Interest Rate and Financial Performance of Listed Deposit Money Banks in Nigeria

Ali- Momoh Betty Oluwayemisi[1], Fajuyagbe Bamikole Samson[2]

Abstract: The study examined a relationship between interest rates and the financial performance of listed deposit money banks in Nigeria. Specifically, the study investigated how the growth of domestic money supply affect financial performance; how the maximum bank lending rate affect financial performance; how the monetary policy rate influences the financial performance of Nigerian deposit money banks; and how the rate of inflation affects the financial performance of Nigerian deposit money banks. The study made use of secondary data. The study's design comprised both descriptive and ex-post facto analyses. The analysis was carried out using panel data. The statistical analysis revealed that there are positive and statistically significant relationships between domestic money supply and financial performance; maximum lending rate has a positive relationship with financial performance; the relationship between the two is statistically significant; monetary policy rate has a positive and statistically significant effect on financial performance; and inflation has a negative and statistically significant effect on financial performance. The study concluded that, interest rate liberalization in Nigeria benefited the financial performance of the country's deposit money banks. It further concluded that, effective interest rate administration has played a critical role in the growth and development of Nigeria's deposit money banks. This suggests that a change in the money supply have a major effect on the financial performance of listed deposit money banks in Nigeria. As a consequence, the study proposed that the Central Bank of Nigeria redefine domestic money supply as a monetary policy instrument by defining an equilibrium level. This would make additional cash accessible to deposit money institutions, allowing them to enhance their performance and accelerate loan applications.

Keywords: Domestic Money Supply; Financial Performance; Deposit Money Banks; Nigeria

JEL Classification: E43; E51; G21

1. Introduction

The banking sector continues to play a significant role in driving economic expansion in Nigeria, and its success is primarily determined by monetary policy action, particularly benchmark interest rate levels. To be more specific, determining a suitable interest rate is essential to attaining greater performance and fostering the growth of the banking industry (Jibrin, Okorie, Okoro, Dada, Chiemeke, &Owolabi, 2015). When interest rates are high, the cost of borrowing money rises, which in turn slows down domestic investment, reduces aggregate demand, boosts unemployment, and slows down economic development. It raises significant issues for policymakers about the available

[1] Department of Accounting, Federal University, Oye-Ekiti, Ekiti-State, Nigeria, E-mail: oluwayemisi.alimomoh@fuoye.edu

[2] Department of Accounting, Ekiti State University, Ado-Ekiti, Ekiti-State, Nigeria, Corresponding author: kolesamson@gmail.com.

investment and finance possibilities. On the other side, a reduction in interest rates results in an increase in aggregate demand, production, investments, employment, company confidence, and export competitiveness (Precious & Palesa, 2014). The interest rate that banks and other financial institutions charge their customers is largely influenced by the benchmark policy rate that is established by the monetary authority. In spite of this, the fees that banks charge to economic actors are determined by a combination of explicit and implicit expenses. The expenses of getting deposits are considered to be the explicit costs, while the opportunity cost connected with the use of the banks' own resources is considered to be the implicit cost (Olayemi & Michael, 2016). All of these factors contributed to the need for the Central Bank of Nigeria to be established (Emecheta & Ibe, 2014).This tendency led to the loss of any efficient apparatus for funding industrial growth, and this was the case for both the public sector and the private sector. There was no stock exchange, no capital markets, no development banking institutions, and there was a glaring lack of development banking practices (Balogun, 2008).

Additionally, the CBN has been helpful by offering specialized loan programs at interest rates that are more favourable to borrowers, notably in the fields of agriculture financing, export development, and small and medium-scale businesses. In spite of these interventions, interest rates imposed by banks have remained high, making credit costly, which has led to the dissolution of corporate organizations, which has contributed to a decline in production as well as a loss of jobs (Akinwale, 2018). The fact that banks serve as intermediaries in the process of resource mobilization and allocation is reflective of the fact that made to customers who borrow money from them. The performance of deposit money institutions is highly impacted by the interest spread, which is defined as the difference between these two interest rates. This is particularly true in terms of profitability. As a consequence of this, the interest rate is recognized as a crucial factor that contributes to the continued existence and successful operation of deposit money institutions (Okoye& Eze, 2013). As a result, when interest rates change, as is seen from the unstable interest rate regime in Nigeria, such fluctuations in interest rates have the potential to damage both the overall performance of banks and the economy of a nation as a whole.

The discovery of inflationary pressures by the Central Bank of Nigeria led to the establishment of an interest rate policy, which was then implemented and used to regulate the circulation of money in the economy. This policy was used to control the circulation of money in the economy. Deposit money banks in Nigeria were forced to restrict their borrowing after the Nigerian central bank made the decision to raise the interest rate that banks pay to borrow money. As a result, deposit money banks in Nigeria experienced a significant decline in both their overall operations and performance (Hassan, 2016). However, deposit money banks also increased their lending rates in the business environment and to other borrowers. This resulted in fewer loans and advances and decreased the quantity of money in circulation throughout the economy. Individuals, businesses, and industries have been dissuaded from taking loans and advances as a direct result of the high interest rate, which has resulted in less money in circulation, a decrease in credit, and a fall in prices (Anyingang & Udoka, 2012). As a consequence of this, deposit money banks are unable to create revenues related with borrowings, loans, and advances, which therefore has an effect on the performance of these institutions.. As a result of this, this study seeks to examined the effect of interest rates on the financial performance of listed deposit money banks in Nigeria

2.0 Literature Review

2.1 Interest Rate

The return or yield on equity, as well as the opportunity cost of delaying the use of money in the present in favour of a time in the future, are both components of the interest rate. The term "interest rate" refers to the sum of three separate rates: the loan rate, the saving rate, and the discount rate. The price of credit, which is also known as the interest rate, is established by the competing forces of demand for and supply of loanable money in any given economy (Victor & Eze, 2013). The cost of taking out a loan or the return you get for keeping your money in the bank is both represented by an interest rate. It is determined as a percentage of the total money that is either borrowed or saved for a period of one year, or for any other length of time that the lender and the borrower agree upon at the time that the loan is contracted. To be more specific, the interest rate is the proportion of the principle that is paid as a fee over a certain amount of time. This charge is referred to as the "interest." It is also possible to think of it as the rental payments made by borrowers in exchange for the use of credit, and the return that lenders get for parting with their liquidity over time (Dhungana, 2016). In addition, interest rates may either be represented in nominal or real terms, depending on whether or not adjustments to the general level of prices (also known as inflation) are included into the calculations of either kind of rate. In the event that the interest rate is not adjusted for inflation, the rate will be presented in nominal terms. A rate of interest that does not take inflation into account is referred to as a nominal interest rate (Owolabi, 2014). This is because inflation has a depressing effect on the purchasing power of the lender, which means that the lender will not be able to purchase the same quantity of goods or services with the money realized at payoff or maturity of the loan or investment in comparison to the time when they were secured (Ogunbiyi & Ihejirika, 2014)

