performance for the banks, there is no statistical significance with p-value = 0. 0.192 > 0.05 at both levels. This indicate that at both levels of the models (with or without moderation), the credit risk insurance position of the banks are not fair in tandem with their operational capabilities/opportunities. Conclusively and in consistence with Adeusi et al. (2014), it shows that the larger the total loan assets of banks, the lower the amount of loan assets insured (β =-.0015009 to -.001343 and t-statistic=-1.74 to -1.30).

Similarly, significant effect is obtained for capital buffering between its relationship with bank size for the two models (p-value=0.000<0.05, 95% confidence level). It shows that the intensity of bank size could be felt by the larger banks with more favorable capital buffer position than the smaller banks in the industry. They can use the advantage to attract higher deposits from numerous customers with (β = 8.21e-07

to 1.73e-06; t-statistic= 6.87 to 10.64). Consistency can be drawn from the study of Berihun-Engida (2015), documenting that bank size and loan growth has negative influence on operational performance. It also suggests that larger banks always surpass the minimum capital buffer requirements of CBN as a mark of stability and strength within the industry. Consequently, it can be deduced from the results presented and discussed that the independent variables were all statistically significant at 0.05 level of significance ($p\text{-value}=0.000<0.05$) with the exception of credit risk insurance. Apparently, the intensity of bank size moderating showed the required effect positively and negatively for the panel least regression models. The intervention of the moderation clearly suggests warning signals to both the individual banks and the regulatory authorities in Nigeria.

Table 4.26: Variables in Equation for Moderating effect of bank size on the Relationship between RMS and FP of Listed Banks at NSE.

Variables	B	S.E	Wald	Df	P> z	t-statistic
CD	-.0004029	.0002218	114.99	1	0.069	-1.82
MRH	-.0006285	.0002694	114.99	1	0.020	-2.33
CRI	-.0015009	.0008618	114.99	1	0.082	-1.74
CB	8.21e-07	1.19e-07	114.99	1	0.000	6.87
CD by BS*	-.0003566	.0002476	114.99	1	0.150	1.44
MRH by BS *	-.000745	.0002743	114.99	1	0.007	-2.72
CRI by BS*	-.0013427	.0010298	114.99	1	0.192	-1.30
BL by BS*	1.73e-06	1.62e-07	114.99	1	0.000	10.64
Constant	.0064388	.0007537	114.99	1	0.000	8.54

Variables entered: Credit Diversification (CD), Market Risk Hedging (MRH), Credit Risk Insurance (CRI), Capital Buffer (CB), BS= Bank Size. * Strength/intensity of BS and independent variable.

Generalized Least Squares Multivariate Model

4.5.8 Panel Regression Analysis of Risk Management Strategies (RMS) and Financial Performance (FP) of Listed Banks at Nigeria Stock Exchange

This section established the regression results of the relationship between risk management strategies and financial performance of listed banks at Nigeria Stock Exchange. Table 4.27 show the regression model output of RMS and FP. The Regression analysis show a relationship indicating $R^2 = 0.5927$. According to Kothari (2004) the coefficient of variation should be calculated and reported for the purpose of comparing the degree of dispersion relative to mean of the population distribution where ratio scale and difference in distribution are noticed. The finding show that the explanatory variables jointly accounted for about 60% variation in the financial performance (FP) for the banks. The remaining 40% is explained by other independent variables not captured in this study. There is overall significance among all the parameters of this regression model $p\text{-value} = 0.000 < 0.05$ level of significance which show that the model is fit and desirable.

4.5.8.1 Model 1 without moderating variable

From Table 4.27, Regression statistics result confirms that the independent variables: Credit Diversification (CD) and Credit Risk Insurance (CRI) at 0.37 and 0.184 respectively have insignificant effect on financial performance while the Market Risk Hedging (MRH) and Capital Buffer (CB) at 0.025 and 0.0000 respectively have significant effect on financial Performance (FP) of the listed banks at Nigeria Stock Exchange. Meaning, change in any of the two variables, Market Risk Hedging (MRH) and Capital Buffer (CB) will lead to a significant change in the price earnings ratio of the listed banks. The explanatory variables have significant relationship with the financial performance ($p\text{-value} = 0.000 < 0.05$). The breakdown of the result shows that Market Risk Hedging (MRH) and capital buffer (CB) have positive and significant effect on financial performance (FP). This result is consistent with (Glantz, 2013). It means that an increase in any of these two variables, will automatically lead to increase in financial performance of the listed banks. However

negative relationships were shown for credit diversification (-.0007011) with coefficient constant of .0012787

From Table 4.27, the overall R square of 0.5927 had confirmed the goodness of fit of the model. R^2 is a measure of the goodness of fit of the explanatory variables in explaining the variation on financial performance. It suggests that the variables jointly explain 60% of the variation in the financial performance of the listed banks.

The overall implication of the result for the credit diversification is that the quality of the banks' risk management were not properly handled by these banks, thus indicating poor credit risk management/policies (Umar, 2015; Adzobu, 2015).

Table 4.27: Model without Moderating Variable

OE/Variables	Coefficients	Standard Error	Z	P> z
CD	.0001015	.000273	0.37	0.37
MRH	-.0007011	.000311	-2.25	0.025
CRI	.0015005	.001130	1.33	0.184
CB	9.35e-07	1.35e-07	6.95	0.000
Constant	.0012787	.0002592	4.93	0.000

$$R^2 = 0.5927; \text{Wald Chi2} = 55.51$$

4.5.8.2 Model 2 with moderating variable

The second model output with moderation (BS) is hereby presented and discussed.

Size of the banks proxy as percentage of market share of the banking industry turnover indicated that the listed banks' market share were not adequate during the period of this study as shown in Table 4.28. Therefore, it can be suggested that all the explanatory variables have joint and individual statistical significance as indicated in the above model output result. It shows that the overall model is statistically significant (Wald chi square (4) =114.99, Prob >chi square = 0.000). The results obtained from the two models using generalized least square (GLS) estimation

technique is R^2 of 0.5927; about 60% for first (1st) model as against second (2nd) model R^2 of 0.5668; about 57% suggesting that bank size (BS) has a stronger effect or intensity on the independent variables (difference of about 5%).

However, the Durbin-Watson statistic 2.00 indicates that our long-run model is fit and not spurious. The strength or the intensity of the effect of moderating variable as indicated by this study, identified (CD) as having higher effect on financial performance (FP) in Nigeria and followed by (CRI) in the long-run. The result suggests that the overall model is statistically significant (Wald chi square (5) = 114.99, Prob.> chi square = 0.0000). The findings showed that FP will assume the value of 0.0643 units when other variables are held constant and that all the independent explanatory variables were statistically significant except Credit Diversification (CD and Credit Risk Insurance (CRI) were insignificant to the price earnings ratio (FP).

Table 4.28: Model Output with Moderating Variable

OE/Variables	Coefficients	Standard Error	Z	P> z
CD	-.0000221	.0002394	-0.09	0.926
MRH	-.0005539	.0002714	-2.04	0.041
CRI	-.000469	.0010144	-0.46	0.644
CB	1.69e-06	1.65e-07	10.20	0.000
BS	-.0007817	.0001104	-7.08	0.000
Constant	.0064388	.0007537	8.54	0.000

$$R^2 = 0.5668; \text{Wald Chi2} = 114.99$$

4.6 Optimal Model

In line with the findings of this study, all variables except credit diversification and credit risk insurance had significant and positive effect on the financial performance of listed banks at Nigeria Stock Exchange. To determine the hierarchy of the effect and the contribution of the risk management strategy on the firm performance, the

optimal model was formulated using the coefficients of the variables. This is given in Figure 4.4.

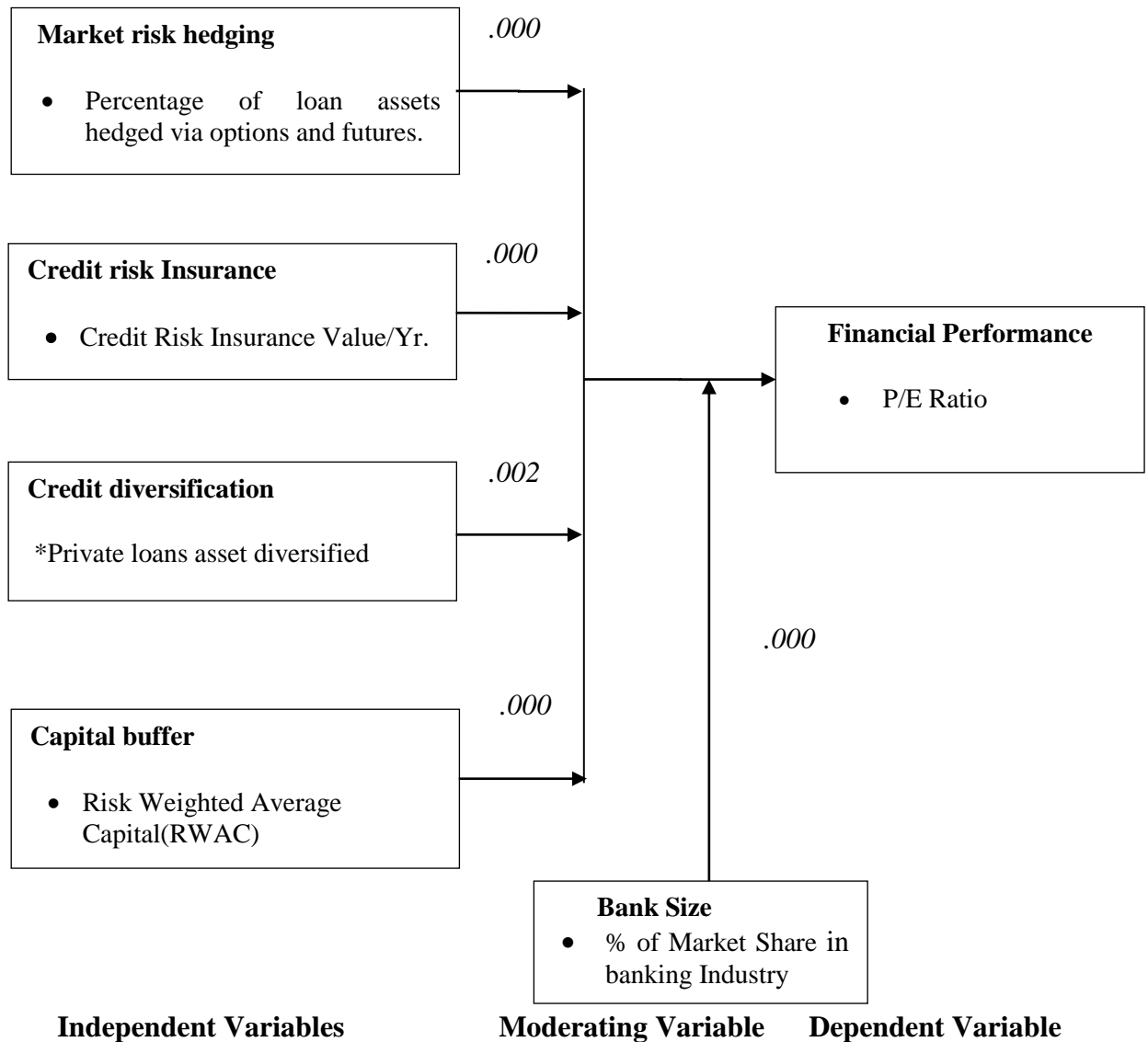


Figure 4.2: Optimal Model Showing the interaction between variables

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In furtherance of achieving the core overall objective of this study, to examine the effect of risk management strategies on financial performance of listed banks at Nigeria stock exchange. The cardinal aim of this chapter is to provide a summary of the findings in line with the research objectives and hypotheses tested, from both descriptive and inferential statistics. Based on the empirical findings, conclusions are arrived at for each of the research objectives. Specifically, the study explored the effect of credit diversification, market risk hedging, credit risk insurance and capital buffer on the financial performance while bank size was employed as the moderating variable for the study. Thus, two models were adopted by the study to unravel the effects of all the predictor variables on the financial performance of the listed banks. Summary of discussions of specific objectives/research hypotheses have been carried out as well as the practical pertinent meanings/interpretations of these results. The conclusion and recommendations from the study were principally drawn from the research findings in relation to the specific objectives. Consequent upon the research findings, certain limitations were encountered by the study, seeking further research studies. Relevant recommendations were made based on the findings of both, the bank managerial, the investors and policy makers, so as to provide virile and stable banking system in Nigeria. Suggestions for further research are also included in this chapter.

