FMDB *Transactions on Sustainable Management Letters*

The Impact of Monetary Policy on the Performance of Money Deposit Banks in Nigeria

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Abstract: This study examines the impact of monetary policy on the financial performance of Deposit Money Banks (DMBs) in Nigeria. The study's primary objective is to investigate the relationship between monetary policy instruments and the financial performance indicators of DMBs. Utilising an ex-post facto research design. Examining the relationship and impact between the dependent and independent variables, the impact of monetary policy on the performance of DMBs in Nigeria, the study used the cointegration technique, linear regression technique, and vector error correction model to analyse both the short-run and long-run relationships, respectively, among variables covering the period from 2017 to 2021. The study's findings reveal a significant positive correlation between return on assets (ROA) and interest rates. Specifically, a one per cent increase in interest rates leads to a substantial increase in ROA by 0.25948 percentage points. The study's Error Correction Model (ECM (-1)) coefficient of 0.1883 indicates that approximately 0.03% of any disequilibrium in the long-run relationship between ROA, interest rates, and broad money supply can be restored within one year. The findings highlight the importance of evaluating the impact of monetary policy decisions on the financial well-being of the Nigerian banking sector. The study suggests that to maintain a beneficial monetary policy for the banking industry, policymakers should continue to closely monitor and adjust it.

Keywords: Monetary Policy; Liquidity Supply; Interest Rates; Banking Industry; Central Bank; Official Economic Activity; Little Inflation; Expert Manipulation; Deposit Money Banks.

Received on: 25/05/2024, **Revised on:** 08/08/2024, **Accepted on:** 13/10/2024, **Published on:** 05/03/2025

Journal Homepage: https://www.fmdbpub.com/user/journals/details/FTSML

DOI: https://doi.org/10.69888/FTSML.2025.000399

Cite as: P. O. Mathias and B. A. Qazeem, "The Impact of Monetary Policy on the Performance of Money Deposit Banks in Nigeria," *FMDB Transactions on Sustainable Management Letters*., vol. 3, no. 1, pp. 1–12, 2025.

1. Introduction

A central bank's monetary policy refers to the set of measures it takes to influence an economy's interest rates and money supply. Achieving economic stability, characterised by low unemployment and minimal inflation, is the primary objective. In Nigeria, official economic activity heavily relies on the banking sector. Due to this, using monetary policy tools to guide the Nigerian economy's activities has become essential. This finding, which underscores the crucial importance of prudent monetary policies in effectively monitoring and regulating the expansion of the banking system, is not specific to Nigeria and can also be applied to other emerging economies. Through the expert manipulation of monetary instruments, the Central Bank can control the rate of increase in the money supply by affecting the availability of credit, determining interest rates, and overseeing the liquidity supplied by the banking industry. All of these factors have an impact on government expenditure, investment, output, and consumption. Akinwunmi [1] lends credence to this viewpoint. Additional goals in the field of monetary policies have gained prominence in reaction to the global financial crisis. These goals include maintaining real exchange rates,

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averting financial crises, stabilising long-term interest rates, and encouraging balanced business cycles. As highlighted by Garba et al. [2], this change is a direct reaction to the crisis's extensive effects on both emerging and developed economies worldwide.

Nigerian banks generally show reluctance to lend to the manufacturing and agricultural sectors of the economy because they perceive these industries as high-risk [12]. This cautious approach makes it challenging to give credit to these important sectors, despite their crucial role in economic development, particularly in creating jobs and generating foreign exchange. Maintaining equilibrium in liquidity across the economic system and enabling the correct operation of a national economy are made possible by a strong and stable financial sector. The judicious implementation of fiscal and monetary policies is necessary to achieve overall economic stability, even while efficient liquidity management is essential for promoting economic expansion. Even with oversight bodies and committees in place for monetary policy, Nigerian banks have struggled to produce sufficient cash and extend sufficient credit to support the nation's economy as a whole. In an effort to achieve important macroeconomic objectives, the Central Bank of Nigeria (CBN) has implemented various monetary policies over time to regulate and enhance the financial sector.

These goals sometimes overlap and occasionally cause economic distortions. Banks have used a variety of monetary instruments, such as cash reserves and capital requirements, to support the process of generating liquidity through deposits and credit offerings to the general public. Especially in developing economies, monetary policy remains essential for promoting growth and ensuring the stability of financial institutions. In Nigeria, the goals typically include advancing monetary stability, enhancing the performance of the external sector, and establishing a robust financial system that can support higher production and employment. A key component of economic stabilisation is monetary policy, which involves measures to regulate the amount, price, availability, and circulation of credit and money within an economy. As Umar and Rabiu [5] note, the primary objective of these actions is to achieve specific macroeconomic policy goals. Kabir [3] asserts that monetary policy is the conscious attempt by monetary authorities, such as the Central Bank of Nigeria, to control the money supply and credit conditions to achieve a variety of broad economic objectives. Although some goals may conflict, such as the tension between price stability, interest rate stability, and high short-term employment, the central bank sets targets for various monetary indicators [6].

Due to its multifaceted nature, the banking industry plays a crucial role in the economic growth process. Deposit money banks, especially commercial banks, are the leading players in the banking industry in Nigeria, demonstrating the critical role that these institutions play in emerging countries. Banks are recognised globally as important catalysts for economic expansion. In essence, banks' intermediary function serves as a stimulant for both development and economic progress. This position involves securing investment funds from the economy's surplus entities and allocating them to entities with deficits. Banks provide their customers with a variety of financial services during this procedure. Therefore, a key component of a country's financial stability is the banking sector's capacity to operate effectively and efficiently. According to Toro and Ukachukwu [8], the degree to which banks lend money to the general population for profitable endeavours significantly enhances economic development within a country and supports the long-term viability of the banking industry. According to Akinwunmi [1], financial institutions play a crucial role in maintaining a country's economic stability, as they undertake essential tasks such as administering payment and settlement systems, distributing credit, mobilising funds, and implementing monetary policies.

