



IMPACT OF MONETARY POLICY ON DEPOSIT MONEY BANKS' PERFORMANCE IN NIGERIA: A POST COVID-19 ANALYSIS

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Abstract: This research investigated the impact of monetary policy on deposit money banks' performance in Nigeria: a post covid-19 analysis. The independent variables were monetary policy rate, cash reserve ratio, credit to private sector and digital banking transactions. The study used a monthly data ranging from January 2021 to December 2024 with net interest margin (NIM) as a measure of banks' performance (dependent variable). Data were analyzed using Error Correction Model (ECM). The results revealed that monetary policy rate exerted a strong and negative effect on bank performance, credit to the private sector also negatively influenced net interest margin of banks, contrary to theoretical expectations. Interestingly, the cash reserve ratio displayed a positive and significant relationship with bank performance while digital banking transactions, as expected, significantly improved banks' performance. The study concluded that while conventional monetary policy tools like MPR and CRR exert strong influences on bank performance, the resilience of Nigerian banks in the post-COVID era has increasingly depended on technological innovation and strategic adjustments. It is recommended that the Central Bank of Nigeria should avoid prolonged reliance on high monetary policy rates, make cash reserve ratio to be more flexible to avoid crowding out private sector lending and encourage continued investment in digital banking platforms to enhance banks' performance in the post-covid-19 period.

Keywords: Banks Performance, Credit to Private Sector, Error Correction Model, Monetary Policy Rate, Net Interest Margin

JEL Classification Codes: E5, G21

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1. INTRODUCTION AND BACKGROUND TO THE STUDY

The role of monetary policy in shaping the performance and stability of banks has long been recognized in financial economics. In Nigeria, the conduct of monetary policy which is anchored primarily on instruments such as the monetary policy rate, cash reserve ratio, and credit allocation policies remains central to the performance of deposit money banks, particularly in the aftermath of major economic shocks. The COVID-19 pandemic of 2020 constituted one of the most disruptive episodes in modern economic history, triggering contractions in global output, trade flows, and financial markets. Nigeria's economy, heavily dependent on oil revenues, was severely hit as crude prices plummeted, leading to a 1.92% contraction in GDP in 2020, while inflation surged to over 15% (National Bureau of Statistics, 2021).

During this crisis, Nigerian banks faced dual challenges: declining asset quality from non-performing loans and shrinking net interest margins as monetary authorities attempted to stimulate growth with accommodative policies. For instance, the Central Bank of Nigeria (CBN) slashed the monetary policy rate to 11.5% in September 2020, the lowest in four years, in a bid to stimulate credit expansion to the private sector (CBN, 2020). Consequently, credit to the private sector as a percentage of GDP rose from 12.1% in 2019 to 14.2% by 2021, reflecting the CBN's push for financial intermediation despite systemic risks (Gbarawae & Chinaka, 2024). Yet, while increased lending supported short-term liquidity, it also heightened exposure to credit risk, which weighed heavily on bank performance. Recent studies such as Ozili (2025), Andabai and Oyakegha (2025), Ebinum (2025) confirm that increased cash reserve ratio such as the unprecedented 32.5% ratio imposed in 2023 posed a serious constraint to banks' capacity to intermediate funds profitably, thereby squeezing net interest margins. This was particularly problematic for smaller banks whose performance relies significantly on interest spreads (Erhijakpor, 2025).

Simultaneously, the period after COVID-19 witnessed an unprecedented acceleration in digital financial services in Nigeria. With lockdowns and social distancing fueling demand for online and mobile transactions, digital banking volumes surged. By 2022, electronic payment transactions in Nigeria exceeded ₦500 trillion, marking a 42% year-on-year increase (NIBSS, 2022). This structural shift introduced new dynamics into bank performance: while

transaction fees and efficiency gains boosted revenues, the capital expenditure on digital infrastructure and cybersecurity posed fresh challenges (Nwala, Gimba & Ukachukwu, 2024). Empirical evidence shows that digital banking adoption significantly altered the revenue mix of Nigerian banks, reducing their reliance on traditional interest-based income while diversifying toward fee-based and digital services (Taiwo & Akande, 2024). In effect, monetary policy in the post-pandemic period has operated alongside the digitalization wave, jointly shaping performance outcomes in ways that are both complex and unprecedented.