5.2 Summary of Findings

As stated in chapter one, this study concentrated on the need to unravel the lack of clarity as to whether and how the concept of risk management strategies and financial performance operates in the Nigerian banking industry. From the foregoing therefore, the main purpose of the study was to examine and establish the risk management strategies and financial performance of listed banks at Nigeria Stock Exchange.

Basically, four point research problems were identified as forming the broad objective of this study. Based on this, there exist knowledge gaps on the investigation of the risk management strategies and financial performance of listed banks at Nigeria Stock Exchange. The complex concept of financial performance worldwide as to its principles, measurement and its resultant effect of various risk strategies to be critically examined especially in the developing economies of the world. Also, the composition of financial performance as to whether it is measures remain a puzzle and controversial in banking literature. This has brought inconsistencies and mixed findings over the world. It is also documented by empirical studies that there is lack of clarity and unanimous submissions as regards various risk management strategies and financial performance in the finance literature. The multitude of problems and conflicting results therefore, demands further examination as envisioned by this study. From the foregoing research problems as presented in chapter one, five specific objectives were established to unravel the research problems over a lengthy period of ten year panel datasets. However, the study targeted all the listed banks but purposively selected twenty banks based on the panel data available for the study.

In order to making this study unique, the theoretical foundation was drawn from major relevant finance literature. The contingency theory was given attention first in terms of theoretical literature review. The essence of a contingency theory of risk management would be to find “fit” between contingent factors and firms’ risk management practices, and to establish propositions of fit that will result in desired outcomes so as to protect the loan assets of the banks. Also, Credit risk insurance hypothesis were critically reviewed due to their uniqueness to this study. The theories laid foundations for risk control achievable through risk management practices to make improved profitability. Modern portfolio theory were reviewed to educate the investors and managers on the need to understand the concept of diversification in investing, with the aim of selecting a collection of investment assets that has collectively lower risk than any individual asset

Due to the nature of this study, quantitative research design method was employed, hence secondary data was collected from the annual reports and financial statements of banks sourced from the individual bank’s website, Central Bank of Nigeria,

Nigeria Stock Exchange and National Deposit Insurance Corporation respectively. From the statistical analysis point of view and as presented in chapter one, both descriptive and inferential statistics were employed to evaluate the various aspects relating to the research objectives of the study. The descriptive statistics involved mean, median, skewness, trend analysis and graphs while inferential statistics employed the use of general least squares regression mode as two major assumptions of ordinary least squares were violated. Various diagnostic tests were employed to determine the model fitness for the study. This involved Stationarity, Co-integration and Granger causality tests, Durbin-Watson tests for independence of the variables were equally performed. In summary the various aspects of the research objectives and the findings on the various tests of the hypotheses of the study are indicated in the ensuing subsections.

5.2.1 The effect of Credit diversification on Financial Performance of listed banks at Nigeria Stock Exchange

The first specific objective of this study was to determine the effect of Credit diversification on financial performance of listed banks at Nigeria Stock Exchange. The hypothetical statement drawn from it was that Credit diversification has no significant effect on financial performance of listed banks at Nigeria Stock Exchange. Descriptive statistical analysis indicated a wide variability and spread among the listed banks as regards the use of credit diversification. The significance of coefficients of variation in the model also confirmed higher degree of variation especially as regards the spread of loan assets of the banks. The results from the panel least regression model employed indicated that credit diversification has statistical no significant effect on the financial performance of the listed banks at Nigeria stock Exchange. This suggests that the overall model applied can significantly be predictive of the outcome variable, thus leading to the submission that the two elements used for credit diversification: loan assets to private sector has insignificant effects on financial performance of listed Banks.

The basic theoretical foundation that fits for the interpretation of this findings are: modern portfolio theory as well as the financial intermediation theory. The theories

have advocated that the composition of a bank's loan assets must be in such a way that the selection of a collection of investment assets must have collectively lower risk than any individual asset. Hence, reduction in the level of risk undertaken by the banks.

5.2.2 The effect of Market Risk hedging on financial performance of listed banks at Nigeria Stock Exchange

Specific objective two of this study proposed that Market risk hedging has no significant effect on financial performance of listed banks at Nigeria Stock Exchange. The analysis shows that the Market risk hedging has positive effects on price earnings ratio, measure of financial performance of listed banks at NSE. Analysis from the descriptive statistics indicated that the mean value shows that employment of market risk hedging was recorded and this spreads across the listed banks. The coefficient of variation of market risk hedging on financial performance was positive. This indicates that the explanatory power of the variable has statistical significance on financial performance. Inferential statistical analysis of the regression model employed, also suggest that market risk has positive significance statistically on financial performance. The descriptive and inferential model output results suggest that there was an improved financial performance as a result of market risk hedging.

The theoretical justification that can be adduced to this market hedging relates to the theories of financial derivative and extreme value, which are based on the application of underlying idea that an investor could exactly replicate the payoff of the option by trading at each point in time in the stock and a riskless bond. It advocates that, the trading strategy should be self-financing, it should have an initial cost, but then require no other cash inflows or outflows until the terminal date, when the payoff should exactly match the payoff of the derivative.

5.2.3 The effect of Credit Risk Insurance on Financial Performance of listed banks at Nigeria Stock Exchange

The thrust of specific objective three was based on the hypothesis, that credit risk insurance has no significant effect on financial performance of listed banks at Nigeria Stock Exchange. Analysis found out that credit risk insurance has no effect on financial performance of listed banks at Nigeria Stock Exchange. The result from the descriptive statistics indicated that the credit risk insurance has a lower mean value and standard deviation. This statistics depict that there is a wide degree of variability in the credit risk insured level of the banks mean value with higher degree of variability and dispersions in the model. This statistics depict that there is a wide degree of variability in the credit risk insured level of the banks. This suggests that credit risk insurance was never a problem for the banks during the period. The coefficients of correlation showed that bank credit risk hedging was positively related to financial performance of the banks. Panel least regression analysis also confirmed, that credit risk insurance has statistical no significant effect on financial performance. The relevant theories which could interpret these findings are: contingency theory stating that where the structure fits the contingencies, then high performance results, whereas, where the structure misfits the contingencies, then low performance results. The main contingency factors are size, task uncertainty, and risk insurance.

5.2.4 The effect of capital buffer on financial performance of listed banks at Nigeria Stock Exchange

The fourth specific objective as hypothesized is to investigate the effect of capital buffer strategy on financial performance of listed banks. The hypothesis states that capital buffer has no significant effect on financial performance of listed banks at Nigeria Stock Exchange. The result from the analysis also confirmed a positive effect between capital buffer and financial performance of listed banks.

Descriptive statistics showed that the mean value of capital buffer was suggesting that the liquidity position of the banks is fair especially in line with the CBN requirements. Result from the panel regression analysis indicated that capita buffer

has statistical significant influence on the financial performance of the listed banks at Nigeria stock Exchange. A positive relationship was established showing that they are related. Coefficients of variation showed that there was a positive significant relationship while higher degree of dispersion was indicated in the result also. This clearly indicates that the coefficient of variation was significantly different from zero as shown by this result.

Sufficiency of economic capital in banking is very germane to achievement good financial performance which could be likened to the issue of minimum capital standard from Basle Accord agreement. The results could best be interpreted with agency theory, stating that the survival of an organization is based on the managers, who act as the agents to the shareholders who are the principals (capital providers). The managers of the principals' resources are expected to make sound decision to propel the bank to higher performance through effective risk management, for the benefits of stakeholders, especially the investors who are the providers of capital (equity capital). Good risk management strategy employed will bring more confidence into the system and encourage the investors to invest more in the business. However, agency problems usually arises which must be adequately managed by both the capital providers (investors) and the users of the capital (managers) for the organization such as agency cost.

5.2.5 Moderating effect of bank size on the effect of risk management strategies and financial performance of listed banks at Nigeria Stock Exchange

In a bid to explore possible influence that bank size could play as a moderating variable for risk management strategies on financial performance, this attribute in the industry was hypothesized. For risk management, the unique characteristic of bank sized as industry-specific factor was employed to showcase its uniqueness and moderating influence. Based on this fact, bank size was employed as the fifth objective of this study. Consistent with prior studies therefore, market share of banks in the industry was proxy for bank size in this study's model. The analysis shows that bank size has a moderating effect on the relationship between risk management strategies and financial performance of listed banks at Nigeria Stock Exchange.

Descriptive statistics showed that bank size mean value of 83% was highest in this model. This indicates that, banks market share were spread and dispersed across the listed banks. The dispersion across the listed banks was even encouraging as regards the pivotal function, market play in financial performance of the banks. This is because banking is built on trust, hence holding more of market share, may suggest satisfying customers' services and meeting statutory regulations of the Central Bank of Nigeria.

Coefficients of variation also attested to it that, market share and financial performance are positively correlated. A positive correlation was recorded for capital buffer and market risk hedging by the findings. This suggests that risk management may enhance financial performance but may affect embanking on more market risk hedging and having adequate capital buffer at the same time. This will definitely affect the degree of economic capital accumulated by the banks. Inferential statistical analysis carried out corroborated findings from descriptive analysis, confirming that, bank size has significant effect on risk management strategies and financial performance of listed banks at Nigeria Stock Exchange.

The theoretical implication of this finding is that, both agency and stakeholder theories advocates, adequate relationship management among the stakeholders of the business, so that performance would be improved in the operation of the business. The issue of central data base for the banks in Nigeria for data sharing as regards market information in respect of borrowers supports this. Data sharing among the bank will definitely improve financial performance of banks and ensure cost reduction. All these are agency theory based.