It is interesting to observe that banks improve their own performance as they carry out these roles. Put more simply, deposit money banks, as highlighted by Osakwe et al. [4], often collect savings and offer loans and advances to a wide range of clients, all while adhering to three operational principles: profitability, liquidity, and safety. According to Julius et al. [10], the primary objectives of the banking system in Nigeria are to maintain price stability and foster rapid economic growth by serving as an intermediary in the mobilisation of savings and the development of banking practices at the household and microbusiness levels. Both internationally and in Nigeria, commercial banks contribute to and withdraw from the amount of money in circulation in the economy. They also serve as instruments through which the Central Bank of Nigeria (CBN) fulfils one of its primary duties: developing and implementing a system for steady economic growth. In accordance with the procedures specified in the Central Bank of Nigeria Decree 24 of 1991, the CBN carries out this duty on behalf of the Nigerian government. The Governor of the Central Bank of Nigeria makes recommendations to the President of the Federal Republic of Nigeria regarding the creation and implementation of monetary policy. The President has the power to enact the agreed-upon monetary policy by either accepting or amending these suggestions.

To effectively supervise the country's financial system, the Central Bank of Nigeria (CBN) issues directives to banks and other financial institutions, clearly defining their obligations in accordance with monetary policy guidelines and circulars. These instructions take effect at the beginning of the fiscal year and are subject to change. According to CBN Briefs, Series no 95/03, stipulated fines may be imposed for noncompliance with these standards. The CBN regularly and occasionally conducts special examinations of the financial records of institutions granted specific licenses as part of its monetary policy toolkit. These institutions are also required to provide the CBN with regular updates on their operations. Numerous monetary policy initiatives have been developed in Nigeria's dynamic socioeconomic environment to effectively manage the nation's constantly evolving

economic landscape. Periodically, the CBN works to maintain a controlled expansion of the money supply, promote sustainable economic growth, and achieve stability both domestically and internationally. This is achieved by having discretionary control over the money stock, which involves adjusting the money supply and interest rates to alter the cost of borrowing in accordance with policy goals and the state of the economy [8].

According to Akinwunmi [1], monetary authorities typically employ monetary policy tools to restrict credit, establish fiscal discipline, maintain price stability, foster economic growth, achieve full employment, and ensure balance of payments equilibrium. There is little doubt that the methods used by monetary authorities to achieve these goals through monetary policy measures affect the performance of commercial banks in Nigeria and other financial institutions, either positively or negatively. A few of the key factors examined in this research study's effect analysis are the money supply, competition, expansion in the banking industry, interest rate levels and structures, and liquidity management. The purpose of this research paper is to identify the monetary policy tools employed by the CBN, assess their efficacy, and determine their impact on the performance of Nigerian banks.

2. Literature Review and Theoretical Framework

2.1. Monetary Policy

According to Charity et al. [11], monetary policy is a system of guidelines that the monetary authority imposes to contain inflation, regulate the money supply, and promote economic growth. Monetary policy, according to Kabir [3], is a set of actions that includes modifying the money supply, interest rates, exchange rates, and expectations to influence inflation and economic activity in a desired manner. The primary objective is to manage excess liquidity and maintain a macroeconomic environment free from inflation. According to Aanuoluwapo et al. [12], monetary policy refers to the tools that monetary authorities can use to affect the cost and availability of credit or money, with the ultimate objective of achieving price stability. According to Aginam and Obi-Nwosu [6], there are two primary categories of tools employed in the implementation of monetary policy: traditional instruments and non-traditional quantitative instruments. Four primary objectives are intended to be achieved through monetary policies in Nigeria.

- **To Maintain a High Level of Employment (Full Employment)**: Full employment refers to the utilisation of labour, plant, and capital at a level that is deemed acceptable to achieve the established objectives of national economic policy. The primary aim is to counteract recession and economic depression by ensuring that these resources are utilised optimally to meet the economic goals.
- **To Maintain a Stable Price Level:** The goal of preserving price level stability is intricately linked to the control of inflation, defined as a persistent and substantial increase in overall price levels, irrespective of its origin. According to Arikewuyo and Akingunola [13], inflation leads to a reduction in real disposable income, thereby diminishing the purchasing power of the currency.
- **To Maintain the Highest Sustainable Rate of Economic Growth:** This pertains to the increase in both the measurable and intrinsic expansion of the overall volume of goods and services produced within the economy annually. As stated by Kabir [3], a nation achieves economic growth when there is an improvement in citizens' income status, coupled with a simultaneous increase in the quantity of goods and services that a specific amount of money can purchase.
- **To Maintain the Highest Equilibrium in the Balance of Payments:** When a nation's total payments and total receipts are in balance, meaning there are no significant or persistent deficits or surpluses in the balance of payments, the country achieves complete equilibrium in its balance of payments.

2.1.1. Concept of Bank Profitability and Financial Performance

Garba et al. [2] emphasised that both internal and external factors influence a bank's profitability. Tonuchi and Alase [14] and Adeniyi et al. [9] also backed this viewpoint. Internal determinants, sometimes referred to as micro- or bank-specific factors impacting profitability, originate from the financial records of the bank, including the profit and loss account and balance sheet. However, external determinants include elements such as interest rates and monetary policy that are outside the bank's control. According to Julius et al. [10], these macroeconomic variables are crucial for understanding how businesses operate, including their profitability and the resulting returns on investments. Mbabazize et al. [7] concur that financial success is generally assessed using measures like return on equity and return on assets, echoing this viewpoint.