The Nigerian banking sector operates at the intersection of monetary policy decisions and rapidly evolving financial technologies. In the aftermath of the COVID-19 pandemic, the Central Bank of Nigeria adopted a mix of accommodative and contractionary policies cutting the Monetary Policy Rate (MPR) to historic lows in 2020 before tightening rates and raising the cash reserve ratio to 32.5% by 2023 (CBN, 2024). While these measures were aimed at stabilizing inflation, stimulating credit to the private sector, and ensuring financial stability, their direct impact on bank performance remains unclear. At the same time, the surge in digital banking transactions, which exceeded ₦500 trillion in 2022, has altered banks' revenue models, reducing reliance on traditional interest spreads while increasing fee-based income. This structural shift raises critical questions about whether monetary policy tools such as monetary policy rate, cash reserve ratio and credit expansion still significantly shape net interest margins (NIM) in the post-pandemic era, or whether digital banking has redefined performance dynamics.

Again, despite the strategic importance of banks to Nigeria's economic recovery and financial stability, few empirical studies have investigated how monetary policy affects bank performance in the unique context of 2020–2024, when both macroeconomic volatility and digital disruption converged. Given the evolving financial landscape in Nigeria, understanding the nexus between monetary policy tools such as monetary policy rate, cash reserve ratio, credit to the private sector and bank performance indicators like Net Interest Margin (NIM), particularly under the influence of digital banking, has become not only timely but essential. While some studies have explored bank performance during the COVID-19 shock, there remains a paucity of empirical work that situates the analysis squarely in the post-pandemic Nigerian context (2020–

2024), a period marked by inflationary pressures, currency devaluations, and rapid financial technology adoption (Michael *et al.*, 2025).

This study, therefore, contributes to the literature by examining how monetary policy has influenced the performance of deposit money banks in Nigeria after the COVID-19 pandemic, focusing specifically on the interplay between traditional monetary tools and the rise of digital banking. This gap in knowledge underscores the need to systematically examine the impact of monetary policy instruments and digital banking on the performance of Nigerian deposit money banks. The main objective is to analyze the impact of monetary policy on the performance of banks in Nigeria in the period after the covid-19 which is from 2020 to 2024. Specifically, the study intends to:

1. Investigate the relationship between monetary policy rate and net interest margin of deposit money banks in Nigeria;
2. Analyze the impact of credit to private sector (% of GDP) on net interest margin of deposit money banks;
3. Determine the relationship between cash reserve ratio and net interest margin of deposit money banks;
4. Ascertain the impact of digital banking transactions on net interest margin of deposit money banks in Nigeria.

The study focuses on all deposit money banks in Nigeria due to the availability of data from the Central Bank of Nigeria. The hypotheses to be tested are stated in their null forms as follows:

- H_{01} : There is no significant relationship between monetary policy rate and net interest margin of deposit money banks in Nigeria.
- H_{02} : There is no significant relationship between credit to private sector (% of GDP) and net interest margin of deposit money banks.
- H_{03} : Cash reserve ratio has no significant relationship with net interest margin of deposit money banks.
- H_{04} : Digital banking transactions have no significant relationship with net interest margin of deposit money banks in Nigeria.

These hypotheses are justified based on the fact that theoretical expectations and empirical findings linking monetary policy to banks' performance are not conclusive, making it necessary to statistically test whether significant

relationships exist in the Nigerian context during the post-COVID period (2020–2024).

2. LITERATURE REVIEW

The literature review focuses on detailed discussion of the key concepts of the study which include the monetary policy variables viz: monetary policy rate, credit to private sector, cash reserve ratio, digital banking transactions, and performance of banks. The conceptual review is followed by the theoretical review which delves into relevant theories that explain the interaction between monetary policy and banks performance. The literature also includes the empirical review which is a review of previous studies from where gaps in literature are identified.

2.1. Conceptual Review

The COVID-19 pandemic significantly disrupted Nigeria's financial sector, prompting the Central Bank of Nigeria (CBN) to implement monetary policy tools to maintain financial stability. In the post-COVID era (2020 till date), these policy instruments directly shaped the performance of deposit money banks through their influence on liquidity, lending, and performance. Monetary policy rate is the benchmark interest rate set by a country's central bank to influence lending, borrowing, and overall economic activity (Ajayi & Nwakanma, 2023). In the immediate post-COVID period, the CBN reduced the MPR to 11.5% particularly in September 2020 to encourage lending and support economic recovery. However, persistent inflationary pressures led to consecutive increases from May 2022, reaching 18.75% by 2023. This tightening cycle, according to Ajayi and Nwakanma (2023), increased borrowing costs, affecting bank lending volumes and performance. Banks, in response, adjusted lending rates and restructured credit allocation thereby affecting their financial performance indicators.