5.3 Conclusions

Based on the findings from the descriptive and inferential analyses conducted, this section presents the conclusions derived from this study. Firstly, the study established from the descriptive statistical analysis that there is wide variability in the mean scores of the model variables. This is an indication that, the banking industry has higher degree of volatility especially as regards their performance metrics. Both the bank-specific, industry-specific factors, affects bank financial performance.

However, bank-specific factors play dominant role as supported by this findings. Thus, the finding from inferential statistics as regards risk management strategies on financial performance was significant statistically.

The result depict that, for a good financial performance to thrive, risk management strategies of the banks must be considered as important. However, it can be deduced that the attributes of risk management and its sub elements in practice are wide and varied across regions and environments. The findings from inferential statistics equally confirmed that there is a significant effect of risk management strategies on bank financial performance. Also the findings confirm the assertions of some of the theories put forward in the study. In a nutshell, it can be concluded that risk management remain vital in the operation of banking business. This means that its employment as a predictor variable in this study suggests that, it needs improvement so that its implicit merits would be derived for the entire banking system.

5.4 Recommendations

Considering the competition in the industry, the need to improve performance in banking operation requires continuous update of knowledge all over the world. Drawing from the findings and the conclusions of this study, the following recommendations are presented so as to improve banking risk management and financial performance in Nigeria. Specifically the following objectives were recommended.

5.4.1 Credit diversification has no significant effects on financial performance of listed banks at Nigeria Stock Exchange.

This suggests that the overall model applied can significantly be predictive of the outcome variable, thus leading to the submission that the two elements used for credit diversification: loan assets to private sector has insignificant effects on financial performance of listed Banks. The bank may de-emphasize the use of this strategy in managing their risk as the use will not improve financial performance of the banks.

5.4.2 The effect of Market Risk hedging on financial performance of listed banks at Nigeria Stock Exchange

The analysis show that the Market risk hedging has positive effects on price earnings ratio, measure of financial performance of listed banks at NSE, as against specific objective two that Market risk hedging has no significant effect on financial performance of listed banks at Nigeria Stock Exchange. The use of this risk management strategy is recommended for the listed banks.

5.4.3 The effect of Credit Risk Insurance on Financial Performance of listed banks at Nigeria Stock Exchange

The analysis shows that credit risk insurance was never a problem for the banks during the period. The coefficients of correlation showed that bank credit risk insurance was negatively related to financial performance of the banks. Panel least regression analysis also confirmed, that credit risk insurance has statistical no significant effect on financial performance. Less use of this strategy is recommended for the banks in other not to have adverse effect on their financial performance.

5.4.4 The effect of capital buffer on financial performance of listed banks at Nigeria Stock Exchange

Good risk management strategy suggests the use of capital buffer and its employment will bring more confidence into the system and encourage the investors to invest more in the business which will have positive effect on financial performance of listed banks at Nigeria Stock Exchange.

5.4.5 Managerial recommendations

The banks need to improve their risk management systems by applying varying risk management strategies discussed in this study to enhance performance efficiency of their operations. Credit risk as a component of the asset management of the banks must constantly be reviewed to meet daily challenges of operation. In other words, the credit risk management policies and procedures of the bank must be sound to tackle any financial shocks within the system. Banks must have a holistic

institutional approach to monitor the branches regularly for improved performance. Training, retraining and development of staff especially risk management officers on how to reduce risk associated with lending of loans and other facilities granted by the banks and how to employ standard in line with international best practices must be introduced. This will no doubt impact positively on the general performance level for the banks, mostly on interest income from secured loan and advances which constitute the highest source of income generation for banks.

Also, capital buffer for the banks must be improved for it to commensurate with present operational activities of the banks. Its review must be the focus of the regulators of the industry and should be continuous or time frame bound. Banks should also work on their operational expenses particularly overhead which constitute larger chunk of the expenses they daily incur. This will no doubt go a long way to reducing total expenses of the banks and improve performance and profitability generally for the banks. Additionally, as a strategic option to attain improved performance, the market risk hedging activities of the banks should be considered, reviewed in line with their daily operational hedging requirement. This is germane to the financial performance of these banks especially as regards foreign exchange market, credit/loan assets disbursement, treasury operations, as well as other sectors of the economy.

5.4.6 Recommendations for Policy Makers

The major policy recommendation arising from this study is centered on the supervision and regulation of banking business in Nigeria. The Central Bank of Nigeria and other regulatory authorities involved in the monitoring and supervision of banks should have enhanced risk-based supervision especially as regards credit portfolio management, non-performing loans, liquidity /economic capital of the bank. Regulatory authorities are apprehensive that some banks may not have the capacity to effectively manage the risks they confront in their obsessive and uncoordinated expansion programs. The condition is exacerbated by the weak corporate governance, over-aggressive lending practices and risk tolerances that were hazardous in the banks. Thus, effective risk management to ensure the stability of the

financial system is a major challenge to the regulatory authorities. The regulators need to be proactive and ensure early detection of distress signals in the banking system for quick resolution of such problems. The CBN should provide strict enforcement of risk management guidelines as well as a revamped resolution framework for the banking industry.

Banks should ensure that risk management policies and regulations were clearly distinguished from corporate governance. This can be done by developing policies and framework to ensure all stakeholders are involved in risk management. The management should ensure that all stakeholders such as regulatory agency and industry associations were brought on board in development of risk policies to ensure success. Apart from adopting COBIT framework, banks should develop their generic systems to implement effective risk management. Institutions that regulate firms should be given additional mandate to oversee effective implementation of risk management system. Such bodies include Capital Market Authority, Nigeria Security and Exchange commission and various associations in key sectors such as manufacturing, professional bodies and other agencies should be at the forefront in working with the firms to develop risk management policies. Credit rating agencies were also found to assist in ensuring success of risk management and therefore their support is paramount.

Also, the present 25 billion naira capital base seems not to be adequate for the present banking activities in Nigeria anymore. In agreement with prior recommendations, the regulatory and monitoring machinery of the Central Bank of Nigeria and other allied institutions should improve on the use of ICT. The IMF report of Article IV consultation had advised the Central Bank of Nigeria to conduct a risk management review, so as to identify any potential need for the Nigerian banking system. To this end, credit reporting as a vital instrument to bad loan/credit management is advocated for all banks, in line with the submission of the Credit Bureau Association of Nigeria. The study can also be used to critique major frameworks of risk management.

5.5 Areas for further study

This study covered a period between 2010 and 2019 hence longer study is recommended for further study. The study employed quantitative research model to unravel the effect of risk management on financial performance of listed banks in Nigeria, thereby not engaging in qualitative aspect of the research. Future research can explore mixed research design to further identify risk management strategies and its effects on organizational outcomes such as firm performance. Specifically, future study should be extended to other sectors of the economy such as Agriculture, mining and construction, extraction and exploration on effect of risk management strategies on their performance. In a future banking research based study, further investigation should be channeled to study risk management in emerging and developing markets like Africa where current studies are relatively low compared to developed markets. This will also improve banks' financial performance generally.

The study employed quantitative research model to unravel the financial performance of listed banks at Nigeria Stock Exchange, thereby not engaging in the non-quantitative aspect of the research, that is, the use of questionnaire. This study suggests and advocates that, future study should evaluate the effect of qualitative aspect of the research by including management and corporate governance aspects in financial performance of banks. This study also suggests that other measurement approach/metrics should be employed to examine financial performance with its possible economic implications. Specifically, future study should be extended to concentrate on other factors affecting banking performance, such as managerial competence, behavioral/emotional factors affecting staff and the regulators, impact of foreign currency inflow and other macroeconomic variables in the Nigerian banking system. To this end, mixed research paradigm can be explored in future research.

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APPENDICES

Appendix I: List of listed banks in Nigeria

This is a list of commercial banks with International Authorization in Nigeria, arranged alphabetically:

1. Access Bank Plc
2. Diamond Bank Plc
3. Fidelity Bank Plc
4. First City Monument Bank Plc
5. First Bank of Nigeria Limited
6. Guaranty Trust Bank Plc
7. Union Bank of Nigeria Plc
8. United Bank for Africa Plc
9. Zenith Bank Plc

This is a list of commercial banks with National Authorization in Nigeria, arranged alphabetically

1. Citi Bank Nigeria Limited
2. Ecobank Nigeria Plc
3. Heritage Banking Company Limited
4. Keystone Bank Limited
5. Polaris Bank Limited. A successor to Skye Bank Plc.
6. Stanbic IBTC Bank Plc
7. Standard Chartered
8. Sterling Bank Plc
9. Unity Bank Plc
10. Wema Bank Plc

This is a list of commercial banks with Regional Authorization in Nigeria, arranged alphabetically:

1. SunTrust Bank Nigeria Limited
2. Providus Bank Limited

This is a list of non-interest banks in Nigeria, arranged alphabetically:

1. Jaiz Bank Plc

This is a list of merchant banks in Nigeria, arranged alphabetically:

1. Coronation Merchant Bank
2. FBNQuest Merchant Bank
3. FSDH Merchant Bank
4. Rand Merchant Bank
5. Nova Merchant Bank

Source: Extracted from CBN website, 2017.

Appendix II: Secondary Data Collection Sheet

Secondary Data Collection Sheet										
Banks	Year	Credit Diversification		Market Risk Hedging		Credit Risk Insurance	Capital buffer	Bank Size	Financial Performance	
		% of loan asset to private sector	Hedging through options	Hedging through futures	Percentage of loan assets insured	Risk weighted Assets(RWA)	% of Market Share in the industry	Price/Earnings Ratio.		
Bank 1	2010									
	2011									
	2012									
	2013									
	2014									
	2015									
	2016									
	2017									
	2018									
	2019									
Bank 2	2010									
	2011									
	2012									
	2013									
	2014									
	2015									
	2016									
	2017									
	2018									
	2019									

rho | .573779 (fraction of variance due to u_i)

 UNIVARIATE = CD

WITHOUT MODERATOR

Random-effects GLS regression	Number of obs =	200
Group variable: bankg	Number of groups =	20
R-sq: within = 0.0193	Obs per group: min =	10
between = 0.0078	avg =	10.0
overall = 0.0017	max =	10
Random effects u_i ~ Gaussian	Wald chi2(1) =	3.30
corr(u_i, X) = 0 (assumed)	Prob > chi2 =	0.0693
FP Coef. Std. Err.	z P>z [95% Conf.	Interval]
CD -.0004029 .0002218	-1.82 0.069 -.0008376	.0000318
_cons .0014687 .0002409	6.10 0.000 .0009966	.0019409
sigma_u .0010509		
sigma_e .00032873		
rho .91087218 (fraction	of variance due to u_i)	