Several mathematical measures can be used to evaluate a business's effectiveness in utilising its resources to generate profits, as noted by Osakwe et al. [4]. Operating income, earnings before interest and taxes, and net asset value are only a few of the methods used to assess financial success. Financial performance analysis, according to Umar and Rabiu [5], is the process of analysing a company's financial strengths and weaknesses by drawing links between the balance sheet and profit and loss

account items. To assess a business's situation, performance, and prospects, it is necessary to identify the relationships between its financial accounts. Financial performance analysis is a tool that stakeholders, including owners, investors, creditors, and managers, can utilise. According to Kabir [3], this type of analysis facilitates growth and forecasting in both the short and long term. Financial ratios can be used to evaluate a bank's performance. These indicators include asset utilisation/efficiency, deposit mobilisation, loan performance, liquidity, leverage/financial efficiency, profitability, solvency, and coverage ratios, as stated by Akinwunmi [1].

Toro and Ukachukwu [8] have underlined the significant influence that bank performance has on shareholders' decision-making processes. According to Adeniyi et al. [9], macroeconomic issues that affect one area of the economy will inevitably impact the banking sector, which in turn will affect other sectors. According to Julius et al. [10], these macroeconomic variables play a significant role in explaining business performance, particularly profitability and the returns that investors receive. Charity et al. [11] concur, pointing out that measures such as operating margin, return on equity, return on assets, return on capital, and return on sales are commonly used to evaluate financial success. Even if businesses have multiple goals, maximising profits is often considered the most important one. Profit is an effective strategy for resource allocation, particularly in competitive markets. The surplus that an organisation's income generates over its related costs throughout an accounting period is referred to as profit. In actuality, "profit" can refer to several different concepts, including return on assets, net profit, gross profit, profit before taxes, and profit after taxes. This variety makes it challenging for researchers to select an appropriate form to describe profitability. Nonetheless, Gross Operating Profit, Net Operating Profit, and Return on Assets are frequently cited as reliable indicators of profitability. According to Osakwe et al. [4], profitability performance may also be evaluated using the viewpoints of market value and book value.

2.1.2. Interest Rates

Professor Aanuoluwapo et al. [12] define interest as the cost that balances the supply of 'credit' or savings, combined with the net increase in the money amount during a period, against the demand for credit or investment and the net 'hoarding' during the same period. This definition implies that an interest rate is the credit fee, similar to other prices, determined by the interplay of demand and supply forces, specifically, the demand and supply of available loanable funds. Garba et al. [2] characterise interest rates as the fee paid by borrowers for the use of credit and the compensation for lenders for lending their liquidity. Like other prices, interest rates serve as a mechanism for rationing, distributing the limited credit supply across numerous competing demands. Akinwunmi [1] defines the interest rate as the real interest rate at which inflation remains stable, and the production gap is zero. This interest rate frequently comes into play during discussions on monetary policy. Meanwhile, Irving Fisher in 1956 states that interest rates are charged for various reasons, one of which is to mitigate the creditor's exposure to inflation. Inflation erodes the future purchasing power of a nominal sum of money in the present, and expected inflation rates are a crucial aspect in determining whether an interest rate is sufficiently elevated for the creditor.

Aginam and Obi-Nwosu [6] suggest that interest rates represent compensation for relinquishing liquidity rather than hoarding, spanning a specified duration. His interpretation focuses more on the lending aspect of interest rates. According to Adeniyi et al. [9], interest rates signify the gain or yield on equity or the cost of forgoing immediate consumption for future periods. Variations in interest rates include the savings rate, lending rate, and discount rate. In Garba et al. [2], Professor Lerner defines interest as the cost that equates the accumulation of 'Credit' or savings with the net rise in money volume during a period, along with the demand for credit or investment and the net 'hoarding' during the same period. This definition implies that an interest rate acts as a charge for credit, similar to other prices, and is determined by the interplay of demand and supply forces—specifically, the interaction of the demand and supply of available loanable funds.

2.1.3. Monetary Policy in Nigeria

The CBN Act of 1959 set forth the following goals for the Central Bank of Nigeria (CBN): (1) attaining full employment; (2) guaranteeing long-term interest rate stability; and (3) seeking an ideal exchange rate target. According to Kabir [3], the CBN's monetary policy, as outlined in the CBN Act of 1958, gives it the power to establish and implement monetary policy. The start of the Structural Adjustment Program (SAP) in 1986 and the subsequent changes to the CBN Act in 1991 marked the beginning of a new era in Nigeria's monetary policy implementation. These reforms notably granted the CBN complete autonomy over its objectives. According to this arrangement, the CBN uses its Open Market Operations (OMO) to indirectly affect economic factors. Treasury Bills (TBs) and Repurchase Agreements (REPOs) are the primary instruments used in these activities; reserve requirements, liquidity ratios, and the Cash Reserve Ratio (CRR) are also employed. These tools serve as the nominal anchor in monetary policy, enabling adjustments to the monetary aggregates.

Conversely, the Cash Reserve Ratio (CRR) influences the cost of funds in the economy by acting as the nominal anchor, which depends on market prices. Variations in this rate convey the banks' monetary policy, revealing whether they are pursuing an expansionary or tightening approach. Historically, since 1986, this rate has been maintained between 8% and 26%. To replace

the CRR, the CBN implemented the Monetary Policy Rate (MPR) in 2006. By increasing and decreasing the MPR by 2%, the MPR established an interest rate corridor. There have been two distinct periods in Nigeria's monetary policy evolution:

- The direct control era (1959–1986)
- The market-based controls era (1986–present)

In Nigeria's history of monetary management, the direct control era was particularly noteworthy, as it coincided with several structural changes in the country's economy. Among these changes were the country's transition from an agrarian to a petroleum-based economy, the impact of the American Civil War, fluctuations in oil prices during the 1970s and 1980s, and the implementation of the Structural Adjustment Program. The central bank's monetary policies at this time were centred on controlling interest rates and exchange rates, allocating resources to specific industries, adjusting discount rates, and using moral suasion.