In Nigeria, credit to private sector is vital for stimulating investment and growth, yet it remains sensitive to monetary policy shifts. According to Ofori *et al.* (2022), credit to private sector refers to financial resources made available to businesses and households by financial institutions. Money supply growth leads to a decrease in interest rates and an increase in investment spending (Mgbomene & Nnamocha, 2023). On the other hand, Mgbomene and Igben

(2023) observed that a decrease in the money supply leads to an increase in interest rates and a decline in investment spending and the correlation between investment spending and aggregate demand is maintained. A change in the money supply, by causing a change in investment spending and thus a shift of the aggregate expenditure, aggregate demand curve moves. During the pandemic recovery, the CBN launched targeted credit interventions (e.g., the ₦50 billion COVID-19 stimulus fund and agriculture/SME support facilities) to sustain private sector activity. Although higher monetary policy rate constrained new lending, directed credit schemes expanded private sector credits, showing a divergence between policy tightening and developmental finance efforts. This duality highlights the complex role of private sector credit in linking monetary policy with bank performance.

By way of conceptualization, Ekeocha, Chukwu, and Ibrahim (2021) noted that cash reserve ratio is the mandatory proportion of commercial bank deposits that must be kept with the Central Bank of Nigeria (CBN). Nigeria maintained one of the world's highest cash reserve ratio at about 32.5% in 2023 and this rate severely constrain banks' liquidity. The tightening of cash reserve ratio was aimed at mopping up excess liquidity to combat inflation; it has the capacity to reduce banks' capacity to extend credit profitably (Ekeocha *et al.*, 2021).

Ozili (2020) observed that the financial transactions executed through digital platforms such as mobile apps, internet banking, and USSD systems make up what we refer to as digital banking transactions. After the pandemic in 2020, digital banking transactions surged and Obaidullah and Haq (2024) observed that the surge cushioned the negative effects of tight monetary policy, boosting fee-based income and operational efficiency while deepening financial inclusion.

Net interest margin is used as a measure of bank performance in this study because it is a reflection of how banks balance policy-induced constraints with innovative business models. NIM is the difference between interest income earned on loans and the interest paid on deposits relative to interest-earning assets (Mulyaningsih & Sastrosuwito, 2021). On one hand, high monetary policy rate and cash reserve ratio reduced lending opportunities and increased the cost of funds. On the other hand, increased reliance on digital channels, non-interest income, and CBN's intervention loans provided relief (Adewuyi & Babajide, 2023).

2.2. Theoretical Review

This study is anchored on two theories namely: Market Power Theory of Interest Margins and Financial Intermediation Theory. The market power theory originates from the Structure-Conduct-Performance (SCP) paradigm in industrial organization economics (Mason, 1939; Bain, 1951). It was later applied to banking by scholars such as Ho and Saunders (1981), who examined determinants of banks' net interest margins. The theory holds that banks with greater market power, i.e. larger market share or less competition are able to set higher loan rates and lower deposit rates, thereby widening their net interest margins. Essentially, profitability is sustained not just by efficiency but by the ability to influence pricing in the market. Conversely, in highly competitive markets, net interest margins tend to be compressed as banks compete for both deposits and lending opportunities.

Therefore, in competitive and regulated environments like Nigeria, tight monetary policy compresses margins and this explains why Nigerian banks turned to digital banking and non-interest income to stabilize profitability in the post-COVID period (Nyarko-Baasi *et al.*, 2024). As this is against the backdrop experienced in the COVID period (Kennedy & Chukunalu, 2023). Intuitively, larger banks with stronger market power can still maintain relatively stable margins by leveraging their market dominance, digital banking platforms, and diversified income sources. Thus, the market power theory explains why banks' performance outcomes differed under the same monetary policy environment since those with greater market power could better withstand the policy shocks, while smaller banks were more vulnerable.

Going further, the financial intermediation theory argues that banks exist to channel funds from surplus units (depositors) to deficit units (borrowers), improving resource allocation efficiency (Gurley & Shaw, 1960; Goldsmith, 1969) and McKinnon, 1973). However, regulatory tools such as the cash reserve ratio directly influence banks' ability to perform this role in the Nigerian context. Also, high cash reserve ratio can limit banks' lending capacity, supporting the theory's assertion that monetary policy significantly constrains intermediation efficiency (Ekeocha *et al.*, 2021). On the other hand, CBN's intervention facilities can strengthen intermediation during economic recovery likewise digital banking adoption.

These two theories provide a framework for understanding how monetary policy shapes bank performance. While the financial intermediation theory highlights the systemic role of banks in channeling credit to the economy, the market power theory explains differences in how individual banks withstand monetary shocks. Thus, in post-COVID Nigeria, banks' performance depended both on the constraints of monetary policy and on their ability to leverage market power and digital innovation to sustain profitability.