Random-effects GLS regression
Group variable: **bankg**

Number of obs = 200
Number of groups = 20

R-sq: within = 0.0193
between = 0.0078
overall = 0.0017

Obs per group: min = 10
avg = 10.0
max = 10

Random effects $u_i \sim \text{Gaussian}$
corr(u_i , X) = 0 (assumed)

wald chi2(1) = 3.30
Prob > chi2 = 0.0693

FP	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
CD	-.0004029	.0002218	-1.82	0.069	-.0008376	.0000318
_cons	.0014687	.0002409	6.10	0.000	.0009966	.0019409
sigma_u	.0010509					
sigma_e	.00032873					
rho	.91087218	(fraction of variance due to u_i)				

WITH MODERATOR

Random-effects GLS regression
Group variable: **bankg**

Number of obs = 200
Number of groups = 20

R-sq: within = 0.0203
between = 0.0151
overall = 0.0027

Obs per group: min = 10
avg = 10.0
max = 10

Random effects $u_i \sim \text{Gaussian}$
corr(u_i , X) = 0 (assumed)

wald chi2(2) = 3.49
Prob > chi2 = 0.1750

FP	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
CD	-.0003566	.0002476	-1.44	0.150	-.0008418	.0001286
FZ	.0000332	.0000777	0.43	0.669	-.0001191	.0001855
_cons	.0012233	.0006243	1.96	0.050	-3.38e-07	.0024469
sigma_u	.00107034					
sigma_e	.00032949					
rho	.91344102	(fraction of variance due to u_i)				

FP | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-----+-----

CD | -.0003566 .0002476 -1.44 0.150 -.0008418 .0001286

FZ	.0000332	.0000777	0.43	0.669	-.0001191	.0001855
_cons	.0012233	.0006243	1.96	0.050	-3.38e-07	.0024469

-----+-----

sigma_u | .00107034

sigma_e | .00032949

rho | .91344102 (fraction of variance due to u_i)

UNIVARIATE = MRH

WITHOUT MODERATOR

FP	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
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-----+-----

MRH	-.0006285	.0002694	-2.33	0.020	-.0011564	-.0001006
-----	-----------	----------	-------	-------	-----------	-----------

_cons	.0017763	.0002693	6.60	0.000	.0012486	.0023041
-------	----------	----------	------	-------	----------	----------

-----+-----

sigma_u | .000914

sigma_e | .0003262

rho | .88701627 (fraction of variance due to u_i)

Random-effects GLS regression
 Group variable: **bankg**

Number of obs = 200
 Number of groups = 20

R-sq: within = 0.0343
 between = 0.2473
 overall = 0.0326

Obs per group: min = 10
 avg = 10.0
 max = 10

Random effects u_i ~ Gaussian
 corr(u_i, X) = 0 (assumed)

wald chi2(1) = 5.44
 Prob > chi2 = 0.0196

FP	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
MRH	-.0006285	.0002694	-2.33	0.020	-.0011564	-.0001006
_cons	.0017763	.0002693	6.60	0.000	.0012486	.0023041
sigma_u	.000914					
sigma_e	.0003262					
rho	.88701627	(fraction of variance due to u_i)				

WITH MODERATOR

FP	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
MRH	-.000745	.0002743	-2.72	0.007	-.0012827	-.0002073
BZ	.000127	.0000714	1.78	0.075	-.0000129	.0002669
_cons	.0009513	.0005388	1.77	0.077	-.0001047	.0020074

_cons | .001432 .0002383 6.01 0.000 .0009649 .0018992

-----+-----

sigma_u | .00105457

sigma_e | .00032915

rho | .91123276 (fraction of variance due to u_i)

Random-effects GLS regression	Number of obs	=	200
Group variable: bankg	Number of groups	=	20
R-sq: within = 0.0168	obs per group: min =		10
between = 0.0009	avg =		10.0
overall = 0.0003	max =		10
Random effects u_i ~ Gaussian	wald chi2(1)	=	3.03
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0816

FP	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
CRI	-.0015009	.0008618	-1.74	0.082	-.00319	.0001882
_cons	.001432	.0002383	6.01	0.000	.0009649	.0018992
sigma_u	.00105457					
sigma_e	.00032915					
rho	.91123276	(fraction of variance due to u_i)				

.

WITH MODERATOR\

FP | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-----+-----

CRI | -.0013427 .0010298 -1.30 0.192 -.0033611 .0006757


```

FZ | .0000235 .0000833 0.28 0.778 -.0001397 .0001866

_cons | .0012604 .0006561 1.92 0.055 -.0000255 .0025463

```

```
-----+-----
sigma_u | .00108185
```

```
sigma_e | .00032998
```

```
rho | .91488657 (fraction of variance due to u_i)
```

```

Random-effects GLS regression                    Number of obs   =       200
Group variable: bankg                          Number of groups =        20

R-sq:  within = 0.0173                          obs per group: min =       10
        between = 0.0035                          avg =           10.0
        overall = 0.0000                          max =           10

Random effects u_i ~ Gaussian                    wald chi2(2)    =        3.11
corr(u_i, X)      = 0 (assumed)                  Prob > chi2     =        0.2109

```

FP	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
CRI	-.0013427	.0010298	-1.30	0.192	-.0033611	.0006757
FZ	.0000235	.0000833	0.28	0.778	-.0001397	.0001866
_cons	.0012604	.0006561	1.92	0.055	-.0000255	.0025463
sigma_u	.00108185					
sigma_e	.00032998					
rho	.91488657	(fraction of variance due to u_i)				

UNIVARIATE – CBS

WITHOUT MODERATOR

Credit Diversification to Private Loan asset.

Year	Observation	Mean	Maximum	Minimum	Std. Dev.
2010	20	0.287551	0.672883	0.128004	0.153031
2011	20	0.261174	0.608977	0.115835	0.138509
2012	20	0.236349	0.548756	0.104363	0.125366
2013	20	0.261208	0.548707	0.104403	0.10784
2014	20	0.247931	0.579215	0.110209	0.132066
2015	20	0.273769	0.636986	0.121193	0.144454
2016	20	0.273769	0.636986	0.121193	0.144454
2017	20	0.09805	0.583999	0.012327	0.159717
2018	20	0.140071	0.834284	0.017609	0.228168
2019	20	0.135992	0.881507	0.018606	0.220465

Market Risk Hedging

Year	Observation	Mean	Maximum	Minimum	Std. Dev.
2010	20	0.612221	0.756751	0.252232	0.115513
2011	20	0.594312	0.812301	0.351423	0.104146
2012	20	0.584541	0.723302	0.357123	0.091736
2013	20	0.620500	0.814514	0.491401	0.094839
2014	20	0.630587	0.856617	0.500513	0.099972
2015	20	0.653271	0.855512	0.523145	0.079809
2016	20	0.653231	0.850033	0.522897	0.079809
2017	20	0.666440	0.856612	0.534559	0.092075
2018	20	0.668318	0.858769	0.588127	0.091456
2019	20	0.635532	0.864401	0.511505	0.105355

Credit Risk Insurance (CRI)

Year	Observation	Mean	Maximum	Minimum	Std. Dev.
2010	20	0.014081	0.036314	0.003735	0.008982
2011	20	0.060571	0.117428	0.019066	0.029932
2012	20	0.060465	0.117228	0.019031	0.029881
2013	20	0.053141	0.103014	0.016729	0.026256
2014	20	0.050051	0.092551	0.015026	0.025621
2015	20	0.048527	0.08973	0.014569	0.02484
2016	20	0.048527	0.08973	0.014569	0.02484
2017	20	0.004009	0.010341	0.001063	0.002558
2018	20	0.004582	0.011818	0.001215	0.002923
2019	20	0.005896	0.015219	0.001565	0.003761

Capital Buffer (RWAC)*N Billion

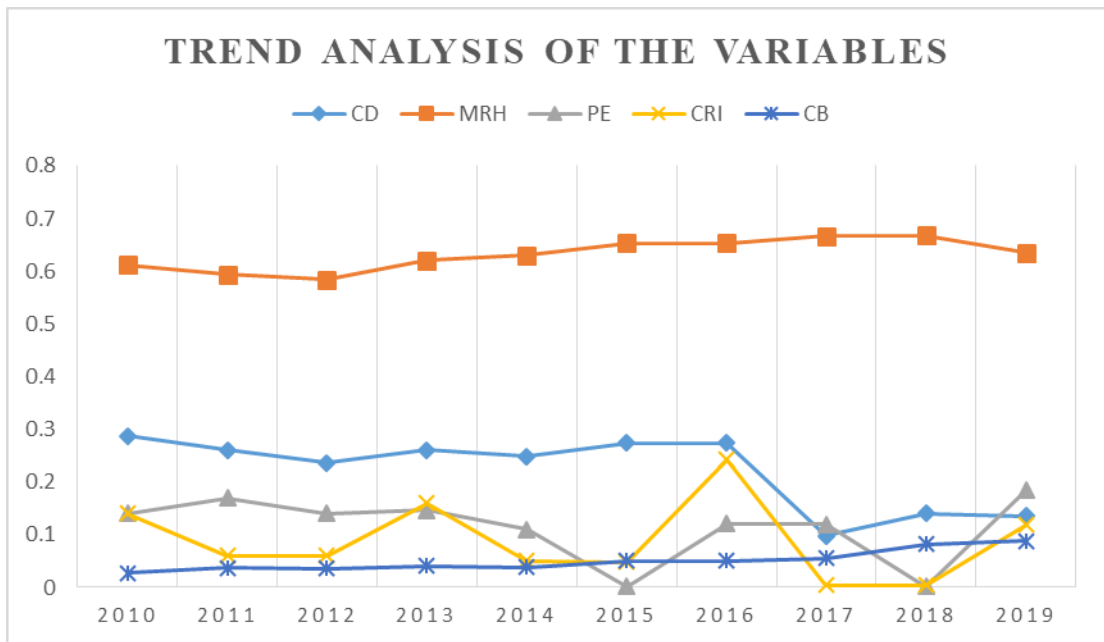
Year	Observation	Mean	Maximum	Minimum	Std. Dev.
2010	20	0.027268	0.068318	0.013148	0.014331
2011	20	0.037295	0.093523	0.017993	0.019685
2012	20	0.035709	0.089619	0.017225	0.018883
2013	20	0.040971	0.010282	0.019795	0.021647
2014	20	0.037863	0.094906	0.018259	0.019956
2015	20	0.050582	0.012679	0.024377	0.026648
2016	20	0.050582	0.012679	0.024377	0.026648
2017	20	0.054805	0.013762	0.026467	0.028987
2018	20	0.082258	0.020643	0.039705	0.043443
2019	20	0.087728	0.022012	0.042347	0.046358

Bank Size (market share)

CS2	Observation	Mean	Maximum	Minimum	Std. Dev.
2010	20	0.762421	0.934339	0.311446	0.143904
2011	20	0.739997	0.009086	0.436025	0.129743
2012	20	0.728162	0.896965	0.436025	0.114284
2013	20	0.77301	0.009086	0.498314	0.118149
2014	20	0.785468	0.058918	0.622893	0.124544
2015	20	0.813498	0.058918	0.622893	0.099425
2016	20	0.813498	0.058918	0.622893	0.099425
2017	20	0.829693	0.058918	0.622893	0.114706
2018	20	0.832185	0.058918	0.622893	0.113935
2019	20	0.791697	0.071375	0.622893	0.13125