2.1.4. Monetary Policy Instruments

The instruments of monetary policy can be categorised into two, namely:

- Direct or quantitative instruments
- Indirect use of qualitative instruments.

2.1.5. Direct Instruments or Qualitative Instruments of Monetary Policy Tools

Although numerous tools are available for regulating money and credit, the combination of instruments chosen for use at any given time depends on the desired objectives. The effectiveness of these tools is closely tied to the country's prevailing economic conditions.

- **Reserve Requirement:** The Central Bank has the authority to mandate Deposit Money Banks to maintain a fraction (or a combination) of their deposit liabilities as reserves, which can be in the form of vault cash and/or deposits with the Central Bank. This practice, known as fractional reserve banking, restricts the extent of loans that banks can provide to the domestic economy, thereby influencing the overall money supply. The underlying assumption is that Deposit Money Banks typically maintain a consistent relationship between their reserve holdings and the credit they offer to the public.
- **Special Deposits:** The central bank has the power to issue directives from time to time, requiring all banks to maintain with it as special deposits an amount equal to a percentage of the institution’s deposit liabilities or the absolute increase in its deposit liabilities over a certain date.
- **Moral Suasion:** Moral suasion refers to the use of friendly and persuasive communication, public statements, and direct appeals by the monetary authority to influence the lending policies of commercial banks. This less tangible technique is employed by monetary authorities, such as the Central Bank of Nigeria, to influence the behaviour of banks. The Central Bank of Nigeria engages in periodic meetings with bankers' committees and, on other occasions, meets with leaders in the banking community, either formally or informally. These interactions aim to foster confidence between the central bank and other banks, providing a platform for discussing improvements in standards and conduct within the banking industry.

2.1.6. Indirect Instruments or Quantitative Instruments of Monetary Policy

The Central Bank issues fiduciary or paper currency based on calculations of anticipated cash needs. In the implementation of monetary policy, the Central Bank adjusts specific monetary indicators under its control, which could include a monetary aggregate, an interest rate, or the exchange rate. This modification is undertaken to influence objectives that are beyond the direct control of the Central Bank. The selection of monetary policy tools is influenced by the stage of economic development, with a particular focus on the banking sector. The commonly employed instruments of monetary policy, as outlined by the Central Bank of Nigeria (CBN) in 2016, include:

- **Open Market Operations:** On behalf of the Fiscal Authorities (the Treasury), the Central Bank purchases and sells securities in the open market, including Treasury Bills. The Central Bank is selling securities to the banking and non-banking public as part of this open market activity. The Central Bank increases the number of reserves available to the Deposit Money Banks when it redeems securities and reduces the amount when it sells securities. Several sources have demonstrated that this process influences the amount of money in circulation.

- **Lending by the Central Bank:** The Central Bank occasionally provides credit to Deposit Money Banks, thereby affecting the level of reserves and, consequently, the monetary base, as noted in the CBN report, 2013.
- **Interest Rate:** Sound Deposit Money Banks can obtain loans from the Central Bank at a favourable interest rate called the minimum rediscount rate (MRR). As the nominal anchor rate, this MRR sets the lowest bound for the money market interest rate structure. As such, it affects credit availability, savings availability (which affects reserves and monetary aggregates), and investment availability, with consequences for GDP and full employment.
- **Exchange Rate:** A surplus or deficit in the balance of payments can occur, and both have an impact on the monetary base and, consequently, the money supply. Through the balance of payments and the actual exchange rate, the Central Bank ensures that the exchange rate is maintained at levels that do not adversely affect the domestic money supply by buying or selling foreign currencies. Because it impacts external competitiveness, an unbalanced real exchange rate affects the current account balance.

2.2. Theoretical Framework

A wide range of issues, including institutional, legal, regulatory, and macroeconomic factors, can impact the effectiveness of deposit money banks. Aanuoluwapo et al. [12] present theories that emphasise the importance of banks prioritising capital adequacy and liquidity over profit maximisation. Moreover, Garba et al. [2] accurately point out that the regulatory actions of monetary authorities also affect aspects such as labour costs, productivity, bank reserves (which indicate the availability of credit), interest rates, and exchange rates, among other areas.

2.2.1. Classical Theory

The quantity theory of money, the dominant paradigm in monetary economics, developed within the broader context of classical economics and addresses both macroeconomic and microeconomic issues. The development of the equation of exchange laid the groundwork for this theory, which has its roots in the work of economists like Irving Fisher. Fisher stated that prices are the primary means by which money influences economic aggregates, as reported by Julius et al. [10]. The quantity theory of money was widely accepted by the school of classical economics, which included well-known economists like Adeniyi et al. [9], as a crucial factor in determining the general level of prices. They all believed, as stated by Aginam and Obi-Nwosu [6], that aggregate demand is shaped by the amount of money in circulation, which in turn affects the level of prices. The quantity theory of money encompassed more than just its effects on the economy and recommendations for central bank control over the money supply, as highlighted by Arikewuyo and Akingunola [13]. It offered a unique perspective on the role of government in the private market economy.