2.3. Empirical Review

Ebinum (2025) investigated the impact of interest rates on the financial performance of deposit money banks in Nigeria using panel regression (1991–2024). The study considered interest rates, monetary policy rate (MPR), and net interest margin (NIM), finding that frequent hikes in MPR significantly compressed banks' interest spreads, concluding that restrictive monetary policies weaken profitability. Similarly, Andabai (2025) examined monetary policy and commercial banks' performance in Nigeria with data from 2000–2024, employing time series regression. Results revealed that MPR strongly predicts variations in NIM and return on equity, implying that monetary tightening worsens margins. Likewise, Olumuyinwa and Faithwin (2025) studied monetary policy instruments and financial performance of Nigerian deposit money banks (2015–2024) using panel fixed effects. They found that while liquidity ratio and MPR negatively influenced net interest margin, credit to the private sector had a positive impact, suggesting that credit expansion enhances profitability.

Ogbulu and Ejem (2024) analyzed determinants of interest rate spread in Nigeria (1991–2020) via vector error correction models. Their findings confirmed that monetary policy rate and inflation widen spreads while reducing net margins, highlighting the adverse effect of interest rate volatility. Nwaguru and Felix (2025) examined interest rate deregulation and non-performing loans in Nigeria using time-series regression. Their analysis linked monetary policy rate (MPR) hikes with higher credit risk and compressed net interest margins (NIM), concluding that interest rate liberalization without stability measures worsens bank profitability.

Oji and Odi (2024) conducted a time-variant study on monetary policy and net domestic credit in Nigeria using ARDL models. They found that MPR

and cash reserve ratio (CRR) shocks negatively affect private sector credit, but expanding credit lines improves net interest margin, suggesting banks profit when credit-to-GDP ratios rise. Michael, Jeremiah, and Akpabio (2025) studied banking regulation and performance of banks in Nigeria (2008–2022) through an ex-post facto design. Results showed that CRR and liquidity ratio strongly constrain banks' profitability, with CRR in particular crowding out lending and depressing NIM. Similarly, Anisiuba and Olelewe (2025) linked CRR tightening between 2022 and 2024 to declining bank credit, emphasizing its contractionary role.

Extending the discourse, Aliyu *et al.* (2024) explored macro-prudential and monetary policy effects on Nigerian banking sector performance using ex-post facto design with secondary data. They discovered that credit to the private sector as a share of GDP positively correlates with banks' performance, emphasizing credit allocation as a growth channel. In contrast, Ezie and Oniore (2024) assessed transmission of monetary policy shocks on non-performing loans in Nigeria using vector autoregression (VAR). They found that tighter MPR increased loan defaults, indirectly reducing banks' net margins, stressing the need for policy balance.

Focusing on liquidity constraints, Ozili (2025) argued that the 32.5% cash reserve ratio imposed in 2023 severely squeezed banks' lending ability, lowering net margins. Complementarily, Nduka and Ngangah (2024) analyzed the effect of monetary policy on the Nigerian banking sector (1981–2023) using ARDL models. They concluded that while CRR ensures stability, excessively high ratios curtail performance. Adamgbo *et al.* (2023) investigated the influence of monetary policy on commercial banks in Nigeria under monetarist ideology. Applying OLS on post-COVID data, they confirmed that digital banking transactions significantly boosted efficiency and widened net margins, offsetting losses from restrictive policy tools.

Iyoha (2024) investigated electronic banking channels and financial performance in the Nigerian banking industry using panel regression from 2015–2022. The study confirmed that e-banking significantly improved the performance of banks by reducing transaction costs and broadening customer reach. Hassan and Bassey (2025) found that digital banking positively affected financial performance of listed Nigerian banks, noting that digital platforms mitigate the negative effects of monetary tightening.

2.4. Gap in Literature

Although a growing body of research has examined the influence of monetary policy instruments on bank performance in Nigeria, significant gaps remain. Most existing studies (such as Ebinum, 2025; Andabai, 2025; Ozili, 2025) focused on broad performance indicators such as return on assets (ROA) and return on equity (ROE), with limited emphasis on net interest margin (NIM) as a direct measure of intermediation efficiency.

Furthermore, while recent works have analyzed monetary policy rate and cash reserve ratio, fewer have jointly incorporated credit to the private sector and the rapidly expanding digital banking transactions into a single framework. In particular, studies on digital banking have concentrated on operational efficiency without linking it directly to monetary policy effects on net interest margin.