Financial Performance using Price Earnings (FP_{PE})(*10,000)

Year	Observation	Mean	Maximum	Minimum	Std. Dev.
2010	20	0.001407	0.004148	0.000232	0.001044
2011	20	0.001692	0.005177	0.000141	0.001351
2012	20	0.001401	0.004131	0.000231	0.00104
2013	20	0.001471	0.004334	0.000242	0.001091
2014	20	0.001098	0.003239	0.000181	0.000815
2015	20	0.001212	0.003574	0.000199	0.0009
2016	20	0.001212	0.003574	0.000199	0.0009
2017	20	0.001194	0.003521	0.000197	0.000886
2018	20	0.001418	0.004226	0.000236	0.001061
2019	20	0.001844	0.005493	0.000307	0.001379



Appendix IV: Granger Causality Tests

Pairwise Granger Causality Tests

Date: 07/20/19 Time: 09:12

Sample: 2009 2018

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
CB does not Granger Cause FP	200	107.213	6.E-30
FP does not Granger Cause CB		12.4646	1.E-05
CD does not Granger Cause FP	200	4.69649	0.0105
FP does not Granger Cause CD		0.11543	0.8911
CRI does not Granger Cause FP	200	6.67890	0.0017
FP does not Granger Cause CRI		3.97942	0.0206
BZ does not Granger Cause FP	200	26.8918	9.E-11
FP does not Granger Cause BZ		1.59573	0.2061
CD does not Granger Cause CB	200	35.3039	2.E-13
CB does not Granger Cause CD		4.83117	0.0092
CRI does not Granger Cause CB	200	0.94187	0.3921
CB does not Granger Cause CRI		3.99292	0.0204
FP does not Granger Cause CB	200	1.04773	0.3532
CB does not Granger Cause FP		2.16134	0.1186
BZ does not Granger Cause CB	200	3.31216	0.0390
CB does not Granger Cause BZ		3.07004	0.0493
CRI does not Granger Cause CD	200	1.72349	0.1818
CD does not Granger Cause CRI		0.00210	0.9979
FP does not Granger Cause CD	200	0.04158	0.9593
CD does not Granger Cause FP		3.09581	0.0480
BZ does not Granger Cause CD	200	4.64722	0.0110
CD does not Granger Cause BZ		60.8099	3.E-20
BZ does not Granger Cause CD	200	9.24995	0.0002
CD does not Granger Cause BZ		3.82342	0.0239
BZ does not Granger Cause CRI	200	0.45559	0.6349
CRI does not Granger Cause BZ		0.72832	0.4844
BZ does not Granger Cause FP	200	3.01315	0.0520
FP does not Granger Cause BZ		2.39410	0.0946

Raw Data

YEAR	BANKS	FP	CD	CRI	CBS	FZ	MRH
2010	Access Bank Plc	0.001129	0.672883	0.036314	165.4	7.438207	0.25
2011	Access Bank Plc	0.001409	0.608977	0.09271	226.4	7.427263	0.35
2012	Access Bank Plc	0.001124	0.548756	0.09253	217	7.539824	0.35
2013	Access Bank Plc	0.001184	0.548707	0.081331	248.7	7.632885	0.4
2014	Access Bank Plc	0.000881	0.579215	0.073056	229.7	7.76523	0.5
2015	Access Bank Plc	0.000973	0.636986	0.070832	306.7	7.888222	0.6
2016	Access Bank Plc	0.000846	0.637016	0.068477	279.5	7.911104	0.62
2017	Access Bank Plc	0.000959	0.064606	0.010341	333	7.952967	0.7
2018	Access Bank Plc	0.00115	0.092294	0.011819	499.5	8.358432	0.71
2019	Access Bank Plc	0.001495	0.097519	0.015219	532.8	8.422971	0.7
2010	Citibank	0.000954	0.135666	0.023001	231.6	6.524443	0.5
2011	Citibank	0.001191	0.123547	0.058714	316.9	6.513527	0.52
2012	Citibank	0.00095	0.110614	0.058614	303.8	6.626055	0.55
2013	Citibank	0.000997	0.240895	0.051507	348.2	6.719134	0.5
2014	Citibank	0.000745	0.11571	0.092551	321.6	6.851502	0.7
2015	Citibank	0.000822	0.131383	0.08973	429.4	6.974479	0.68
2016	Citibank	0.000715	0.180385	0.086742	391.4	6.997413	0.72
2017	Citibank	0.00081	0.018766	0.00655	466.1	7.039222	0.69
2018	Citibank	0.000972	0.026809	0.007486	699.15	7.444687	0.7
2019	Citibank	0.001264	0.028327	0.009639	745.76	7.509226	0.75
2010	Diamond Bank	0.001506	0.251253	0.008359	214.5	6.888878	0.56
2011	Diamond Bank	0.00188	0.227368	0.042674	293.5	6.877914	0.56
2012	Diamond Bank	0.0015	0.204886	0.042604	281.4	6.990441	0.58
2013	Diamond Bank	0.001574	0.204921	0.037445	322.5	7.083472	0.59
2014	Diamond Bank	0.001176	0.216452	0.033635	297.9	7.215901	0.62
2015	Diamond Bank	0.001298	0.237971	0.032612	397.7	7.338888	0.63
2016	Diamond Bank	0.001129	0.237976	0.031528	362.5	7.361756	0.65
2017	Diamond Bank	0.001279	0.024204	0.00238	431.7	7.403609	0.65
2018	Diamond Bank	0.001534	0.034577	0.002721	647.55	7.809074	0.66
2019	Diamond Bank	0.001995	0.036534	0.003503	690.72	7.873613	0.71
2010	Ecobank	0.001936	0.451208	0.00982	275.7	6.713685	0.7
2011	Ecobank	0.002417	0.408224	0.05014	377.3	6.702697	0.5
2012	Ecobank	0.001928	0.367974	0.050052	361.6	6.815201	0.52
2013	Ecobank	0.002023	0.367772	0.043987	414.6	6.908255	0.55
2014	Ecobank	0.001512	0.388422	0.03951	382.9	7.040711	0.5

YEAR	BANKS	FP	CD	CRI	CBS	FZ	MRH
2015	Ecobank	0.001668	0.427077	0.03831	511.2	7.163637	0.7
2016	Ecobank	0.001451	0.427182	0.037038	465.9	7.186523	0.68
2017	Ecobank	0.001644	0.043329	0.002797	554.9	7.228388	0.72
2018	Ecobank	0.001972	0.061899	0.003196	832.35	7.633853	0.69
2019	Ecobank	0.002564	0.065402	0.004116	887.84	7.698392	0.7
2010	Enterprises Bank Ltd	0.000256	0.247897	0.006783	145.32	6.377976	0.75
2011	Enterprises Bank Ltd	0.000319	0.224244	0.034621	198.87	6.367037	0.56
2012	Enterprises Bank Ltd	0.000255	0.202094	0.034559	190.575	6.479638	0.56
2013	Enterprises Bank Ltd	0.000267	0.202147	0.030378	218.505	6.572646	0.58
2014	Enterprises Bank Ltd	0.0002	0.213455	0.027288	201.81	6.705002	0.59
2015	Enterprises Bank Ltd	0.000221	0.234676	0.026458	269.43	6.82803	0.62
2016	Enterprises Bank Ltd	0.000192	0.234712	0.025578	245.595	6.850963	0.63
2017	Enterprises Bank Ltd	0.000217	0.023928	0.001931	292.53	6.892753	0.65
2018	Enterprises Bank Ltd	0.000261	0.034183	0.002207	438.795	7.298218	0.56
2019	Enterprises Bank Ltd	0.000339	0.037924	0.002984	468.048	7.362757	0.58
2010	Fidelity Bank Plc	0.004148	0.329618	0.012182	683.8	6.08632	0.59
2011	Fidelity Bank Plc	0.005177	0.298219	0.062185	935.7	6.075346	0.62
2012	Fidelity Bank Plc	0.004131	0.268759	0.062084	896.9	6.188059	0.63
2013	Fidelity Bank Plc	0.004334	0.26884	0.05456	1028.2	6.280958	0.65
2014	Fidelity Bank Plc	0.003239	0.283882	0.049013	949.6	6.413459	0.65
2015	Fidelity Bank Plc	0.003574	0.312068	0.047518	1267.9	6.536402	0.66
2016	Fidelity Bank Plc	0.003109	0.312102	0.04594	1155.4	6.559332	0.71
2017	Fidelity Bank Plc	0.003521	0.03175	0.003469	1376.2	6.601094	0.7
2018	Fidelity Bank Plc	0.004226	0.045357	0.003964	2064.3	7.006559	0.5
2019	Fidelity Bank Plc	0.005493	0.045643	0.004862	2201.92	7.071098	0.52
2010	First Bank Plc	0.003894	0.289016	0.029291	534.9	6.297478	0.55
2011	First Bank Plc	0.004859	0.261524	0.074762	731.9	6.286557	0.5
2012	First Bank Plc	0.003877	0.235609	0.074624	701.6	6.399094	0.7
2013	First Bank Plc	0.004068	0.235657	0.065599	804.3	6.492088	0.81
2014	First Bank Plc	0.00304	0.248907	0.058922	742.8	6.624464	0.85
2015	First Bank Plc	0.003355	0.273697	0.057128	991.8	6.747469	0.85
2016	First Bank Plc	0.002918	0.273773	0.055234	903.8	6.77033	0.85
2017	First Bank Plc	0.003306	0.027589	0.008341	1076.6	6.812235	0.75
2018	First Bank Plc	0.003967	0.039412	0.009532	1614.9	7.2177	0.85
2019	First Bank Plc	0.005157	0.041643	0.012275	1722.56	7.282238	0.86
2010	First City Monument Bank	0.001115	0.164809	0.006175	214.5	6.624729	0.65
2011	First City Monument Bank	0.001392	0.149036	0.031521	293.5	6.613787	0.66