2.1.2 Monetary Policy Rate

The use of various monetary tools to regulate or manage the amount, cost, availability, and direction of money and credit in an economy in order to accomplish a certain macroeconomic policy aim is what we mean when we talk about monetary policy (Ayodele, 2014). It is a purposeful effort on the part of the Central Bank to exert some degree of influence on the money supply and credit conditions in the economy in order to accomplish a set of predetermined economic goals. Some of the goals of macroeconomics include maintaining prices at a stable level, achieving sustainable economic growth, reaching full employment, and maintaining a stable balance of payments (Akinwale, 2018). However, the degree to which banks comply with the policy directions is a critical factor in determining whether or not monetary policies are successful in attaining the goals for which they were designed. This is due to the fact that the policies often work against their interests in terms of profit.

2.1.3 Maximum Lending Rate at a Bank

The maximum bank lending rate is the interest rate that deposit money banks may legally charge their borrowers for loans they make to their clients. If the highest interest rate that banks are ready to lend at is too high, the banks run the danger of inducing adverse selection difficulties. This occurs when high-risk borrowers are willing to accept the high interest rates. It is possible that Nigeria's deposit money banks may discourage long-term investment by charging excessively high interest rates, which would limit the country's capacity for economic expansion (Ngumo, 2012). An rise in the base rate that the central bank uses to determine other interest rates would lead to an increase in the maximum interest rate that commercial banks charge their clients when they borrow money. An rise in the maximum lending rate will have an effect on individuals, particularly if the interest rate on any loans they hold is variable. This would result in a decrease in the amount of money that people have available for

spending, saving, or investing. People are going to have to pay their bills, and as those costs grow more costly, families are going to have less money available for other expenses (Victor & Eze, 2013).

2.1.3 Inflation Rate

An economy is said to be experiencing inflation when the average price of products and services in that economy is climbing at an ever-increasing rate over time. As a result of the general increase in prices of goods and services, one unit of currency may now purchase a lower total quantity of those products and services. As a result, one may draw the conclusion that inflation is a reflection of a decline in the buying power of each unit of the nation's currency, as well as a decline in the value of products and services in the medium of exchange and the unit of account within the economy (Fischer, 1993). They believed that these three factors contributed to the country's low level of funds that were mobilized. They claim that consumers do not find it appealing to put money away for the future, and they also assert that restricted mobilization is a result of the style of life chosen by certain individuals. The portion of an individual's income that is not spent on immediate needs constitutes their savings. In the process of capital mobilization, saving results in an increase in industrial output (Omotosho & Doguwa, 2013)

2.1.4 Nigerian Interest Rate

To liberalize the interest rate regimes that were permitted to be set by the interplay between the forces of demand and supply in Nigeria, the Structural Adjustment Program (SAP) was implemented in 1986. This enabled for interest rates to be determined by the market. The goal of fostering an effective intermediation process, as well as guaranteeing a healthy level of competition and participation, was the rationale for allowing participants in the financial market to negotiate the interest rates on deposits and loans (Ogundipe, Akintola& Olaoye, 2020). According to Ogunbiyi and Ihejirika (2014), deposit money banks (DMBs) are formed as a primary network via which the Central Bank of Nigeria communicates interest rate policy in Nigeria. This was the assertion made by the two researchers. While deposit money banks pay interest to its clients on the deposits they have made with them, they also charge interest on the debt (loans and advances) that they give to borrowers. This results in the difference between these two interest rates, which is referred to as the interest spread, and the difference between these two interest rates accounts for a significant portion of the profits made by deposit money institutions (DMBs).

In a similar vein, Obidike, Ejeh, and Ugwuegbe (2015) are of the opinion that, in recent times in Nigeria, the liquidity ratio and exchange rate have not contributed to an increase in the volume of deposits, money bank loans, and advances because of inadequate infrastructure and high operating costs in an extremely volatile economic environment.

2.1.5 The Monetary and Financial Performance of Deposit Money Banks in Nigeria

Researchers have used a variety of proxies as indicators of the financial performance of banks in the published research that is now available. A mix of financial ratio analysis, benchmarking, and monitoring performance in comparison to the budget are all included in these proxies. Return on equity, return on assets, net interest margin, and a whole host of other metrics are also examples of others (Alimi, 2014). However, Gitman, Juchau, and Flanagan (2015) explained that a good performance measurement framework should include more aspects of performance than just profitability embedded in pure market-oriented indicators. Additionally, this framework should be less

susceptible to manipulation by the markets. Gitman, Juchau, and Flanagan (2015) cited this explanation in their article. According to Pandey (2010), "performance" is defined as the capacity of an organization to recognize the value of the investments made into business activities, with the expectation that these activities will contribute to the organization's ongoing pursuit of self-improvement and the realization of its objectives. The performance of the bank was evaluated. According to Mengistu (2015), profitability is a bank's first line of defense against unforeseen losses. This is because profitability allows a bank to bolster its capital position and increase its future profitability via the deployment of retained profits. If an institution continues to incur losses, the institution's capital base will eventually be depleted, which will put the institution's equity and debt holders in jeopardy. As a measure of the organization's overall profitability, the return on assets (ROA) and the return on equity were used in this research. Return on assets is a fundamental indication of a bank's financial success that is often referenced in the relevant academic literature. It demonstrates the amount of profit generated for each Naira worth of assets, and more significantly, it represents the capacity and efficiency with which management is able to employ the financial and real investment resources of the bank in order to make profits.