Another gap lies in the post-COVID-19 period (2020–2024), which introduced unprecedented monetary tightening (e.g., 32.5% cash reserve ratio in 2023) alongside rapid digital transformation, yet very few empirical investigations have addressed how these simultaneous shifts shape banks' performance. This study therefore fills the gap by providing a holistic, post-pandemic analysis of how monetary policy rate, cash reserve ratio, credit to private sector, and digital banking interact to influence the net interest margin of Nigerian deposit money banks.

3. METHODOLOGY

This research adopts an *ex-post facto* research design, since it relies on secondary time-series data already published and cannot be manipulated by the researcher. The study uses monthly secondary data covering the period January 2021 to December 2024. Data for monetary policy rate, cash reserve ratio and credit to the private sector were obtained from Central Bank of Nigeria (CBN) Statistical Bulletin & Monetary Policy Communiqués and National Bureau of Statistics (NBS). Data for digital banking transactions were obtained from the Nigeria Inter-Bank Settlement System (NIBSS) while data for and net interest margin was obtained from Nigeria Deposit Insurance Commission (NDIC) Quarterly Financial Performance Report for the relevant years.

The study employed time-series econometric techniques in analyzing the data. These include stationarity test which was used to check unit roots in

the monthly data. Johansen Co-integration test determined the existence of long-run relationships among the variables, while the Error Correction Model (ECM) estimated the short-run dynamics of the variables. Diagnostic tests were carried out and they include Breusch-Godfrey test for autocorrelation, heteroskedasticity (White test), and model stability (CUSUM).

3.1. Model Specification

The model flows from the financial intermediation theory, which links monetary policy to credit allocation and bank performance, and the market power theory, which explains variations in banks' interest margins under monetary policy shocks. The specification modifies the work of Olumuyinwa and Faithwin (2025) who used liquidity ratio, MPR and credit to the private sector as constructs of monetary policy while net interest margin was their dependent variable. By way of modification, we introduce digital banking transaction in addition to the monetary policy variables in order to add currency to the variables.

The functional form of the model is:

$$NIM_t = f(MPR_t, CRR_t, CPS_t, DBT_t) \quad (1)$$

Where:

NIM = Net Interest Margin of banks (proxy for performance)

MPR = Monetary Policy Rate

CRR = Cash Reserve Ratio

CPS = Credit to the Private Sector

DBT = Digital Banking Transactions

The econometric form of the model is specified as:

$$NIM_t = \alpha_0 + \beta_1 MPR_t + \beta_2 CRR_t + \beta_3 CPS_t + \beta_4 DBT_t + \varepsilon_t \quad (2)$$

Where ' ε_t ' is the error term, α_0 is the intercept of the model, $\beta_1 - \beta_4$ are the coefficients of the model to be estimated and ' t ' is the time period (2021:M01 to 2024:M12).

3.2. Apriori Expectations

Based on theory and prior empirical findings:

- $\beta_1 < 0$: MPR is expected to be negative meaning that higher MPR increases lending rates, discouraging credit and reducing net interest margin of banks.
- $\beta_2 < 0$: CRR is expected to be negative which implies that higher CRR reduces banks' liquidity and lending capacity, compressing net interest margin of banks.
- $\beta_3 > 0$: CPS is expected to be positive meaning that increased credit to the private sector should enhance banks' earnings and performance.
- $\beta_4 > 0$: DBT is expected to be positive which means more digital banking transactions increase fee-based income and efficiency, boosting net interest margin of banks.

4. DATA ANALYSIS

The analyses start with the test for unit root on each of the variables in order to ascertain their suitability for the forecast. This was followed by the Cointegration test and the model estimation.

Table 1: Summary of the Unit Root Test (*p-values* in parenthesis)

<i>Variables</i>	<i>ADF test stat. @ Level</i>	<i>ADF test stat. @First Difference</i>	<i>Order of Integration</i>
NIM	-1.5847 [0.4820]	-3.7186 [0.0069]	Stationary at first difference, I(1)
MPR	-1.6928 [0.4283]	-3.9023 [0.0042]	Stationary at first difference, I(1)
CRR	0.5738 [0.9874]	-4.1288 [0.0463]	Stationary at first difference, I(1)
CPS	-0.6459 [0.8499]	-3.5411 [0.0111]	Stationary at first difference, I(1)
DBT	-1.7449 [0.4025]	-5.9399 [0.0117]	Stationary at first difference, I(1)

The unit root test is premised on the following null and alternate hypothesis:

H_0 : The variable has a unit root (i.e. it is not stationary)

H_1 : The variable has no unit root (i.e. it is stationary)

Since the probability values of the ADF test statistic at first difference are all less than 0.05 critical value, we reject their respective null hypothesis and conclude that the variables have no unit root (i.e. they are stationary at

first difference. Thus the statistical properties of the variables at first difference do not vary with time and so the first differenced data can be used in our estimation without the result being spurious. We proceed with the test for long run association amongst the variables.