YEAR	BANKS	FP	CD	CRI	CBS	FZ	MRH
2012	First City Monument Bank	0.001111	0.134364	0.031465	281.4	6.726353	0.71
2013	First City Monument Bank	0.001165	0.134424	0.027655	322.5	6.819361	0.7
2014	First City Monument Bank	0.000871	0.141905	0.024843	297.9	6.951772	0.5
2015	First City Monument Bank	0.000961	0.156035	0.024088	397.7	7.074709	0.52
2016	First City Monument Bank	0.000836	0.155983	0.023287	362.5	7.097631	0.55
2017	First City Monument Bank	0.000947	0.016537	0.001759	431.7	7.139422	0.5
2018	First City Monument Bank	0.001136	0.023624	0.002011	647.55	7.544888	0.7
2019	First City Monument Bank	0.001477	0.024962	0.002589	690.72	7.609426	0.68
2010	Guaranty Trust Bank	0.001734	0.128004	0.003735	308.8	6.544056	0.72
2011	Guaranty Trust Bank	0.002164	0.115835	0.019066	422.6	6.533062	0.69
2012	Guaranty Trust Bank	0.001726	0.104363	0.019032	405	6.645741	0.7
2013	Guaranty Trust Bank	0.001811	0.104403	0.016729	464.3	6.738745	0.75
2014	Guaranty Trust Bank	0.001354	0.110209	0.015026	428.8	6.871091	0.56
2015	Guaranty Trust Bank	0.001494	0.121193	0.014569	572.6	6.994116	0.56
2016	Guaranty Trust Bank	0.001299	0.121193	0.014086	521.8	7.016968	0.58
2017	Guaranty Trust Bank	0.001472	0.012327	0.001064	621.5	7.058844	0.59
2018	Guaranty Trust Bank	0.001472	0.01761	0.001215	932.25	7.464309	0.62
2019	Guaranty Trust Bank	0.001913	0.018606	0.001565	994.4	7.528848	0.63
2010	Heritage Bank Ltd	0.000232	0.247897	0.006783	131.48	6.277893	0.65
2011	Heritage Bank Ltd	0.000289	0.224244	0.034621	179.93	6.266954	0.56
2012	Heritage Bank Ltd	0.000231	0.202094	0.034559	172.425	6.379555	0.58
2013	Heritage Bank Ltd	0.000242	0.202147	0.030378	197.695	6.379555	0.59
2014	Heritage Bank Ltd	0.000181	0.213455	0.027288	182.59	6.472563	0.62
2015	Heritage Bank Ltd	0.0002	0.234676	0.026458	243.77	6.604919	0.63
2016	Heritage Bank Ltd	0.000174	0.234712	0.025578	222.205	6.727947	0.65
2017	Heritage Bank Ltd	0.000197	0.023928	0.001931	264.67	6.750879	0.65
2018	Heritage Bank Ltd	0.000236	0.034183	0.002207	397.005	7.156344	0.66
2019	Heritage Bank Ltd	0.000307	0.036118	0.002842	423.472	7.220883	0.71
2010	Mainstreet Bank Ltd.	0.001002	0.135666	0.023001	243.18	6.573233	0.7
2011	Mainstreet Bank Ltd.	0.001251	0.123547	0.117428	332.745	6.562317	0.5
2012	Mainstreet Bank Ltd.	0.000998	0.110614	0.117228	318.99	6.674845	0.52
2013	Mainstreet Bank Ltd.	0.001047	0.240895	0.103014	365.61	6.767924	0.55
2014	Mainstreet Bank Ltd.	0.000782	0.11571	0.092551	337.68	6.900292	0.5
2015	Mainstreet Bank Ltd.	0.000863	0.131383	0.08973	450.87	7.023269	0.7
2016	Mainstreet Bank Ltd.	0.000751	0.180385	0.086742	410.97	7.046203	0.81
2017	Mainstreet Bank Ltd.	0.000851	0.018766	0.00655	489.405	7.088012	0.85
2018	Mainstreet Bank Ltd.	0.001021	0.026809	0.007486	734.1075	7.493477	0.65

YEAR	BANKS	FP	CD	CRI	CBS	FZ	MRH
2019	Mainstreet Bank Ltd.	0.001327	0.028327	0.009639	783.048	7.558016	0.66
2010	Skye Bank Plc	0.001132	0.264979	0.012639	259.2	6.524443	0.71
2011	Skye Bank Plc	0.000141	0.239651	0.064517	354.6	6.513527	0.7
2012	Skye Bank Plc	0.001127	0.216166	0.064406	339.9	6.626055	0.5
2013	Skye Bank Plc	0.001183	0.215893	0.056606	389.7	6.719134	0.52
2014	Skye Bank Plc	0.000884	0.228129	0.050839	359.9	6.851502	0.55
2015	Skye Bank Plc	0.000975	0.250834	0.049297	480.6	6.974479	0.5
2016	Skye Bank Plc	0.000848	0.250804	0.047661	437.9	6.997413	0.7
2017	Skye Bank Plc	0.000961	0.025403	0.003599	521.6	7.039222	0.68
2018	Skye Bank Plc	0.001153	0.03629	0.004113	782.4	7.444687	0.72
2019	Skye Bank Plc	0.001499	0.038344	0.005296	834.56	7.509226	0.69
2010	Stanbic IBTC	0.000244	0.247897	0.006783	138.4	6.329186	0.7
2011	Stanbic IBTC	0.000304	0.224244	0.034621	189.4	6.318247	0.75
2012	Stanbic IBTC	0.000243	0.202094	0.034559	181.5	6.430848	0.56
2013	Stanbic IBTC	0.000255	0.202147	0.030378	208.1	6.523856	0.56
2014	Stanbic IBTC	0.00019	0.213455	0.027288	192.2	6.656212	0.58
2015	Stanbic IBTC	0.00021	0.234676	0.026458	256.6	6.77924	0.59
2016	Stanbic IBTC	0.000183	0.234712	0.025578	233.9	6.802173	0.62
2017	Stanbic IBTC	0.000207	0.023928	0.001931	278.6	6.843963	0.63
2018	Stanbic IBTC	0.000248	0.034183	0.002207	417.9	7.249428	0.65
2019	Stanbic IBTC	0.000323	0.036118	0.002842	445.76	7.313967	0.56
2010	Standard Chartered Bank Nigeria Ltd	0.000907	0.135666	0.023001	220.02	6.47315	0.58
2011	Standard Chartered Bank Nigeria Ltd	0.001131	0.123547	0.117428	301.055	6.462234	0.59
2012	Standard Chartered Bank Nigeria Ltd	0.000903	0.110614	0.117228	288.61	6.574762	0.62
2013	Standard Chartered Bank Nigeria Ltd	0.000947	0.240895	0.103014	330.79	6.66784	0.63
2014	Standard Chartered Bank Nigeria Ltd	0.000708	0.11571	0.092551	305.52	6.800209	0.65
2015	Standard Chartered Bank Nigeria Ltd	0.000781	0.131383	0.08973	407.93	6.923186	0.65
2016	Standard Chartered Bank Nigeria Ltd	0.00068	0.180385	0.086742	371.83	6.94612	0.66
2017	Standard Chartered Bank Nigeria Ltd	0.00077	0.018766	0.00655	442.795	6.987929	0.71

YEAR	BANKS	FP	CD	CRI	CBS	FZ	MRH
2018	Standard Chartered Bank Nigeria Ltd	0.000924	0.026809	0.007486	664.1925	7.393394	0.7
2019	Standard Chartered Bank Nigeria Ltd	0.001201	0.028327	0.009639	708.472	7.457932	0.5
2010	Sterling Bank Nigeria Ltd	0.00105	0.135666	0.023001	254.76	6.619753	0.52
2011	Sterling Bank Nigeria Ltd	0.00131	0.123547	0.117428	348.59	6.608837	0.55
2012	Sterling Bank Nigeria Ltd	0.001045	0.110614	0.117228	334.18	6.721365	0.5
2013	Sterling Bank Nigeria Ltd	0.001097	0.240895	0.103014	383.02	6.814444	0.7
2014	Sterling Bank Nigeria Ltd	0.00082	0.11571	0.092551	353.76	6.946813	0.81
2015	Sterling Bank Nigeria Ltd	0.000904	0.131383	0.08973	472.34	7.069789	0.65
2016	Sterling Bank Nigeria Ltd	0.000787	0.180385	0.086742	430.54	7.092723	0.66
2017	Sterling Bank Nigeria Ltd	0.000891	0.018766	0.00655	512.71	7.134532	0.71
2018	Sterling Bank Nigeria Ltd	0.001069	0.026809	0.007486	769.065	7.539997	0.7
2019	Sterling Bank Nigeria Ltd	0.00139	0.028327	0.009639	820.336	7.604536	0.5
2010	Union Bank Plc	0.00109	0.309532	0.011832	214.5	6.833786	0.52
2011	Union Bank Plc	0.00136	0.296923	0.060408	293.5	6.822851	0.55
2012	Union Bank Plc	0.001085	0.289995	0.060295	281.4	6.93537	0.5
2013	Union Bank Plc	0.001138	0.266103	0.053006	322.5	7.028467	0.7
2014	Union Bank Plc	0.000851	0.277835	0.047611	297.9	7.160846	0.68
2015	Union Bank Plc	0.000938	0.31203	0.046161	397.7	7.283792	0.72
2016	Union Bank Plc	0.000817	0.320868	0.04463	362.5	7.306665	0.69
2017	Union Bank Plc	0.000925	0.028604	0.00337	431.7	7.348523	0.7
2018	Union Bank Plc	0.00111	0.040863	0.003851	647.55	7.753988	0.75
2019	Union Bank Plc	0.001443	0.043176	0.004959	690.72	7.818527	0.56
2010	United Bank for Africa Plc	0.000972	0.608124	0.013474	176.5	6.577026	0.56
2011	United Bank for Africa Plc	0.001213	0.550275	0.068784	241.5	6.56611	0.58
2012	United Bank for Africa Plc	0.000967	0.495857	0.068667	231.4	6.67872	0.59
2013	United Bank for Africa Plc	0.001015	0.495712	0.060344	265.3	6.771707	0.62
2014	United Bank for Africa Plc	0.000758	0.523473	0.0542	245	6.904048	0.63
2015	United Bank for Africa Plc	0.000837	0.575677	0.052557	327.2	7.027048	0.65
2016	United Bank for Africa Plc	0.000728	0.575682	0.050812	298.2	7.049949	0.56
2017	United Bank for Africa Plc	0.000825	0.583999	0.003837	355.2	7.091825	0.58
2018	United Bank for Africa Plc	0.00099	0.834284	0.004385	532.8	7.497291	0.59
2019	United Bank for Africa Plc	0.001287	0.881507	0.005646	568.32	7.561829	0.62
2010	Unity Bank Plc	0.001641	0.440867	0.007167	292.3	7.406772	0.63
2011	Unity Bank Plc	0.002048	0.398999	0.036589	399.9	7.395844	0.65
2012	Unity Bank Plc	0.001634	0.359483	0.036523	383.3	7.508403	0.65