Theoretical Review

2.2.1 Stakeholder Theory

The stakeholder theory was first established by Freeman in 1984 as a tool for management, but it has since expanded into a theory of the enterprise that has a significant potential for explaining a variety of phenomena. The stakeholder theory places an explicit emphasis on the balance of the interests of many stakeholders as the primary factor in determining business policy. The stakeholder theory takes a prospective stance and strives to understand how managers should prioritize and respond to claims made by stakeholders in order to enhance a company's capacity to produce value. This theory employs a forward-looking approach (Freeman, 1984). According to the definition offered by Donaldson and Preston (1995), stakeholders are "identified groups or individuals who have a genuine interest in an organization and these interests have inherent worth." [Citation needed] According to this idea, no one interest should be allowed to take precedence over the others since it is concerned with how management decision-making impacts all of the stakeholders. The management of a company need to maintain the interests of its customers, suppliers, workers, communities, and shareholders aligned with one another and going in the same direction for the company as a whole to flourish and be sustainable over time. The straightforward tactic of hedging one's bets by hedging the interests of many stakeholders against one another should not be prioritized above the need of constant innovation to maintain this alignment of interests. Therefore, executives will produce the most potential value for shareholders and other financiers if they manage the company with the stakeholders' interests in mind (Osho &Akinola, 2018).

The stakeholder theory is the primary theoretical foundation for this investigation. This is due to the fact that collaboration across the numerous stakeholders is required for the greatest possible performance from the company. People who are impacted by the actions of an entity and who also have some kind of control over that entity are considered to be stakeholders. Stakeholders may be affected in a variety of ways. In the context of deposit money institutions, these stakeholders include, but are not limited to, management, shareholders, customers, regulatory agencies, the government, and so on. Every participant is impacted by the government's control of the interest rate policies used by deposit money institutions. It is clear that the regulation of interest rate policies involves and has an effect on all of the participants in the economy who are also stakeholders in the deposit money

institutions. The effectiveness of deposit money institutions as a whole is influenced in some way by the rules governing interest rates. In light of this, one may deduce that the management of interest rates in Nigeria's deposit money banks, which takes place as a result of the activities of a variety of stakeholders, has an influence on the overall performance of the banks. And in a related manner, the performance of banks has an influence on the many different stakeholders. This can be in the form of lending rates charged to customers for the purpose of obtaining loans and advances; the high bank rate of borrowing charged by the central bank of Nigeria on deposit money banks in order to limit the amount of borrowing done by those banks; dividends paid out to shareholders; and so on.

2.2.2 Shareholders Theory

This idea was first proposed by Milton Friedman in the year 1970. It emphasizes the importance of putting the interests of shareholders first and discusses the proper way for corporate executives to conduct themselves in their respective business environments. The theory of shareholders proposes that managers have a primary obligation to maximize shareholders' interests in a manner that is still authorized by law or societal standards. This is the core tenet of the shareholders' theory. According to this view, the goal of the company is to increase the wealth of its shareholders as much as possible; to put it another way, the only reason a company exists is to satisfy the requirements and aims of its proprietors. According to this idea, the success of a company is evaluated based only on its current market value, often known as the value it provides to its shareholders. According to the opinion of Basman (2017), the overall objective of any and all corporate entities should be the maximizing of shareholder value. A strategy that aims to maximize the wealth of shareholders guarantees that shareholders are suitably paid for the risks that are incurred. The dividends paid to shareholders are an essential part of their wealth, but it also includes the capital gain of their assets. According to this idea, the fundamental issue with the way corporations are governed arises from the principal–agent relationship that is created when beneficial ownership and executive decision making are kept separate. This division is what causes the company's behaviour to deviate from the goal of generating profits, which is why the separation is important. This is due to the fact that when ownership and control are separated, the principals, who are the investors, have different interests and goals than the agents, who are the managers, who are in charge of the business. Because they are not the owners of the company, the managers do not fully incur the expenses of their activities nor do they get the full rewards of those actions.

2.2.3 The Classical Theory of the Interest Rate

In 1945, Marshall and Fisher were the first to propose what is now known as the classical theory of interest rates. Because only real factors like productivity and thriftiness are taken into consideration in the process of determining interest rates according to this theory, it is also referred to as the "real theory of interest rates." This is due to the fact that monetary factors are not given any weight in the process. According to the traditional economic theory, the level of interest rates is established by analyzing how demand for and supply of investment or capital interact with one another (Richard, 1979). Due to the fact that businesses borrow money in order to invest, the cost of investment is interest. Therefore, the interest rate is crucial to the decision to invest. The opposite is true as well: a high interest rate will result in a decrease in investment, while a low interest rate will stimulate more investment. Therefore, there is a negative connection between investment and interest rates. People keep their money in the bank so they may earn interest on it. When interest rates are high, people save

more money, but when they are low, they save less money (Okoye& Udeh, 2009; Uchendu, 2009). However, the interest rate has a direct bearing (or a positive influence) on the amount of money saved. The need that businesses have to invest is met by the savings that families have. Therefore, savings represent supply in the products market, whereas investment represents demand. Therefore, the level of interest paid on loans to finance the purchase of products is established at the point in the market at where the supply of and demand for savings cross or intersect one another. The interest rate will change to maintain equilibrium in the products market as a result of saving and investment (Okoro, 2013).

2.3 Empirical Evidence

Akomolafe, Danladi, Babalola, and Abah (2015) demonstrated that fixed effects regression is the method that should be used. According to the findings, there is a constructive connection between the profitability of banks and monetary policies, which are represented here by money supply and interest rates as proxies. However, statistical analysis showed that a one percent and a five percent increase in the interest rate did not produce a meaningful difference. As a result, the findings of this research suggest that the nation's monetary authorities should investigate the possibility of adopting an interest rate policy that is hospitable to the growth of the loan industry in the country.

Maigua and Mouni (2016) conducted research to determine the extent to which the performance of commercial banks in Kenya is affected by the factors that determine interest rates. The key economic elements that have the most significant impact on an economy's overall economic growth are interest rates. They are useful tools for bringing inflation under control and for fostering economic growth. Inflation rates, discount rates, exchange rates, and reserve requirements are some of the factors of interest rates that have been investigated in order to ascertain the effect that they have on the activities of financial institutions. The 43 commercial banks currently functioning in Kenya served as the study's primary population of interest. The size of the sample was determined to be 26 commercial banks that were randomly selected from the population. The method of analyzing the data that was used in this research was known as multiple regression analysis. On the other hand, higher levels of reserve requirement ratio lead to lower levels of performance in commercial banks in Kenya. Based on the findings of the research, it is recommended that the Central Bank of Kenya establish base reserve requirements in a way that does not put undue pressure on the operations of the banks. This will contribute to the expansion of the banking sector in Kenya, and therefore, the country's economy. In conclusion, the research suggests that management at commercial banks should formulate a plan for the most effective way to determine discount rates for their institutions. Doing so will significantly contribute to dictating the borrowing and lending culture of commercial banks in Kenya and will improve the performance of these institutions.