Table 2: Summary of the Johansen Cointegration Test

<i>Hypothesized No. of CE(s)</i>	<i>Trace Statistic</i>	<i>Prob. **</i>	<i>Max-Eigen Statistic</i>	<i>Prob. **</i>	<i>Decision</i>
None *	1387.888	0.0000	588.4145	0.0001	Cointegrated
At most 1 *	799.4732	0.0001	381.1963	0.0001	Cointegrated
At most 2 *	418.2768	0.0001	270.8718	0.0001	Cointegrated
At most 3 *	147.4050	0.0001	124.4586	0.0001	Cointegrated
At most 4 *	22.94647	0.0031	17.24166	0.0164	Cointegrated
At most 5 *	5.704806	0.0169	5.704806	0.0169	Cointegrated

The null and alternate hypothesis for the Johansen cointegration test is stated below:

H_0 : The variables are not cointegrated

H_1 : The variables are cointegrated

The Johansen cointegration test uses both the trace statistic and the Max-eigen statistic to determine the presence of long run relationship amongst variables. In Table 2, the Trace and max-eigen statistics have significant probability values which imply that the null hypothesis is rejected. Thus, the test concludes that the variables are cointegrated i.e. there is long run relationship between monetary policy variables and bank performance. Since the study has found the variables to be integrated at first difference $I(1)$ and cointegrated, the model parameters are estimated using the Error Correction Model.

Table 3: Summary of the Error Correction Model

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>
C	-6.512176	4.738489	-1.374315	0.1774
MPR	-6.391958	1.138845	-5.612668	0.0000
CRR	7.069078	0.911112	7.758737	0.0000
CPS	-42.38415	4.938276	-8.582783	0.0000
DBT	31.75194	4.022242	7.894090	0.0000
ECM(-1)	-0.773246	0.249441	-3.099915	0.0087
R-squared	0.989287	F-statistic		70.18228
Adjusted R-squared	0.987877	Prob(F-statistic)		0.000000
S.E. of regression	0.035681	Durbin-Watson stat		1.767087

Table 3 shows that the coefficient of monetary policy rate (MPR) is negative and highly significant. This means that an increase in monetary policy rate reduces banks’ net interest margin (NIM). This aligns with theory and a-priori expectation where higher MPR raises lending costs, reduces loan demand, and compresses margins.

Cash reserve ratio (CRR) has a positive and significant coefficient. This means that higher cash reserve ratio appears to increase banks’ performance in this model, which may reflect Nigerian banks’ ability to pass liquidity costs to borrowers or compensate through non-interest income. This finding is interesting and may reflect Nigeria’s unique regulatory environment as will be discussed later.

The coefficient of credit to private sector (CPS) is negative and significant which means that credit to private sector reduces net interest margin of banks. This could mean that while banks extend more loans, the profitability of those loans is limited by high defaults, rising risks, or lower effective yields.

The coefficient of digital banking transactions (DBT) is positive and significant. This is an indication that digital banking transactions strongly boost bank performance. This shows that digitalization cushioned policy tightening effects by improving efficiency, lowering costs, and expanding fee-based income.

The coefficient of the error correction term ECM(-1) is negative and significant and this confirms a valid error-correction mechanism. About 77% of short-run disequilibrium is corrected each month, showing strong convergence to long-run equilibrium. Since the intercept of the model is negative and not statistically significant, the baseline effect of omitted variables is negligible. The F-statistic is significant ($p=0.000$) and this implies that the overall model is highly significant.

Table 4: Diagnostic Tests

Test	Test statistic	Decision
Breusch-Godfrey Serial Correlation LM Test	F-statistic = 1.7391 ($p=0.4578$)	No serial correlation is present
Heteroskedasticity Test: White	F-statistic = 0.045 ($p=0.6109$)	Accepts homoskedasticity assumption
R-squared	0.9893 (98.93%)	
Stability Test (CUSUM)	Within 5% bounds	Model is stable

The diagnostic test summarized in Table 4 shows that the model explains about 98.93% of variations in bank performance which is an excellent explanatory power. No significant serial correlation is present since the probability value is greater than 0.05 critical value. This suggests model residuals are entirely independent. The heteroskedasticity test accepts homoskedasticity assumption thus confirming the absence of heteroskedasticity.