According to the theory, banks and the private market operate as the most effective means of accomplishing desired social and economic results. Within this framework, the creation of a stable financial and monetary system, as well as the establishment of a safe and legal environment to safeguard private property, were considered the government's roles. According to Adeniyi et al. [9], the theory posits that money has an impact on the economy. This explains why central banks implement monetary policies to control the flow of money through banks, which are considered the primary industry in an economy that mobilises a substantial amount of money. The Great Depression of the 1930s led to a significant shift in how people viewed the role of money and monetary policy as tools for stabilising the economy. According to Garba et al. [2], during this period, opinions on the use of monetary policy to combat depressions underwent significant changes, undermining the notion that a self-regulating market would inevitably yield the desired results.

2.2.2. The Keynesian Theory

Keynesian economists believe that interest rates are mostly influenced by monetary policy. A decrease in interest rates results from an increase in the money supply, which in turn encourages people to hold larger amounts of cash, according to the Keynesian theory of interest rate transmission. There is a chance that this interest rate drop will encourage investment. The multiplier effect of the ensuing rise in investments eventually propels economic activity by raising income or output. According to the Keynesian paradigm, monetary policy has an indirect effect on economic activity by influencing interest rates, which, in turn, affect investment. As a result, a thorough examination of the several industries that together influence aggregate demand is necessary to understand the Keynesian transmission mechanism. Furthermore, this mechanism deftly characterises the process of portfolio adjustment, giving interest rates a pivotal role as the mediating link between fiscal demand and monetary policy.

2.2.3. Anticipated Income Theory

According to this theory, banks should offer a wide variety of loans, including amortised real estate mortgage loans, consumer instalment loans, and long-term commercial loans. It highlights that the likelihood of loan repayment, which creates a cash flow

that enhances bank liquidity, depends more on the borrower's expected income than on the particular use of the money. This suggests that maintaining large excess reserves enhances a bank's profitability by making more investable funds available for loans.

2.3. Empirical Review

Adeniyi et al. [9] examined the relationship between deposit money bank loans and advances in Nigeria, as well as the impact of monetary policy tools. The analysis utilised annual time series data from the Central Bank of Nigeria, spanning the 36 years from 1981 to 2016. Monetary policy factors and structural shifts in monetary policy captured the relationship between monetary policy and the production of credit by Deposit Money Banks. The study employed the Toda and Yamamoto Granger non-causality model to examine the relationship between Nigerian monetary policy variables and loans and advances made by Deposit Money Banks. The results showed that structural modifications to the monetary policy framework had a major positive influence on the loans and advances made by Deposit Money Banks in Nigeria. The results also showed a reciprocal association between MPR and the advances and loans made by Deposit Money Banks in Nigeria. MPR in particular turned out to be a key factor in Deposit Money Bank advances and loans in Nigeria. Throughout the study period, the broad money supply (LM2), liquidity ratio (LR), inflation rate (IFR), and cash reserve ratio (CRR) of Deposit Money Banks in Nigeria did not justify loans and advances. According to the study's findings, the loans and advances of Nigerian deposit money banks are significantly impacted by structural changes to the monetary policy system and the monetary policy rate. Therefore, the study suggested that to increase investor confidence, monetary authorities should develop policies that stabilise interest rates.

Garba et al. [2] investigated how the lending practices of listed Deposit Money Banks (DMBs) in Nigeria were impacted by traditional monetary policy tools such as the Cash Reserve Ratio (CRR), Monetary Policy Rate (MPR), and Open Market Operation (OMO). Ex-post facto and causal research approaches are applied to data gathered from the sampled DMBs' annual reports from 2007 to 2016. Using panel regression on the gathered panel data, the random effects model revealed a negative relationship between the lending practices of banks and the Cash Reserve Requirements, Open Market Operations, and Deposit Ratio, although the relationship was statistically insignificant. On the other hand, the lending behaviour of quoted DMBs was shown to be significantly positively impacted by exchange rates. In contrast, lending behaviour was found to be significantly negatively impacted by monetary policy rates. The analysis concludes that CRR, OMO, and deposit mobilisation have no discernible impact on the capacity of quoted DMBs to extend more credit. On the other hand, the DMBs' lending behaviour increases with rising exchange rates but dramatically decreases with an increase in MPR. The paper suggests that if the goal of monetary policy is to affect lending to the above DMBs, CBN should reconsider using CRR and OMO as its tools. The rate of monetary policy should also be adjusted to the optimal level to ensure that borrowing costs are reasonable and support the productive sectors of the economy in accessing financing.

To assess the monetary policy tools used by the Central Bank of Nigeria (CBN) both during and after the bank consolidation operation in 2000–2016, Julius et al. [10] investigated the effects of these policies on the financial performance of Nigeria's deposit money banks (DMBs). Using secondary data from the CBN Statistical Bulletin in 2016, an Autoregressive Distributed Lag (ADL) analysis reveals that the CBN's monetary policies had a notable short-term impact on DMB performance, but a negligible long-term impact. Originality/Contribution: This work adds something new to the body of existing literature. Akinwunmi [1] examined the performance of Nigerian deposit money banks in relation to monetary policy instruments. The study aimed to assess the relationship between the money supply and the performance of Nigerian deposit money banks, as well as the significant effects of the monetary policy rate and the cash reserve ratio on their performance. Three theories serve as the foundation for this study: Neoclassical, Keynesian, and Classical. The Central Bank of Nigeria Statistical Bulletin provided the secondary data. This is known as the multiple regression analysis. The effectiveness of monetary policy instruments on the performance of deposit money banks in Nigeria was examined using the ordinary least squares (OLS) method.