By using panel data regression, Nguyen and Le (2017) were able to investigate the influence that monetary policy has on the earnings of commercial banks in Vietnam. Data for their study were collected from 20 commercial banks operating in Vietnam's banking industry, with yearly frequency spanning from 2007 to 2014. The time period covered by their research was from 2007 to 2014. For the purposes of monetary policy, variables such as base (MB), discount rate (DIS), and required reserve ratio (RRR) are utilized as proxies. Performance of commercial banks is often measured in terms of their profit before taxes (PROFIT). According to the findings, there is a correlation between the profits made by banks and the monetary policies that are in place. Only MB has a substantial positive influence on the bank's profit when using a significance threshold of 10%. This is the case among the variables selected to reflect SBV's monetary policy. Based on this assumption, the research

makes the recommendation that MB should be one of the elements that is at the center of attention in SBV's policies addressing the performance and stability of banking.

Additionally, Oladele, Amos, and Adedeji (2017) investigated how the current interest rate environment affects the profitability of deposit money institutions in Nigeria. During the years 2005–2014, data was collected from 21 different deposit money banks located in Nigeria. A regression analysis was carried out for the goal of their research in order to identify the nature of the connection that exists between the interest rate and the profitability of deposit money banks in Nigeria. The outcomes of their investigation indicated that there was a positive and statistically significant connection between the interest rates on loans and the profitability of the bank. There was a large and positive correlation between the interest rate that was being exchanged between banks and the profitability of the banks. The interest rate on Treasury bills had a positive and substantial link with the profitability of banks, and the interest rate on monetary policy also shown a positive and significant association with the profitability of banks. It is recommended as a result that the government should adopt policies that will assist Nigerian banks in increasing their profitability, and it is also recommended that there is a need to strengthen bank lending rates, inter-bank rate policy, Treasury bill rates, and monetary policy rates through the implementation of an effective and efficient regulation and supervisory framework.

In a study that was quite similar, Musah, Anokye, and Gakpetor (2018) investigated how the difference in interest rates affected the profitability of commercial banks in Ghana. The research determined the interest rate spread through the use of net interest income (IntSp) and net interest margin (NIM), as well as the profitability of the bank through the utilization of Return on Assets (ROA) and Return on Equity (ROE) (ROE). The research analyzed panel data from a sample of twenty-four different financial institutions over the course of 10 years. The findings of the research indicate that there is a correlation, which is not only positive but also statistically significant, between the interest rate spread and the profitability of banks in Ghana. The findings could be interpreted within the context of the loanable funds theory to suggest that the demand for loans is higher than the supply of the same, allowing banks to charge higher interest on lending relative to deposits in order to increase profitability. This would be consistent with the hypothesis that the loanable funds theory proposes. The findings of the study have important repercussions for future research on interest rate spreads and other topics, in particular for the strategy that the Ghanaian government would implement to lower interest rate spreads. If banks are motivated by profit, the only way they would lower interest rate spreads is if they diminish their profitability. However, the data that is now available demonstrates that banks charge greater interest margins in order to maximize their profit.

Eyigege and Nguavese (2019) investigated the impact that bank lending rates have on the economic results of deposit and money banks that are traded on the Nigeria stock market. The research uses a descriptive research design with cross-sectional panel data for a period of 12 years (2004–2015) to investigate the influence of bank lending proxies (loans and advances to total deposit) on financial performance with profitability and liquidity as dependent variables proxies as ROA and CA/CL, respectively. The research adopts a descriptive research design because it seeks to better understand the relationships between bank lending proxies and financial performance. Using Yemane's sampling approach, the research takes data from five out of a total population of 21 deposit money banks. The population consists of deposit money banks. In this work, an OLS regression on panel data as well as a fixed effects regression analysis is used. An insignificantly favourable impact of bank lending was found to have been exerted on the financial performance of deposit and money banks that were

mentioned on the Nigeria stock market, according to the findings of the research. As a result, the research suggests that deposit money banks in Nigeria should increase the amount of deposits they receive in order to improve their capacity for lending, and that these banks should also develop financial strategies that are both comprehensive and realistic in order to improve their financial performance.

According to the reviewed, it is clear that there is a lack of study work on the influence of interest rate and financial performance of listed deposit money banks in Nigeria. This is obvious from the fact that the reviewed were examined. Even the few studies that were done hardly acknowledged the impact that interest rate has on the functioning of banks. These investigations were exploratory and qualitative in character, and they used questionnaires as a source of data gathering. This is an interesting aspect of the research that was conducted. Consequently, the purpose of this research was to investigate the impact of interest rates on the financial performance of listed deposit money banks in Nigeria using secondary data and various panel data analysis approaches.

3.0 Methodology

3.1 Model Specification

This study used a pooled OLS model to express the relationship between banks' financial performance indicators with return on asset, return on equity, and interest rate variables such as maximum bank lending rate, monetary policy rate, inflation rate, and domestic money supply. The observations were pooled across firms and over time. However, the study did not take into account any potential uniqueness or heterogeneity that may have existed in the banks during the time period that was being studied (2007-2021).