YEAR	BANKS	FP	CD	CRI	CBS	FZ	MRH
2013	Unity Bank Plc	0.001714	0.359595	0.032102	439.5	7.601452	0.66
2014	Unity Bank Plc	0.001281	0.379602	0.028835	405.9	7.733815	0.71
2015	Unity Bank Plc	0.001414	0.417421	0.027957	541.9	7.856823	0.7
2016	Unity Bank Plc	0.00123	0.417465	0.027032	493.8	7.879708	0.5
2017	Unity Bank Plc	0.001393	0.423427	0.002041	588.2	7.921535	0.52
2018	Unity Bank Plc	0.001671	0.604895	0.002333	882.3	8.327001	0.55
2019	Unity Bank Plc	0.002173	0.399459	0.003004	941.12	8.39154	0.5
2010	Wema Bank	0.000837	0.248859	0.008512	226.1	7.187657	0.7
2011	Wema Bank	0.001045	0.225138	0.043455	309.4	7.176637	0.81
2012	Wema Bank	0.000833	0.202886	0.043376	296.5	7.288928	0.65
2013	Wema Bank	0.000874	0.202933	0.038124	340	7.382124	0.66
2014	Wema Bank	0.000654	0.214277	0.034247	314	7.514636	0.71
2015	Wema Bank	0.000721	0.235569	0.033203	419.2	7.637668	0.7
2016	Wema Bank	0.000627	0.235581	0.128375	382	7.660538	0.5
2017	Wema Bank	0.00071	0.238977	0.002424	455	7.702375	0.52
2018	Wema Bank	0.000852	0.341396	0.00277	682.5	8.107841	0.55
2019	Wema Bank	0.001108	0.36072	0.003567	728	8.172379	0.5
2010	Zenith Bank Plc	0.002359	0.305512	0.009744	518.4	7.385293	0.7
2011	Zenith Bank Plc	0.002943	0.276404	0.049743	709.3	7.374315	0.68
2012	Zenith Bank Plc	0.002348	0.249136	0.049661	679.9	7.486894	0.72
2013	Zenith Bank Plc	0.002464	0.249173	0.043648	779.4	7.579934	0.69
2014	Zenith Bank Plc	0.001841	0.263106	0.039207	719.8	7.71231	0.7
2015	Zenith Bank Plc	0.002032	0.28926	0.038014	961.1	7.835302	0.75
2016	Zenith Bank Plc	0.001767	0.289304	0.03675	875.9	7.858177	0.8
2017	Zenith Bank Plc	0.002002	0.293399	0.002775	1043.3	7.900043	0.82
2018	Zenith Bank Plc	0.002403	0.419142	0.003171	1564.95	8.305509	0.85
2019	Zenith Bank Plc	0.003123	0.442867	0.004084	1669.28	8.370048	0.78

Appendix Va: Raw Data - Loan Asset (TO PRIVATE) (N'Billion)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Access Bank plc	23.65	19.50	17.73	19.76	24.79	29.64	34.15	379.33	398.30	402.09
Citibank	29.20	24.08	21.90	24.41	30.61	36.60	42.18	468.50	491.92	496.61
Diamond Bank	40.51	33.40	30.37	33.85	42.46	50.77	58.51	649.85	682.34	688.84
Ecobank	37.37	30.81	28.02	31.23	39.18	46.84	53.98	599.53	629.51	635.50
Enterprises Bank Ltd	52.42	43.23	39.32	43.81	54.96	65.71	75.72	841.03	883.08	849.04
Fidelity Bank plc	39.56	32.63	29.67	33.07	41.48	49.60	57.15	634.74	666.48	706.46
First Bank plc	36.65	30.22	27.48	30.63	38.42	45.93	52.93	587.89	617.28	623.16
First City Monument Bank	47.10	38.84	35.32	39.37	49.38	59.04	68.03	755.58	793.36	800.91
Guaranty Trust Bank	116.81	96.33	87.60	97.62	122.46	146.42	168.71	1,874	1,968	1,986
Heritage Bank Ltd	47.43	39.12	35.57	39.64	49.72	59.45	68.51	760.93	798.98	806.59
Mainstreet Bank Ltd.	30.66	25.28	22.99	25.63	32.14	38.43	44.29	491.92	516.52	521.44
Skye Bank plc	30.14	24.86	22.60	25.19	31.61	37.79	43.54	483.61	507.79	512.63
Stanbic IBTC	49.92	41.17	37.44	41.73	52.34	62.58	72.11	800.98	841.03	849.04
Standard Chartered Bank Nigeria Ltd	27.74	22.88	20.80	23.19	29.08	34.77	40.07	445.07	467.32	471.78
Sterling Bank Nigeria Ltd	32.12	26.49	24.09	26.85	33.67	40.26	46.40	515.35	541.11	546.27
Union Bank plc	38.63	31.85	28.97	32.28	40.49	48.41	55.78	619.63	650.61	656.80
United Bank for Africa plc	29.30	24.16	21.97	24.49	30.72	36.72	42.32	470.01	493.51	498.21
Unity Bank plc	33.92	27.97	25.43	28.34	35.55	42.51	48.98	544.06	571.26	576.70
Wema Bank,	53.70	44.28	40.26	44.88	56.29	67.31	77.55	861.43	904.51	913.12
Zenith bank plc	40.51	33.40	30.37	33.85	42.46	50.77	58.51	649.85	682.34	688.84

Appendix Vb: Raw Data - Loan Asset (GOVT) (N'Million)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Access Bank plc	10.13	8.36	7.60	8.47	10.62	12.70	14.64	162.57	170.70	172.32
Citibank	12.52	10.32	9.38	10.46	13.12	15.69	18.08	200.78	210.82	212.83
Diamond Bank	17.36	14.32	13.02	14.51	18.20	21.76	25.07	278.51	292.43	295.22
Ecobank	16.02	13.21	12.01	13.39	16.79	20.08	23.13	256.94	269.79	272.36
Enterprises Bank Ltd	22.47	18.53	16.85	18.78	23.55	28.16	32.45	360.44	378.46	363.87
Fidelity Bank plc	16.96	13.98	12.71	14.17	17.78	21.26	24.49	272.03	285.63	302.77
First Bank plc	15.71	12.95	11.78	13.13	16.46	19.69	22.68	251.95	264.55	267.07
First City Monument Bank	20.19	16.65	15.14	16.87	21.16	25.30	29.16	323.82	340.01	343.25
Guaranty Trust Bank	50.06	41.28	37.54	41.84	52.48	62.75	72.31	803.14	843.30	851.33
Heritage Bank Ltd	20.33	16.76	15.24	16.99	21.31	25.48	29.36	326.11	342.42	345.68
Mainstreet Bank Ltd.	13.14	10.84	9.85	10.98	13.77	16.47	18.98	210.82	221.36	223.47
Skye Bank plc	12.92	10.65	9.69	10.80	13.55	16.19	18.66	207.26	217.62	219.70
Stanbic IBTC	21.40	17.65	16.05	17.88	22.43	26.82	30.91	343.28	360.44	363.87
Standard Chartered Bank Nigeria Ltd	11.89	9.80	8.91	9.94	12.46	14.90	17.17	190.74	200.28	202.19
Sterling Bank Nigeria Ltd	13.77	11.35	10.32	11.51	14.43	17.26	19.89	220.86	231.91	234.11
Union Bank plc	16.55	13.65	12.41	13.83	17.35	20.75	23.91	265.55	278.83	281.49
United Bank for Africa plc	12.56	10.35	9.41	10.49	13.16	15.74	18.14	201.43	211.50	213.52
Unity Bank plc	14.54	11.99	10.90	12.15	15.24	18.22	20.99	233.17	244.83	247.16
Wema Bank,	23.01	18.98	17.26	19.23	24.12	28.85	33.24	369.19	387.65	391.34
Zenith bank plc	17.36	14.32	13.02	14.51	18.20	21.76	25.07	278.51	292.43	295.22

Appendix Vc: Raw Data - Market Capitalization (N'Billion)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Access Bank plc	165.40	226.40	217.00	248.70	229.70	306.70	279.50	333.00	499.50	532.80
Citibank	231.60	316.90	303.80	348.20	321.60	429.40	391.40	466.10	699.15	745.76
Diamond Bank	214.50	293.50	281.40	322.50	297.90	397.70	362.50	431.70	647.55	690.72
Ecobank	275.70	377.30	361.60	414.60	382.90	511.20	465.90	554.90	832.35	887.84
Enterprises Bank Ltd	145.32	198.87	190.58	218.51	201.81	269.43	245.60	292.53	438.80	468.05
Fidelity Bank plc	683.80	935.70	896.90	1,028.2	949.60	1,267.9	1,155.4	1,376.2	2,064.3	2,201.9
First Bank plc	534.90	731.90	701.60	804.30	742.80	991.80	903.80	1,076.6	1,614.9	1,722.6
First City Monument Bank	214.50	293.50	281.40	322.50	297.90	397.70	362.50	431.70	647.55	690.72
Guaranty Trust Bank	308.80	422.60	405.00	464.30	428.80	572.60	521.80	621.50	932.25	994.40
Heritage Bank Ltd	131.48	179.93	172.43	197.70	182.59	243.77	222.21	264.67	397.01	423.47
Mainstreet Bank Ltd.	243.18	332.75	318.99	365.61	337.68	450.87	410.97	489.41	734.11	783.05
Skye Bank plc	259.20	354.60	339.90	389.70	359.90	480.60	437.90	521.60	782.40	834.56
Stanbic IBTC	138.40	189.40	181.50	208.10	192.20	256.60	233.90	278.60	417.90	445.76
Standard Chartered Bank Nigeria Ltd	220.02	301.06	288.61	330.79	305.52	407.93	371.83	442.80	664.19	708.47
Sterling Bank Nigeria Ltd	254.76	348.59	334.18	383.02	353.76	472.34	430.54	512.71	769.07	820.34
Union Bank plc	214.50	293.50	281.40	322.50	297.90	397.70	362.50	431.70	647.55	690.72
United Bank for Africa plc	176.50	241.50	231.40	265.30	245.00	327.20	298.20	355.20	532.80	568.32
Unity Bank plc	292.30	399.90	383.30	439.50	405.90	541.90	493.80	588.20	882.30	941.12
Wema Bank,	226.10	309.40	296.50	340.00	314.00	419.20	382.00	455.00	682.50	728.00
Zenith bank plc	518.40	709.30	679.90	779.40	719.80	961.10	875.90	1,043.3	1,564.9	1,669.3

Appendix Vd: Raw Data - Total Earnings (' N Billion)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Access Bank plc	14.66	16.07	19.30	21.09	26.06	31.34	33.04	24.74	52.11	55.58
Citibank	24.27	26.61	31.97	34.93	43.16	52.53	54.72	57.54	86.31	92.06
Diamond Bank	18.77	20.58	24.73	27.02	33.39	40.41	42.33	44.51	66.77	71.22
Ecobank	14.24	15.61	18.76	20.50	25.33	30.65	32.11	33.76	50.64	54.02
Enterprises Bank	59.62	65.37	78.53	85.81	87.11	88.23	85.43	89.35	92.02	94.16
Fidelity Bank plc	16.48	18.07	21.71	23.73	29.32	35.48	37.17	39.08	58.62	59.37
First Bank plc	13.74	15.06	18.09	19.77	24.43	29.57	30.97	32.57	48.85	52.11
First City Monument Bank	19.23	21.09	25.33	27.27	34.20	41.39	43.36	45.60	68.94	72.95
Guaranty Trust Bank	17.81	19.53	23.46	25.64	31.68	38.34	40.16	42.23	63.35	67.57
Heritage Bank	53.94	59.14	71.05	77.63	72.93	76.35	78.62	80.79	82.14	85.90
Mainstreet Bank	25.48	27.94	33.57	36.67	45.32	54.85	57.46	60.42	90.62	96.66
Skye Bank plc	22.89	25.10	30.16	32.95	40.72	49.28	51.62	54.28	81.42	86.85
Stanbic IBTC	56.78	62.25	74.79	81.72	100.98	122.21	124.03	134.62	150.89	167.45
Standard Chartered Bank Nigeria	23.05	25.28	30.37	33.18	41.00	49.62	51.98	54.66	62.99	70.46
Sterling Bank Nigeria	26.69	29.27	35.16	38.42	47.48	57.46	60.19	63.45	70.94	85.27
Union Bank plc	19.69	21.59	25.94	28.34	35.02	42.38	44.40	46.68	50.23	55.69
United Bank for Africa plc	18.16	19.92	23.93	26.14	32.31	39.10	40.96	43.07	47.60	55.52
Unity Bank plc	17.81	19.53	23.46	25.64	31.68	38.34	40.16	42.23	47.66	58.54
Wema Bank,	27.01	29.62	35.59	38.88	48.05	58.15	60.92	64.05	70.08	81.68
Zenith bank plc	21.98	24.10	28.95	31.63	39.09	47.31	49.56	52.11	56.89	61.34