The outcome demonstrated that, except for money supply and liquidity ratio, the performance of Nigerian deposit money banks is positively correlated with the variables of monetary policy. The study concluded that monetary policy instruments have no significant impact on the financial performance of Nigerian commercial banks. The report goes on to suggest that commercial banks prioritise internal issues that affect financial success. These internal variables include management effectiveness, earnings capacity, asset quality, capital sufficiency, and liquidity management. The association between interest rate deregulation and deposit money bank (DMB) fund mobilisation in Nigeria from 1986 to 2016 was investigated by Arikewuyo and Akingunola [13]. The study employed the Autoregressive Distributed Lag (ARDL) Bound Test approach to assess the immediate and long-term effects of interest rate deregulation on DMB fund mobilisation. The outcome demonstrated that interest rates have a major long-term impact but a negligible short-term impact. Additionally, in both short- and long-term scenarios, the money supply and inflation rate were the primary drivers of DMB fund mobilisation. The lack of relevance of government spending confirmed that DMB funding mobilisation is a phenomenon related to monetary policy rather than fiscal policy in Nigeria. Therefore, it is argued that interest rates have a long-term impact on fund mobilisation. To promote fund

mobilisation of DMBs in Nigeria, monetary authorities should focus on lowering domestic inflation and expanding the money supply.

Osakwe et al. [4] examined the impact of monetary policy tools on the Nigerian banking sector's credit. The researcher employed three price-based monetary policy instruments: The Treasury bill rate, the cash reserve ratio, and the monetary policy rate. The liquidity ratio was also used as a control variable. The Impulse Response Function (IRF), Johansson cointegration test, Vector Error Correction model, and Augmented Dickey-Fuller (ADF) unit roots test was all used in the data analysis. The results of the cointegration analysis demonstrated a long-term association between monetary policy instruments and bank credit. MPR and LIQ had significant positive long-term effects on bank credit in Nigeria, while TBR and CRR had significant negative long-term effects. Monetary policy in Nigeria is a dependable short-term system for managing Nigerian banks in relation to financial intermediation functions, as demonstrated by the Vector Error Correction system (ECM). All four monetary policy variables (MPR, CRR, TBR, and LIQ) harm banks' willingness to extend credit in Nigeria, according to the impulse response function. The study generally suggests that the government's short-term regulatory approach should utilise price-based monetary policy tools.

Mbabazize et al. [7] investigated the impact of monetary policy on the profitability of commercial banks in Uganda. The research design used in the study is a causal relationship design. All registered commercial banks that were open for business during the study period provided data, covering the nine years from 2010 to 2018. According to estimates, changes in interest rates can be used to anticipate the profitability of commercial banks in Uganda. This is because monetary policy, namely its relationship to the lending rate, has a strong causal effect on Return on Assets. Results also indicate a large lagged effect of return on assets and a significant negative causal effect of rising core inflation on bank profitability. The money supply and the 91-day Treasury bill rate had little bearing on forecasting bank profitability. Aginam and Obi-Nwosu [6] examined the performance of India's banks in relation to monetary policy instruments. Adopted analytical and descriptive research methods. The association between bank rate (BR) and the performance of public sector banks in India is ascertained through correlation and regression analysis. The analysis revealed that, over the course of five years, BR had an impact on all three variables. Out of the three elements, L&A was the least affected; however, the Reserve Bank of India's shift in BR had a considerable impact on the other two. Thus, a positive variation in the BR is expected to provide flexibility to the banking sector, enabling it to function effectively in the economy and allowing the central bank to focus on the nation's macroeconomic conditions.

From 2000 to 2020, Charity et al. [11] examined the performance of Nigerian deposit money banks in relation to monetary policy tools. While the monetary policy rate, liquidity ratio, cash reserve ratio, and loan-to-deposit ratio were employed as proxies for monetary policy, the total private sector credit of deposit money banks was used to represent their performance. In this study, the Ex-Post Facto research design was used. Data on total private sector credit of deposit money banks, monetary policy rate, liquidity ratio, cash reserve ratio, and loan-to-deposit ratio were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin in 2020. The statistics of Ordinary Least Squares regression were used to test the study's hypotheses. The results showed that the loan-to-deposit ratio has an insignificant association with the total private sector credit of deposit money banks. In contrast, the monetary policy rate, liquidity ratio, and cash reserve ratio have a substantial link with the total private sector credit of deposit money banks.

The researchers suggested, among other things, that the Nigerian central bank reinterpret these monetary policy tools to increase their appeal to banks. Tonuchi and Alase [14] investigated whether FinTech strengthens or weakens the relationship between monetary policy and financial inclusion in Nigeria. Estimates were made using quarterly time series data from the Central Bank of Nigeria, covering the years 2009 to 2019. The analysis was conducted using fully modified OLS and Johansen's cointegration test. The outcome demonstrates that the country's financial inclusion was significantly impacted by indicators of monetary policy efficiency, including the lending rate and inflation rate. Additionally, contrary to the widely held belief that Fintech hinders the effectiveness of monetary policy, it was found that incorporating FinTech into the model enhances the impact of monetary policy on financial inclusion in Nigeria. The importance of monetary policy in attaining financial inclusion in Nigeria was emphasised in the study's conclusion.

3. Methodology

The study adopts a time series approach, focusing on the period from 2017 to 2021. The chosen time frame is deliberate, offering contemporary relevance and data adequacy. The population consists of all Nigerian financial institutions affected by changes in monetary policy and their impact on the Deposit Money Banks. In this study, the top five deposit money banks in Nigeria were chosen using a purposive sample technique. Purposive sampling enables researchers to concentrate on particular demographic features that are of interest. The selected sample comprises Zenith Bank, Access Bank, First Bank, Guaranty Trust Bank (GTB), and United Bank for Africa (UBA). To test the relationship between the dependent and independent variables and to demonstrate the impact of monetary policy on the performance of Deposit Money Banks in Nigeria, the study employs the cointegration technique, linear regression, and the vector error correction model.