The following is a specification of the model that was used for this investigation:

$$Y_{lt}=\alpha_{it} + \beta_1 MBLR_{lt} + \beta_2 MPR_{lt} + \beta_3 DMS_{lt} + \beta_4 INFr_{lt} + \varepsilon_{it} \quad \text{.....3.1}$$

With modifications, the study adapted the model stated in 3.1 by incorporating variables to capture interest rate and financial performance of listed deposit money banks in Nigeria. Hence, the adapted model is specified as follows:

$$ROA_{it}=f(MBLR, MPR, DMS, INFr) \quad \text{.....3.2}$$

$$ROA_{lt}=\alpha_{it} + \beta_1 MBLR_{lt} + \beta_2 MPR_{lt} + \beta_3 DMS_{lt} + \beta_4 INFr_{lt} + \varepsilon_{it....} \quad \text{.....3.3}$$

$$ROE_{it}=f(MBLR, MPR, DMS, INFr) \quad \text{.....3.4}$$

$$ROE_{lt}=\alpha_{it} + \beta_1 MBLR_{lt} + \beta_2 MPR_{lt} + \beta_3 DMS_{lt} + \beta_4 INFr_{lt} + \varepsilon_{it....} \quad \text{.....3.5}$$

Where,

ROA = Return on asset

ROE= Return on equity

MBLR= Maximum Bank Lending Rate

MPR=Monetary Policy Rate

DMS= Domestic Money Supply

INFR= Inflation rate

β= the coefficient of the function

e = error term.

α= the constant term

3.2. Samples and Sampling Techniques

The research looked at five different quoted deposit money banks, including Access Bank, Ecobank, First Bank, Wema Bank, and Zenith Bank. In this particular research, a sample method known as "convenience sampling" was used. This approach was used for the research since it was simple and easy to get the necessary information from the banks that were sampled for the analysis that was being done (2007–2021).

3.3 Source of Data and Analysis Techniques

The data for the research obtained from audited financial reports of the sampled banks that were conducted over the time period of the study. The study relied on secondary sources of data to get its information. The information on the variables utilized for completing the study work can only be found in the financial statements of the banks, therefore the researchers had no choice but to use secondary sources of data in order to complete their job.

In order to provide an explanation of the variables that were used in the investigation, this study made use of descriptive statistics such as mean, variance, minimum, and maximum values. Following this step came the panel co-integration analysis, the panel unit root analysis, and finally the panel data multivariate analysis.

4. Results and Discussion

4.1. Descriptive Analysis

This section of the analysis provides an overview of the data set while an attempt is also made to describe the main attributes of the data.

Table 4.1 Descriptive Statistics

	DMS	INFR	MLR	MPR	ROA	ROE
Mean	14256.84	11.46733	22.78800	11.40000	0.071531	0.622312
Median	13893.22	11.40000	22.62000	12.00000	0.107346	0.709170
Maximum	28783.19	18.55000	31.09000	14.00000	0.187693	2.950663
Minimum	2637.910	6.600000	9.030000	6.000000	-0.251615	-3.174599
Std. Dev.	7911.214	3.239576	5.565351	2.662236	0.106897	1.244961
Skewness	0.220717	0.525451	-0.692544	-0.877360	-2.047237	-1.599499
Kurtosis	2.055343	2.717551	3.690082	2.722903	6.779069	7.596704
Jarque-Bera	0.679525	0.740109	1.496676	1.972390	19.40380	19.60205
Probability	0.711939	0.690697	0.473152	0.372993	0.000061	0.000055
Observations	15	15	15	15	15	15

Source: Data Analysis, (2022).

Table 4.1 provides a brief overview of the central trends, degree of distribution, minimum and maximum values, and degree of peakedness, asymmetric value, and Jarque-bera statistics for all of the series that were used in the inquiry. All of these data can be found in the table. By using the average values (mean), the lowest values, and the maximum values, the study was able to determine the

position of the center of distributions for the series. The use of the root mean squared deviation, also known as the standard deviation, indicated how individual variable values are distributed on either side of the center. This, in turn, highlighted the uniformity of the items that make up the distribution of each variable. The kurtosis statistics tell which variables have peaks, the skewness value reveals whether or not the series is symmetrical, and the Jarque-Bera statistics reveal whether or not each series meets the normalcy criterion. The kurtosis statistics illustrate how each variable peaks at a certain point in time. Table 4.1 displayed the following data: the domestic money supply was 14256.84, the inflation rate was 11.47, the maximum lending rate was 22.79, the monetary policy rate was 0.072, and the return on assets and return on equity were respectively 11.4 and 0.622. The total amount of money in circulation in the United States fluctuated between a low of 2.637.91 billion and a high of 2.8783.19 billion when it was at its lowest and highest peaks, respectively.

A look at the table showed that the lowest possible figure for the inflation rate was 6.6 percent, while the highest possible value was 18.6 percent. The table 4.1 data showed that the minimum value for the maximum loan rate was 9.03 percent, while the highest value was 31.09 percent. The lowest value of the monetary policy rate that was stated in table 4.1 was six percent, while the highest number was fourteen percent. According to Table 4.1, the lowest possible value for return on assets was -0.252, while the highest possible value was 0.188. The smallest figure for return on equity was -3.175, and the maximum value was 2.951. Only the domestic money supply and the inflation rate were found to have a skew to the right, as shown by their respective positive skewness statistics of 0.2207 and 0.5255, respectively, in table 4.1. This was one of the things that was shown to be the case. On the other hand, the value of the return on equity was positively skewed. As a result, the presence of a distribution with a negative skew is a signal that the level of risk is higher than what is measured by the standard deviation. In terms of kurtosis, a leptokurtic distribution is referred to as a kurtosis with a distribution that is bigger than 3. When compared to a normal distribution of kurtosis with a value of 3, a leptokurtic distribution has a kurtosis value that is more than 3, which results in a sharper peak with a lower likelihood. A platykurtic distribution is one that has a kurtosis that is less than three. This distribution has a peak that is lower, broader, and has a larger probability than leptokurtic and normal distributions.

Notably, the kurtosis statistics revealed that maximum lending rate (3.690), return on assets (6.779), and return on equity (7.597) were leptokurtic (i.e. positive kurtosis values are greater than 3), whereas domestic money supply (2.055), inflation rate (2.718), and monetary policy rate (2.723) were platykurtic. This finding is noteworthy because it indicates that maximum lending rate, return on assets, and return on equity were all leptokur (i.e. positive kurtosis values are less than 3).With regard to the Jarque-Bera result, the probability values of domestic money supply (0.7119), inflation rate (0.6907), maximum lending rate (0.4731), and monetary policy rate (0.3730) showed a normal distribution. This was due to the fact that their values were greater than the benchmark 0.05 level of significance specified for the normality test. The only purpose of the aforementioned study was to expose the descriptive statistics associated with each of the variables. As a result, there is no conclusion that can be formed from the traits that were seen. In addition, it is clear that each of the variables has a total of 15 observations. This is because there is a wealth of information available on the factors that were investigated in the research.