Appendix Ve: Raw Data - Price Earning Ratio (P/E)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Access Bank plc	11.28	14.09	11.24	11.79	8.81	9.79	8.46	13.46	9.59	9.59
Citibank	9.54	11.91	9.50	9.97	7.45	8.17	7.15	8.10	8.10	8.10
Diamond Bank	11.43	14.26	11.38	11.94	8.92	9.84	8.56	9.70	9.70	9.70
Ecobank	19.36	24.16	19.28	20.23	15.12	16.68	14.51	16.44	16.44	16.44
Enterprises Bank	2.44	3.04	2.43	2.55	2.32	3.05	2.87	3.27	4.77	4.97
Fidelity Bank plc	41.49	51.77	41.31	43.34	32.39	35.74	31.09	35.21	35.21	37.09
First Bank plc	38.94	48.60	38.78	40.68	30.41	33.54	29.18	33.06	33.06	33.06
First City Monument Bank	11.15	13.92	11.11	11.83	8.71	9.61	8.36	9.47	9.39	9.47
Guaranty Trust Bank	17.34	21.64	17.26	18.11	13.54	14.94	12.99	14.72	14.72	14.72
Heritage Bank	2.44	3.04	2.43	2.55	2.50	3.19	2.83	3.28	4.83	4.93
Mainstreet Bank	9.54	11.91	9.50	9.97	7.45	8.22	7.15	8.10	8.10	8.10
Skye Bank plc	11.32	14.13	11.27	11.83	8.84	9.75	8.48	9.61	9.61	9.61
Stanbic IBTC	2.44	3.04	2.43	2.55	1.90	2.10	1.89	2.07	2.77	2.66
Standard Chartered Bank Nigeria	9.54	11.91	9.50	9.97	7.45	8.22	7.15	8.10	10.54	10.06
Sterling Bank Nigeria	9.54	11.91	9.50	9.97	7.45	8.22	7.15	8.08	10.84	9.62
Union Bank plc	10.89	13.60	10.85	11.38	8.51	9.38	8.17	9.25	12.89	12.40
United Bank for Africa plc	9.72	12.13	9.67	10.15	7.58	8.37	7.28	8.25	11.19	10.24
Unity Bank plc	16.41	20.48	16.34	17.14	12.81	14.13	12.29	13.93	18.51	16.08
Wema Bank,	8.37	10.45	8.33	8.74	6.54	7.21	6.27	7.10	9.74	8.91
Zenith bank plc	23.59	29.43	23.48	24.64	18.41	20.32	17.67	20.02	27.51	27.21

Appendix Vf: Raw Data - Insurance Cost (N'Million)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Access Bank plc	227.3	169.6	139.0	154.9	205.1	269.7	310.8	350.1	525.2	560.2
Citibank	56.6	42.5	34.6	84.0	50.6	68.7	108.7	125.6	188.4	201.0
Diamond Bank	145.4	108.5	88.9	99.1	131.3	172.6	198.9	224.7	337.1	359.5
Ecobank	240.9	179.7	147.3	164.1	217.4	285.8	329.4	371.1	556.7	593.8
Enterprises Bank	185.6	138.5	113.5	126.5	167.6	220.3	253.9	287.5	431.2	460.0
Fidelity Bank plc	186.3	139.0	113.9	127.0	168.2	221.1	254.8	287.9	431.9	460.6
First Bank plc	151.3	112.9	92.5	103.1	136.6	179.6	207.0	231.7	347.6	370.7
First City Monument Bank	110.9	82.7	67.8	75.6	100.1	131.6	151.6	178.5	267.8	285.6
Guaranty Trust Bank	213.6	159.4	130.6	145.6	192.8	253.5	292.1	330.0	495.0	528.0
Heritage Bank	168.0	125.3	102.7	114.5	151.6	199.3	229.7	260.1	390.2	416.2
Mainstreet Bank	59.4	44.6	36.3	88.2	53.1	72.1	114.1	131.9	197.8	211.0
Skye Bank plc	114.1	85.1	69.8	77.7	103.0	135.4	156.0	175.5	263.3	280.8
Stanbic IBTC	176.8	131.9	108.1	120.5	159.6	209.8	241.8	273.8	410.7	438.1
Standard Chartered Bank Nigeria	53.8	40.4	32.9	79.8	48.1	65.3	103.3	119.3	179.0	190.9
Sterling Bank Nigeria	62.3	46.8	38.1	92.4	55.7	75.6	119.6	138.2	207.2	221.1
Union Bank plc	170.8	135.1	120.0	122.7	160.7	215.8	255.7	253.2	379.8	405.1
United Bank for Africa plc	254.5	189.9	155.6	173.4	229.7	302.0	348.0	392.1	588.2	627.3
Unity Bank plc	213.6	159.4	130.6	145.6	192.8	253.5	292.1	329.1	493.6	392.1
Wema Bank,	190.9	142.4	116.7	130.1	172.3	226.5	261.0	294.0	441.4	470.5
Zenith bank plc	176.8	131.9	108.1	120.5	159.6	209.8	241.8	272.3	308.5	358.6

Appendix Vg: Raw Data - Total Equity Capital (N' Billion)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Access Bank plc	3.1	3.4	27.0	46.9	83.9	96.5	98.5	105.4	110.6	115.3
Citibank	2.6	2.9	23.1	40.2	71.9	82.8	126.0	111.0	166.5	177.6
Diamond Bank	3.7	4.0	32.3	56.2	100.7	115.9	176.4	155.4	233.1	248.6
Ecobank	3.4	3.7	30.0	52.1	93.3	107.3	163.4	143.9	215.9	230.2
Enterprises Bank	4.5	4.9	39.6	68.8	123.2	141.6	215.7	189.9	284.9	303.9
Fidelity Bank plc	4.4	4.8	38.5	66.9	119.9	137.9	210.0	185.0	277.5	296.0
First Bank plc	10.8	11.9	95.5	166.0	297.3	342.0	520.8	458.8	688.2	734.1
First City Monument Bank	8.3	9.1	73.5	127.9	229.0	263.4	401.1	353.4	530.1	565.4
Guaranty Trust Bank	5.4	5.9	47.7	83.0	148.7	171.0	260.4	229.4	344.1	367.0
Heritage Bank Plc	4.1	4.5	35.8	62.2	70.6	78.2	101.7	111.7	120.8	125.0
Mainstreet Bank	2.7	3.0	24.3	42.2	75.5	86.9	132.3	116.6	174.8	186.5
Skye Bank plc	7.8	8.6	69.3	120.5	215.8	248.2	378.0	333.0	499.5	532.8
Stanbic IBTC	4.3	4.7	37.7	65.5	117.3	134.9	205.4	180.9	271.4	289.4
Standard Chartered Bank Nigeria	2.5	2.8	21.9	38.2	68.3	78.7	119.7	105.5	158.2	168.7
Sterling Bank Nigeria	2.9	3.2	25.4	44.2	79.1	91.1	138.6	122.1	183.2	195.4
Union Bank plc	6.6	7.3	58.5	101.8	182.2	209.6	319.2	281.2	421.8	449.9
United Bank for Africa plc	3.5	3.8	30.8	53.6	95.9	110.3	168.0	148.0	222.0	236.8
Unity Bank plc	2.7	3.0	24.0	41.6	74.6	85.8	130.6	115.1	172.7	184.2
Wema Bank,	3.1	3.4	27.7	48.2	86.3	99.3	151.2	133.2	199.8	213.1
Zenith bank plc	5.0	5.5	43.9	76.3	136.7	157.2	239.4	210.9	316.4	337.4

Appendix Vh: Raw Data – Risk Weighted Asset (N' Billion)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Access Bank plc	1.71	1.87	14.85	25.80	46.15	53.08	54.18	57.97	60.83	63.42
Citibank	1.43	1.60	12.71	22.11	39.55	45.54	69.30	61.05	91.58	97.68
Diamond Bank	2.04	2.20	17.77	30.91	55.39	63.75	97.02	85.47	128.21	136.75
Ecobank	1.87	2.04	16.50	28.66	51.32	59.02	89.87	79.15	118.72	126.63
Enterprises Bank	2.48	2.71	21.77	37.83	67.74	77.90	118.62	104.47	156.70	167.15
Fidelity Bank plc	2.42	2.64	21.18	36.80	65.95	75.85	115.50	101.75	152.63	162.80
First Bank plc	5.94	6.55	52.53	91.30	163.52	188.10	286.44	252.34	378.51	403.74
First City Monument Bank	4.57	5.01	40.43	70.35	125.95	144.87	220.61	194.37	291.56	310.99
Guaranty Trust Bank	2.97	3.25	26.24	45.65	81.79	94.05	143.22	126.17	189.26	201.87
Heritage Bank	2.25	2.46	19.70	34.22	38.81	42.99	55.92	61.41	66.43	68.74
Mainstreet Bank	1.50	1.67	13.34	23.22	41.52	47.82	72.77	64.10	96.15	102.56
Skye Bank plc	4.29	4.73	38.12	66.28	118.69	136.51	207.90	183.15	274.73	293.04
Stanbic IBTC	2.37	2.59	20.74	36.03	64.52	74.20	112.97	99.50	149.24	159.19
Standard Chartered Bank Nigeria	1.36	1.52	12.07	21.00	37.57	43.26	65.84	58.00	87.00	92.80
Sterling Bank Nigeria	1.57	1.75	13.98	24.32	43.50	50.09	76.23	67.16	100.73	107.45
Union Bank plc	3.63	4.02	32.18	55.99	100.21	115.28	175.56	154.66	231.99	247.46
United Bank for Africa plc	1.93	2.09	16.94	29.48	52.75	60.67	92.40	81.40	122.10	130.24
Unity Bank plc	1.49	1.65	13.20	22.88	41.03	47.19	71.83	63.31	94.96	101.29
Wema Bank,	1.71	1.87	15.24	26.51	47.47	54.62	83.16	73.26	109.89	117.22
Zenith bank plc	2.75	3.03	24.15	41.97	75.19	86.46	131.67	116.00	173.99	185.59