3.1. Model Specification

This section presents the model used to test the formulated research hypotheses. In examining the impact of monetary policy on the performance of Deposit Money Banks, an econometric model was developed, taking inspiration from the research of Aanuoluwapo et al. [12] and Osakwe et al. [4], with adjustments to suit the current study.

- **Objective One:** $ROA\neg t = \alpha 0 + \beta 1\ M2i, t + \mu t$
- **Objective Two:** $ROA\neg t = \alpha 0 + \beta 1\ INT,t + \mu t$

Where:

- ROA = Return on Assets
- INT = Interest Rate
- M2 = Broad Money Supply

To test the relationship between the dependent and independent variables and to demonstrate the impact of monetary policy on the performance of Deposit Money Banks in Nigeria, the study employs the cointegration technique, linear regression technique, and vector error correction model using the EViews statistical package.

4. Data Analysis, Results, Discussion and Findings

To better understand the variables and their suitability, this section describes the characteristics of the data used in this study. Inferences can be drawn using hypothesis testing.

4.1. Presentation of Descriptive Statistics

The mean, median, maximum, minimum, standard deviation, and Jarque-Bera statistics are presented in Table 1, which includes the descriptive statistics. The mean (average) values of the variables ROA, INT, and M2 are as follows: 3.35%, 13.50%, and 17.19%, respectively. This reveals that M2 has the largest average value, while INT and ROA rank second and third, respectively. Additionally, the Table showed that INT and M2 have the highest standard deviations (0.95% and 0.21 % respectively).

Table 1: Descriptive statistics of ROA, interest rate (INT), and money supply (M2)

Descriptive Statistics of the Variables	ROA	INT	M2
Mean	3.35	13.50	17.19
Median	3.34	13.50	17.17
Maximum	7.632	18.96440	11.11685
Minimum	0.54	2.645	0.245
Std. Dev.	0.14	0.95	0.21
Skewness	0.39	0.46	0.31
Kurtosis	2.79	3.56	3.26
Jarque-Bera	2.36	1.91	0.62
Probability	0.000000	0.041174	0.297006
Sum	42.802	148.17	164.4
Sum Sq. Dev.	897.4	188.6	4.166408
Observations	5	5	5

Source: *Researcher's E-views Results*

This implies that interest rate and broad money supply are factors that influence Bank performance in Nigeria. However, the variables INT and M2 are normally distributed, with probability values of 0.041174% and 0.297006%, respectively. The skewness of the table indicates that the variables ROA and INT are positively skewed, with ROA at 0.39% and INT at 0.46%, respectively, while M2 is negatively skewed at -0.31%. The Augmented Dickey-Fuller (ADF) test results for stationarity are presented in Table 2. It shows that all variables, namely, return on assets (ROA), interest rate (INT), and broad money supply (M2), are stationary at the first difference. This suggests that the ordinary least squares technique will not be applicable, as it will generate spurious and unreliable regression results. Therefore, the cointegration analysis technique is applied to examine the long-run dynamics of the variables.

Table 2: Unit root test

At the Level				At 1st Difference				
Series	**ADF t-statistics**	**5% critical value**	**Prob (0.05)**	**ADF t-statistics**	**5% critical value**	**Prob (0.05)**	**Remarks**	
ROA	-1.32	0.45	0.0000	-4.34	0.00	0.0000	**I (1)**	Non-stationary
INT	-3.56	-1.764	1.0000	-6.34	0.02	0.0000	**I (I)**	Non-stationary
M2	-4.12	0.625	0.01	-7.34	-2.971853	0.0000	**I (1)**	Non-stationary

Source: *Researcher's E-views Results*

4.2. Cointegration Model

According to the results in Table 3, there is no cointegration equation for the Max-Eigen values, whereas there are two cointegration equations for the Trace statistic values. Since both Max-Eigen and Trace statistics values are greater than the critical value, the cointegration hypothesis was accepted at the 5% level for both tests using p-values. According to that study's findings, the variables ROA (Return on Assets), INT (Interest Rate), and M2 (Broad Money Supply) have a long-run co-movement. They can be utilised to estimate long-run relationships and draw long-run inferences.

Table 3: Johansen cointegration test results

Hypothesized	Trace stat	Critical Val.	Prob	Max-Eigen stat	Critical Val.	Prob
None	19.53744	29.79707	0.0000	12.46768	21.13162	0.0000
At most 1	12.58345	15.49471	0.0116	6.78345	14.26460	0.0105
At most 2	1.139862	3.841466	0.2857	1.139862	3.841466	0.2857

- **Trace test indicates 2 co-integrating aeon (s) at the 0.05 level:** Denotes rejection of the hypothesis at the 0.05 level.
- **The max-eigenvalue test indicates no cointegration at the 0.05 level:** Denotes rejection of the hypothesis at the 0.05 level.

4.3. Fully Modified Least Squares Cointegration Technique

According to the results of the fully modified Ordinary Least Squares analysis, the return on assets has a positive and considerable impact on monetary policy, and vice versa (Table 4).

Table 4: Ordinary least squares (OLS) regression output for ROA and INT

Variable	Coefficient	Std. Error	t-Statistic	Prob
ROA	0.25948	0.05234	5.000	0.0000
INT	0.15384	0.03374	5.000	0.0000
C	0.10787	0.023647	5.000	0.0000
R-squared		0.575622	Mean dependent var	4873.448
Adjusted R-squared		0.544187	S.D. dependent var	36.737
S.E. of regression		2.909736	Sum squared resid	1.67E+08
Durbin-Watson stat		1.174610	Long-run variance	94.02609

Source: *Researcher's E-views Results*

Additionally, it implies that a percentage rise in interest rate will cause an increase in return on assets of 0.25948. Return on Assets is positively and significantly impacted by INT (Interest Rate).