4.2. Correlation Analysis

Table 4.2. Correlation Matrix of Variables

	DMS	INFR	MLR	MPR	ROA	ROE
DMS	1.000000					
INFR	0.291190	1.000000				
MLR	0.260545	0.227507	1.000000			
MPR	0.736340	0.001665	0.384818	1.000000		
ROA	0.279940	-0.412420	0.273544	0.744297	1.000000	
ROE	-0.056220	-0.057870	-0.062357	-0.073703	0.007819	1.000000

Source: Data Analysis, (2022).

Table 4.2, presents the correlation coefficients that have been calculated between the variables that have been examined. The connection between the two variables is shown in each column of the table. This helps to determine which sets have the greatest degree of association.

The link between the variables that were independent and those that were dependent was outlined in Table 4.2. Return on assets had a positive relationship with both the maximum lending rate (0.274) and the monetary policy rate (0.2799). (0.744). This indicates that an increase in the domestic money supply, maximum lending rate, and monetary policy rate resulted in an increase in the return on assets of deposit money banks in the proportion of 27.99 percent, 27.4 percent, and 74.4 percent, respectively, as a result of the increase in return on assets. Nevertheless, a negative correlation was found between return on assets and inflation rate (-0.412), which suggests that as inflation rate increases, return on assets of deposit money institutions would drop. On the other side, the data also revealed that return on equity had a negative relationship with the rate of inflation (-0.058), domestic money supply (-0.056), maximum lending rate (-0.062), and monetary policy rate (-0.074). (-0.073). This suggests that the rise in the independent variables led to a fall in the return on equity capital of deposit money institutions as a consequence. The results shown in Table 4.2 demonstrate that, on the whole, correlations between independent variables are low. This is an indicator of the lack of multi-co linearity, which is often associated with data pertaining to time series.

4.3 Tests for the Diagnosis and Unit Root

A test of the variables' ability to remain stationary was carried out. Before using traditional econometric methods, the theory of economics mandates that the variables be in a stationary state. This is done so that the findings do not seem to be deceptive. A maximum latency of three was employed while doing the stationarity test, and this lag was included into the intercept. The Augmented Dickey-Fuller (ADF) unit root test was carried out on each of the series that were the focus of this investigation.

Table 4.3. Unit Root Test Results

	Level			1st Difference		
	Intercept	Intercept and Trend	None	Intercept	Intercept and Trend	None
DMS	0.9986	0.9508	1.0000	0.0404**	0.1226	0.7785
INFR	0.0984	0.1290	0.4288	0.0150**	0.1259	0.0008**
MLR	0.3535	0.2413	0.3814	0.3447	0.8719	0.0413**
MPR	0.5325	0.2791	0.7012	0.0021**	0.0002**	0.0008**
ROA	0.0001**	0.1325	0.2526	0.3145	0.3576	0.0201**
ROE	0.0413**	0.1458	0.0096**	0.0035**	0.0186**	0.0001**

**5% level of significance

Source: Data Analysis, (2022)

Table 4.4. Summary of Unit root tests

Augmented Dickey-Fuller(ADF)				
Variables	Level	First Difference	I(*d*)	Remarks
DMS	-	0.0404**	I(1)	Stationary
INFR	-	0.0150**	I(1)	Stationary
MLR	-	0.0413**	I(1)	Stationary
MPR	-	0.0002**	I(1)	Stationary
ROA	0.0001**	0.0201**	I(0)	Stationary
ROE	0.0096**	0.0001**	I(0)	Stationary

**5% level of significance

Source: Data Analysis, (2020)

The study utilized the Augmented Dickey Fuller (ADF) Test in order to investigate the order of integration among the variables such as domestic money supply, inflation rate, maximum lending rate, monetary policy rate, return on assets, and return on equity. This was done in order to investigate the order of integration among these variables. The application of the unit root test, also known as the ADF, is evaluated for each variable by comparing the null hypothesis "presence of unit root test" (i.e., presence of non-stationarity) with the alternative hypothesis "series is stationary." The null hypothesis is tested against the alternative hypothesis first. If the value of the absolute probability is higher than the value of the benchmark probability (0.05), then the null hypothesis is accepted, and it is inferred that the series is stationary, and vice versa if the value of the absolute probability is lower. The results of the unit root test of the ADF are displayed in Table 4.4. The results show that only return on assets and return on equity were stationary at the level indicated as I(0) in Table 4.4. On the other hand, domestic money supply, inflation rate, maximum lending rate, and monetary policy rate were stationary at first difference indicated as I. However, return on assets and return on equity were the only stationary variables in the table (1). The findings provide evidence of co-integration, which refers to a link that exists over the long term, between DMS, INFR, MLR, and MPR. Due to the fact that the series are in the same order of integration, this suggests that the co-integrating regression estimate is the method of estimation that should be used. As a result, the model incorporates a co-integrating

process across all four variables, and the Johansen co-integration test was carried out with this setting in mind.

4.5 Discussion of Findings and Implications

According to the findings of the regression analysis, all of the independent factors (the domestic money supply, the inflation rate, the maximum lending rate, and the monetary policy rate) have a substantial influence on the overall financial performance of deposit money banks in Nigeria. It was determined from the data that there is a considerable positive association between the money supply in the domestic economy and the return on assets. This was made clear by the fact that the coefficient linked with the domestic money supply was 5.280, and the P-value was 0.0184. Both of these figures were lower than the benchmark of 5% that was stated for this research. The outcome suggests that the domestic money supply is a primary instrument for encouraging the financial performance of deposit money institutions in Nigeria, which is consistent with the positive apriori assumption. This finding was reached as a consequence of the analysis of the data. Additionally, a growth in the money supply promotes the capacity of banks to generate new money by granting loans to their clients, and it causes the amount of credit granted by deposit money institutions to expand as a result of this ability. In this approach, investors have the opportunity to get fresh loans with which to increase their existing interests.