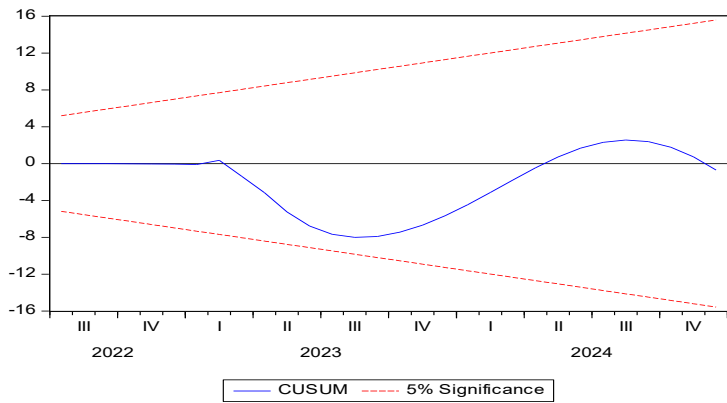


Figure 1: CUSUM Test

The CUSUM line remains within the 5% significance boundaries which is an indication that the model is stable over time. This means the relationships identified are not spurious and the ECM is structurally reliable.

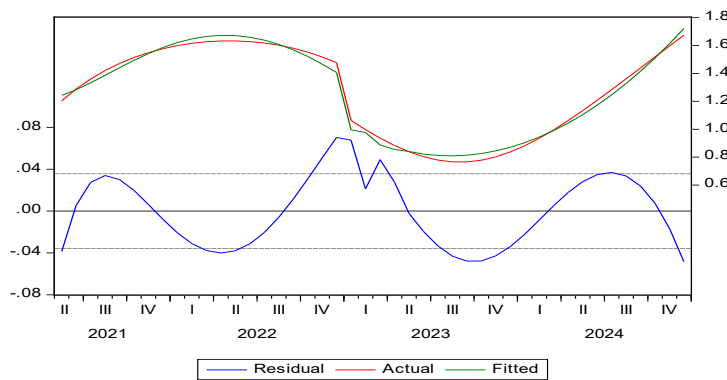


Figure 2: Actual and Fitted Regression Plot

The actual and fitted values closely align, confirming the model's high predictive accuracy (consistent with $R^2 \approx 0.99$). The indication is that he

deviations are minimal, showing the ECM captures the dynamics of banks' performance effectively.

Test of Hypotheses: The hypothesis test is shown in a Table in order to summarize the test and show the significance or otherwise of the variables at a glance.

Table 5: Summary of the Hypotheses Test

<i>Hypotheses</i>	<i>t-statistic</i>	<i>Decision</i>
H ₀₁ : There is no significant relationship between monetary policy rate and net interest margin of deposit money banks in Nigeria.	-5.6127 <i>p-value</i> = 0.0000	Reject H ₀₁ since <i>p-value</i> is less than 0.05 critical value
H ₀₂ : There is no significant relationship between credit to private sector (% of GDP) and net interest margin of deposit money banks.	7.7587 <i>p-value</i> = 0.0000	Reject H ₀₂ since <i>p-value</i> is less than 0.05 critical value
H ₀₃ : Cash reserve ratio has no significant relationship with net interest margin of deposit money banks.	-8.5828 <i>p-value</i> = 0.0000	Reject H ₀₃ since <i>p-value</i> is less than 0.05 critical value
H ₀₄ : Digital banking transactions have no significant relationship with net interest margin of deposit money banks in Nigeria.	7.8941 <i>p-value</i> = 0.0000	Reject H ₀₄ since <i>p-value</i> is less than 0.05 critical value

The first hypotheses test revealed that MPR has a significant negative effect on net interest margin of banks. Thus, increases in MPR reduce bank performance in Nigeria. From the second hypothesis, credit to private sector (CPS) significantly influences net interest margin of banks, but the relationship is negative. This suggests that while banks extend credit, profitability is reduced, possibly due to rising default risks or low lending efficiency in Nigeria's post-COVID environment.

For the third hypothesis, the study concludes that cash reserve ratio (CRR) significantly affects net interest margin of banks, with a positive relationship in this model. This indicates that despite liquidity constraints from high CRR, Nigerian banks may be compensating by repricing loans, raising fees, or leveraging other income channels to sustain margins.

The fourth hypothesis concluded that digital banking transaction (DBT) has a strong positive and significant impact on net interest margin of banks. This confirms that digital banking adoption in the post-COVID period enhanced efficiency, expanded fee-based income, and supported profitability despite monetary tightening.