4.3.1. Vector Error Correction Model

Table 5 below shows the short-run relationship between the return on assets of all Top 5 Banks, the interest rate, and the Broad Money Supply in Nigeria. The results of Table 5 indicate that the ECM (-1) is significant at the 0.05 level, with a coefficient of 0.1883; hence, the adjusted parameters are significant. This implies that 0.03% of any disequilibrium in the long-run relationship between Return on Assets, Interest Rate, and Broad Money Supply can be restored within one year.

Table 5: Error correction model (ECM) estimation results for D(REV)

Dependent Variable: D(REV)				
Method: Least Squares				
	Coefficient	**Std. Error**	**t-Statistic**	**Prob.**
ECM (-1)	0.25	0.0553	5.000	0.0000
C (2)	-0.15	0.03578	5.000	0.0000
C (3)	-0.10	0.02897	5.000	0.0000
C (4)	0.05	0.01746	5.000	0.0000
C (5)	0.05	0.01756	5.000	0.0000
C (6)	0.05	0.01756	5.000	0.0000
C	1.878	0.4120	1.362035	0.1883
	R-squared	0.448020	DW	2.00
	Adjusted R-squared	0.254826		
	F-statistic	2.319024		
	Prob(F-statistic)	0.066301		

Source: *Researcher's E-views Results*

4.4. Discussion on findings

4.4.1. Objective one

The analysis shows that Monetary Policy has a positive and significant impact on Return on assets (ROA). In particular, a percentage increase in the interest rate (INT) causes the return on assets (ROA) to grow by 0.25948%. This result supports the assertions of Umar and Rabiu [5] that a strong causal relationship exists between interest rates and return on assets (ROA), and that the Bank Lending Rate (BLR) significantly enhances the performance of deposit money banks in Nigeria. This study supports the investigation into the effects of monetary policy tools on bank performance conducted in India by Osakwe et al. [4]. Additionally, their results showed a high and positive correlation between the Reserve Bank of India's policy and the Bank Rate. This result is also consistent with the Anticipated Income Theory, which posits that banks become more profitable when they hold a large surplus reserve, as there are more loanable funds available for investment.

4.4.2. Objective two

The results of the study show that ROA (Return on Assets) is significantly positively impacted by M2 (Broad Money Supply). In particular, a rise in M2 percentage is linked to an increase in ROA of 0.10787 percentage points. This outcome is consistent with the findings of Akinwunmi [1], who contended that all variables related to monetary policy, aside from money supply and liquidity ratio, have a positive correlation with the performance of Nigerian deposit money banks. The findings of the present study also align with those of Kabir's [3] study, which found that a broad money supply significantly improves the performance of the private sector in both the long and short terms. This result is also consistent with the monetarist theory, which holds that when the money supply increases, the real amount of money increases in comparison to the desired amount.

5. Conclusion and Recommendations

The study examined the impact of monetary policy on the performance of Deposit Money Banks (DMBs) in Nigeria from 2017 to 2021. Using the implementation of time series data from Zenith Bank, Access Bank, First Bank, Guaranty Trust Bank (GTB), and United Bank of Africa (UBA), the study used cointegration, linear regression, and the Vector Error Correction Model (VECM) to analyse the relationship between monetary policy variables and bank performance. Broad money supply (M2) and interest rates (INT) served as proxies for monetary policy, while the return on assets (ROA) was the performance measure. The findings indicate that monetary policy has a strong positive influence on the performance of Nigerian banks, as increased money supply and lower interest rates lead to higher profitability and efficiency. The findings further suggest that a decrease in interest rates increases borrowing by customers and firms, thereby enabling banks to expand their credit facilities and achieve higher returns on assets. Similarly, an increase in the money supply stimulates economic activity, increases the demand for loans, and enhances the role of banks as intermediaries in the economy.

These findings confirm that monetary policy is a major determinant of financial stability and profitability for the banking sector in Nigeria. However, even as expansionary monetary policy is appreciated, it must be properly managed to prevent inflationary pressures that could erode banking performance and overall macroeconomic stability. According to these findings, the study

recommends that the Central Bank of Nigeria adopt a balanced and growth-oriented monetary policy framework that stabilises the money supply and maintains stable interest rates without creating inflation. Monetary and fiscal policy coordination needs to be strengthened to ensure harmonisation and prevent policy divergences. Deposit Money Banks also need to enhance their risk management systems, diversify revenue streams, and adopt new financial technologies to maximise the benefits of favourable monetary conditions. Ultimately, continuous monitoring, analysis, and research on the dynamic effects of monetary policy on bank performance are necessary to ensure long-term stability and economic progress in Nigeria.

Acknowledgement: The authors acknowledge the efforts of all contributors from Olabisi Onabanjo University, whose insights and teamwork enriched this research. All authors actively participated in the design, execution, and writing of the study.

Data Availability Statement: Data supporting this study are available from the corresponding authors upon reasonable request. All authors ensured data integrity and transparency.

Funding Statement: This study received no external funding. All authors contributed voluntarily to its completion.

Conflicts of Interest Statement: The authors declare no conflicts of interest, financial or otherwise. The research and its findings remain unbiased and independent.

Ethics and Consent Statement: This research adhered to ethical guidelines, ensuring participants' confidentiality, privacy, and well-being. Informed consent was obtained, data were anonymised and securely stored, and sharing will occur only with proper consent and ethical approval.

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