Therefore, banks that rely primarily on interest income as their primary source of revenue will be in a position to significantly boost their profitability as a result of this change. This conclusion is consistent with the results that Akomolafe, Danladi, Babalola, and Abah, (2015) obtained in their research on the influence of monetary policy on the performance of commercial banks in Nigeria via the use of a micro-panel analysis. They came to the conclusion that there is a considerable positive association between the performance of banks and the amount of money available. This conclusion, however, runs counter to the findings of Ayodele (2014), who discovered that money supply has a negative influence on the performance of deposit money institutions, which suggests that money supply does not boost profitability. This finding contradicts Ayodele's (2014) study. His findings suggested that an increase in the money supply is not good for banks because it leads to a decline in the general level of interest rate, and the decline in interest rates affects the performance of commercial banks because banks will earn lower interests on loan and advances issued to customers as a result of the lower interest rates.

In addition, it was shown that there is a large and negative link between the rate of inflation and the return on assets. This was made abundantly clear by the fact that the coefficient related with inflation was negative (-0.0124), and its P-value was bigger than the threshold of 0.0345% that was stipulated for this research. This suggests that inflation in Nigeria has a significant influence on the performance of deposit money banks in the country. This demonstrates that an inflationary environment leads to a reduction in the performance of banks when the money supply is reduced, which in turn leads to a restriction of financial resources for the conduct of investment projects. Additionally, inflation severely restricts the availability of payment-deferring instruments that are linked with a high opportunity cost of withholding money in the form of cash reserves. This does not allow deposit money banks to give out loans and advances to customers, which in turn reduces their ability to generate interest income, which in turn leads to decreased profitability for the business.

Furthermore, due to the fact that inflation causes a decline in the value of money, consumers benefit from it while deposit money banks suffer from it. This is because the value of money that is loaned or

advanced to consumers in the form of loans or advances will have decreased by the time the consumers are ready to repay the loans or advances. This discovery is in agreement with a proposal made by Fisher (1930) about the loanable funds theory of the interest rate. He hypothesized that interest rates would decrease as the rate of inflation rose, and that a high inflation rate would reduce the productivity of the financial sector by increasing the resistance of financial markets, which would in turn slow down the performance of deposit money institutions. In addition, with the help of Maigua and Mouni's (2016) research, they looked at the impact that the factors that determine interest rates have on the operations of commercial banks. They came to the conclusion that a greater level of inflation rates leads to better performance in deposit money banks in Kenya as a consequence of the findings of their study, which demonstrated that inflation rates had a beneficial impact on the performance of deposit and money banks.

The research also showed that there is a substantial positive association between the maximum lending rate and the financial performance of deposit money banks in Nigeria. This was one of the key takeaways from the study. This was made abundantly clear by the fact that the coefficient linked with the bank lending rate was 0.808046, and its P-value was 0.0312, both of which were lower than the benchmark of 5% that was required for this research. This demonstrates that the bank lending rate as a variable is an accurate metric for gauging bank performance since it has a positive sign in its value.

5. Conclusion and Recommendations

According to the findings of the research, the liberalization of interest rates in Nigeria had a beneficial impact on the financial performance of deposit money institutions in the country. It has also been successful as a consequence of the overall outcome, which is that efficient administration of interest rates has played a vital part in the expansion and development of Nigeria's deposit money institutions. This indicates that it has been successful. According to the findings of the study, an increase or decrease in the money supply has a significant effect on the financial performance of deposit money banks. As a result of this, the study suggested that the Central Bank of Nigeria should redefine the domestic money supply as a tool for monetary policy by establishing an equilibrium level. This would allow the bank to make more funds available to deposit money banks so that they could improve their performance and increase the amount of loans they issued. Also, considering that the rate of inflation has a negative effect on the performance of deposit money banks, there is an urgent need for the government to strictly impose restrictions on the cross-border flow of capital and also to make use of the relevant macroeconomic management tools to control inflation in times of crisis in order to mitigate the effects of inflation on the profitability of deposit money banks. This is because there is an urgent need for the government to do so because the rate of inflation has a negative effect on the financial performance of deposit money banks in the country.

5.1 Suggestions for Further Studies

The study has only looked at four independent variables that are related to the factors that determine interest rates in Nigeria, and it has only looked at two dependent variables that are related to financial performance. Additional factors affecting interest rates and financial performance of Nigerian deposit money banks, including industry-specific variables as well as macroeconomic variables, should be included in any future research that investigate this topic. Once again, it has been proposed that more

research on the ways in which interest rates influence the financial performance of other sectors of the economy, such as oil and gas, manufacturing, insurance, technology, and health care enterprises, should be carried out.

References

Akinwale, S. O. (2018). Bank Lending Rate and Economic Growth: Evidence from Nigeria. *International Journal of Academic Research in Economics and Management Sciences*, 7 (3), 111-122.

Akomolafe, K. J. (2014). Financial Deepening and Economic Growth: Evidence from Nigeria. *International Journal of Economics, Commerce and Management*, 2 (11), 12-18.

Akomolafe, K.J., Danladi, J.D., Babalola, O., & Abah, A. G. (2015). Monetary Policy and Commercial Banks' Performance in Nigeria. *Public Policy and Administration Research*, 5(9), 158-166.

Alimi, R. S. (2014). Inflation and Financial Sector Performance: The Case of Nigeria. Timisoara. *Journal of Economics and Business*, 7 (1), 55-69.

Aliyu M., &Yusuf, A.H. (2014). Impact of Bank Lending on Economic Growth in Nigeria. *Journal of Finance and Accounting*, 5(1), 174-182.

Ayodele, O. M. (2014). Effect of Monetary Policy on Commercial Banks' Lending in Nigeria. *Review of Public Administration and Management*, 3 (5), 20-27

Balogun E.D. (2008). Banking Reforms and the Nigeria Economy Performance, Pitfalls and Future Policy Options MPRA paper No 3804.

Central Bank of Nigeria (2006). *How Does the Monetary Policy Decisions of the Central Bank of Nigeria Affect You?* Central Bank of Nigeria, Monetary Policy Department.

Central Bank of Nigeria, (2016). *Annual Account and Financial Reports*, www.cenbank.orgAbuja.

Donaldson, T. & Preston, L. E. (1995). The Stakeholder Theory of the Corporation: Concepts, Evidence, and Implications. *The Academy of Management Review*, 20(1), 65-91.

Dhungana, N.T. (2016). Effect of Monetary Policy on Bank Lending in Nepal. *International Journal of business & management review*, 4(7), 1-10.