5. DISCUSSION OF FINDINGS

The study revealed that the monetary policy rate (MPR) exerts a significant negative effect on the net interest margin (NIM) of deposit money banks. This suggests that frequent hikes in MPR raise the cost of borrowing, discourage loan uptake, and compress banks' margins. The result is intuitive, as restrictive monetary policies often discourage credit expansion and reduce profitability in economies with fragile credit markets. This finding is consistent with Ebinum (2025) and Andabai (2025), who both reported that persistent monetary tightening reduced bank spreads and weakened profitability. Similarly, Ogbulu and Ejem (2024) and Nwaguru and Felix (2025) observed that rising MPR leads to higher credit risk, narrowing banks' margins. Thus, the result reaffirms the theoretical expectation that restrictive monetary policy undermines banks' financial performance.

Contrary to theoretical expectations, credit to the private sector (CPS) was found to have a negative and significant relationship with net interest margin. This implies that while banks expanded credit, their profitability did not improve; instead, margins were eroded. A plausible explanation lies in Nigeria's post-COVID environment, where inflationary pressures, exchange rate volatility, and high default risks limited the profitability of loans extended to the private sector. Although this contrasts with the findings of Olumuyinwa and Faithwin (2025) and Aliyu et al. (2024), who argued that credit expansion enhances profitability, it aligns with the concerns of Nwaguru and Felix (2025) that increased lending under unstable monetary conditions worsens non-performing loans and reduces margins. The divergence highlights how macroeconomic instability can overturn the expected growth-enhancing role of private sector credit.

Interestingly, the study found that the cash reserve ratio (CRR) has a positive and significant effect on net interest margin. Theoretically, a high CRR should reduce bank liquidity and constrain lending, thereby depressing profitability. However, in Nigeria's case, banks appear to have adapted to the high CRR regime (32.5% in 2023) by repricing loans, passing on costs to borrowers, and relying on fee-based income or service revenue from digital services. This adaptive behavior enabled banks to sustain margins despite liquidity constraints. The finding diverges from Michael, Jeremiah, and Akpabio (2025), Ozili (2025), and Anisiuba and Olelewe (2025), who all

found that CRR tightening reduces bank profitability by crowding out lending. Nonetheless, the divergence underscores the resilience and innovation of Nigerian banks, which have developed mechanisms to mitigate the adverse effects of restrictive policy instruments.

The study also established a strong positive relationship between digital banking transactions (DBT) and net interest margin. This indicates that the adoption of digital platforms significantly enhanced banks' efficiency, lowered transaction costs, and expanded fee-based income, thereby offsetting the negative impact of monetary tightening. This result is consistent with Adamgbo et al. (2023), who showed that digital banking boosted efficiency and widened margins, and Iyoha (2024), who found that electronic banking reduced costs and broadened customer reach. Similarly, Hassan and Bassey (2025) demonstrated that digital platforms cushioned banks against the profitability pressures of restrictive monetary policies. The monetary policy variables used in the study were jointly significant in determining overall banks' performance while also accounting for high proportion of changes in banks' net interest margin.

5. CONCLUSION AND RECOMMENDATIONS

The study concludes that while conventional monetary policy tools like monetary policy rate and cash reserve requirement exert strong influences on bank performance, the resilience of Nigerian banks in the post-COVID era has increasingly depended on technological innovation and strategic adjustments. The monetary policy remains a powerful determinant of banking performance in Nigeria, but its effects can either weaken or strengthen profitability depending on the policy mix, economic environment, and the strategic responses of banks. While traditional tools such as MPR and CRR remain central to liquidity management, their effectiveness in enhancing bank profitability is limited in a volatile, post-pandemic economy. Instead, the resilience of Nigerian banks has increasingly been tied to technological innovation and income diversification. It is recommended that:

The Central bank of Nigeria (CBN) should avoid prolonged reliance on high monetary policy rates, as these restrict credit expansion and erode bank profitability. Instead, a more balanced approach that combines inflation control with growth-supportive policies is essential.

While cash reserve ratio serves as a liquidity control tool, excessively high ratios undermine intermediation. The CBN should consider moderating the cash reserve ratio or making it more flexible, to avoid crowding out private sector lending.

Since credit to private sector negatively affected margins, banks should strengthen risk assessment frameworks, adopt more stringent loan monitoring mechanisms, and diversify credit portfolios to minimize defaults and improve the profitability of lending.

Policymakers should encourage continued investment in digital banking platforms, cybersecurity, and financial inclusion initiatives. Given the positive effect of digital banking transactions, banks should scale up digital innovations as a sustainable source of income and efficiency. Also, banks in Nigeria should reduce over-reliance on interest income by expanding fee-based services, trade finance, and digital products, which have shown resilience under monetary tightening.

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