Emecheta, B.C. & Ibe, R. C. (2014). Impact of Bank Credit on Economic Growth in Nigeria: Application of Reduced Vector Autoregressive (VAR) Technique. *European Journal of Accounting, Auditing and Finance Research*, 2 (9), 11-21.

Enyioko, N. (2012) Impact of Interest Rate Policy and Performance of Deposit Money Banks in Nigeria. *Global journal of management and business research*,12(2), 1-13.

Eyigege, A.I., & Nguavese, M. N. (2019). The Influence of Bank Lending on Corporate Financial Performance of Deposit Money Banks Quoted on the Nigerian Stock Exchange, *Journal of Business and Financial Affairs*, 8(1),1-5.

Fischer, S. (1993). The Role of Macroeconomic Factors in Growth. *Journal of Monetary Economics* 32 (3), 485-511.

Freeman, R.E. (1984). *Strategic Management: A stakeholder approach*. London: Pitman Publishers.

Gitman, L.J., Juchau, R, & Flanagan, J. (2015). *Principles of Managerial Finance*, 12th Ed., Australia, Pearson Education

Hassan, O. M. (2016). Effect of Interest Rate on Commercial Banks Deposits in Nigeria. *Proceeding of the First American Academic Research Conference on Global Business, Economics, Finance and Social Sciences*, 1-17.

Ibeabuchi, S.N. (2007). Overview of Monetary Policy in Nigeria. *Central Bank of Nigeria Economic and Financial Review*, 45 (44), 15-37.

Imoisi, A. I., Olatunji, L.M & Ekpenyong, B.I. (2013). Monetary Policy and Its Implications for Balance ofPayments Stability in Nigeria. *International Journal of Economics and Finance*, 5 (3), 196-204.

Jibrin, M. A., Okorie, G., Okoro, A. S., Dada, E. A., Chiemeke, C. & Owolabi, O. H. (2015). Strategies for Lowering Banks' Cost of Funds in Nigeria Central Bank of Nigeria Working Paper Series.

Kojo E., & Innocent I. (2015). Savings, Inflation and Economic Growth Linkages: A Re-Examination with Nigerian Data. *Journal of Investment and Management*, 4(5), 180-185.

Kostikov, E., Jilkova, P., & Stranska, P. K. (2019). Quantified Impact of Market Interest Rates on Commercial Banks' Business Mix. *Journal of International Studies*, 12(2), 258-269.

Maigua, C. & Mouni, G. (2016). Influence of Interest Rate Determinants on The Performance of Commercial Banks in Kenya. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 6 (2), 121-133.

Mengistu, M.M. (2015). Evaluation of the Financial Performance of Banking sector in Ethiopia: The case of Zemen Bank. *Global Journal of management and Business Research & Finance*, 15(9), 29-38.

Musah, A., Anokye, F. K., Gakpetor, E. D. (2018). The Impact of Interest Rate Spread on Profitability in Ghana. *European Journal of Business, Economics and Accountancy*, 6 (1), 27-39.

Ndugbu, M. O. & Okere, P. (2015). Monetary policy and the performance of deposit money banks: The Nigerian experience. *European Journal of Business and Management*, 7 (17), 65-72.

Ngumo, L. W. (2012). *The Effect of Interest Rates on The Financial Performance of Firms Offering Mortgages in Kenya (Unpublished Master's Thesis, University of Nairobi*).

Nguyen, T.N., & Le, T. H. (2017). Impact of Monetary Policy on Commercial Banks' Profit in Vietnam. *Asian Journal of Social Sciences*, 13 (8), 32-40.

Ogunbiyi, S.S., &Ihejirika, P. O. (2014). Interest Rates and Deposit Money Banks Profitability in Nexus: The Nigerian Experience. *Arabian Journal of Business and Management Review*, 3(11), 133-148.

Ogundipe, A. S., Akintola, A. F., & Olaoye, S.A., (2020). Interest Rates and Loan Performance of Deposit Money Banks in Nigeria. *International Journal of Economics and Business Review*, 8(1), 13-20.

Okoro, A. S. (2013). Impact of Monetary Policy on Nigerian Economic Growth. *Prime Journal of Social Science* (PJSS), 2(2), 195-199.

Okoye V. & Eze, O. R. (2013). Effect of Bank Lending Rate on the Performance of Nigerian Deposit Money Banks. *International Journal of Business and Management Review*, 1 (1), 34-43.

Okoye, E. I. & Udeh, F.N. (2009). Monetary Policy and Corporate Profitability in The Banking Sector. *Journal of Management Science*, 9 (2), 1-12.

Oladele, S.A., Amos, M.O., &Adedeji, A.A. (2017). Effects of Interest Rate on the Profitability of Deposit Money Banks in Nigeria. *European Journal of Business and Management, 9* (10), 46-55.

Olayemi, S.O. & Michael, O. (2016). Financial Reforms and Industrial Productivity Growth in Nigeria. *Journal of Economics and Sustainable Development*, 7(7), 64-70.

Omotosho, B.S. & Doguwa, S. I. (2013). Understanding the Dynamics of Inflation Volatility in Nigeria: A GARCH Perspective. *CBN Journal of Applied Statistic*, 3(2), 51-77.

Osho, A. E. & Akinola, A. O. (2018). Usefulness of Accounting Theory and Practice on Large Scale Organizations in Nigeria. *European Scientific Journal*, 14(31), 303-319.

Precious C. & Palesa, M. (2014). Impact of Monetary Policy on Economic Growth: A Case Study of Mediterranean South Africa. *Journal of Social Sciences*, 5(15), 76-84.

Toby, A. J., & Peterside, D. B. (2014). Analysis of the Role of Banks in Financing the Agriculture and Manufacturing Sectors in Nigeria. *International Journal of Research in Business Managemen*t.2 (2), 9-22.

Uchendu, O. A. (2009). Monetary policy in Nigeria. *CBN Economic and Financial Review* 33 (2), 6-10

Victor O., & Eze, O. R. (2013). Effect of Bank Lending Rate on the Performance of Nigerian Deposit Money Banks. *International Journal of Business and Management Review*, 1(1), 34-43.

Pandey, I. M. (2010). *Financial Management*, 10th Ed., New Delhi: Vikas Publishing House.

Richard, J. T (1979). *Monetary policy and theory.* New York: Player Publishing Inc.