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Impact of CBN Cash Reserves Requirement on the Financial Performance of Deposit Money Banks in Nigeria

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Abstract: *This study investigates the impact of the Central Bank of Nigeria's (CBN) Cash Reserve Requirement (CRR) on the financial performance of Deposit Money Banks (DMBs) in Nigeria, focusing on Return on Assets (ROA), Return on Equity (ROE), Liquidity Rate (LR), and Loan-to-Deposit Ratio (LDR). Anchored in Monetary Theory and Resource Dependence Theory, the study employs an ex-post facto research design and utilizes secondary data from 2018 to 2023. Descriptive statistics, correlation analysis, and simple regression analysis were applied to examine the relationships between CRR and the performance metrics. Findings reveal that CRR significantly influences all four metrics, demonstrating a strong positive relationship with ROA, ROE, LR, and LDR. These results highlight the dual role of CRR in promoting financial stability and influencing operational strategies in the banking sector. The study concludes that while CRR enhances regulatory compliance and liquidity, it also imposes constraints on lending and profitability, necessitating adaptive strategies by banks. Policymakers are advised to balance CRR adjustments to optimize liquidity control and profitability, ensuring alignment with Nigeria's economic development goals.*

Keywords: cash reserve requirement, deposit money banks, financial performance, return on assets, return on equity, liquidity rate, loan-to-deposit ratio

INTRODUCTION

The Central Bank of Nigeria's (CBN) Cash Reserve Requirement (CRR) is a fundamental monetary policy tool designed to regulate liquidity, control inflation, and ensure the stability of financial institutions. Within the context of Nigeria's banking sector, understanding the influence of CRR on the financial performance of Deposit Money Banks (DMBs) is vital, especially in light

of the sector's pivotal role in fostering economic growth. CRR policies, which mandate banks to hold a percentage of their deposits as non-lending reserves, have significant implications for critical performance metrics such as Return on Assets (ROA), Return on Equity (ROE), Liquidity Rate, and Loan-to-Deposit Ratio (Adebayo et al., 2022; Obi et al., 2022; Eze, 2023). Studies have highlighted CRR's role in curbing systemic liquidity risks and managing inflationary pressures; however, its effects on banks' profitability and efficiency remain underexplored. For instance, Obi and Chukwuma (2021) and Adamu and Suleiman (2023) demonstrated that higher CRR levels constrain the lending capacity of banks, thereby limiting their income-generating potential. Similarly, Yusuf and Osagie (2024) found that CRR policies adversely affect the ability of banks to extend credit to priority sectors such as agriculture, manufacturing, and infrastructure, which are critical to Nigeria's economic diversification agenda. This underscores the need for further investigation into how CRR influences sector-specific lending behaviors and overall profitability.

The Nigerian economy, marked by high inflation rates, currency instability, and fiscal deficits, provides a unique backdrop for analyzing CRR's impacts. Research by Egbule et al. (2021) and Hassan and Yusuf (2024) revealed that CRR-induced liquidity constraints can exacerbate the challenges posed by macroeconomic volatility, making it harder for banks to maintain optimal performance metrics. Furthermore, studies by Alabi et al. (2023) and Omotayo et al. (2023) emphasized the significant regional disparities in the effects of CRR, with banks in economically vibrant zones like Lagos experiencing fewer adverse impacts compared to those operating in less developed regions such as the Northeast.

While CRR policies are integral to macroeconomic stability, their interaction with other monetary policy tools remains an area of limited research. For example, Adebayo et al. (2022) and Olokundun et al. (2023) argued that CRR's impact on liquidity and profitability cannot be fully understood without considering its interplay with interest rate adjustments and government borrowing strategies. Additionally, Chukwu and Omoregie (2023) and Adedeji and Ezeh (2024) highlighted the growing importance of technology adoption in the banking sector, yet the relationship between CRR policies and banks' capacity to invest in digital transformation remains insufficiently examined. The implications of CRR on performance proxies such as Liquidity Rate and Loan-to-Deposit Ratio are particularly critical. Salami (2023) and Obi et al. (2022) observed that stringent CRR policies often result in reduced liquidity, hampering banks' ability to meet regulatory and operational requirements. Similarly, Adamu and Suleiman (2023) found that higher CRR levels lead to tighter credit conditions, adversely impacting the loan-to-deposit ratios of DMBs and limiting their contribution to economic development.

In addition to profitability and liquidity, the social and developmental implications of CRR policies warrant greater attention. Studies by Omotayo et al. (2023) and Adebayo et al. (2023) highlighted the challenges faced by marginalized groups, such as female entrepreneurs, in accessing bank credit under restrictive liquidity conditions. This aligns with findings by Hassan and Yusuf (2024), who argued that CRR constraints disproportionately affect banks' ability to support small and medium enterprises (SMEs), which are key drivers of job creation and economic growth in

Nigeria. Regional disparities in the impacts of CRR further complicate the policy's effectiveness. Obi and Chukwuma (2021) and Alabi et al. (2023) noted that banks in regions with low banking penetration and limited economic activity face greater challenges in complying with CRR requirements, often resulting in reduced credit availability and lower financial performance. This calls for a more tailored approach to CRR policy implementation, one that considers the unique economic and demographic characteristics of Nigeria's six geopolitical zones.

While CRR policies are designed to enhance financial stability, their unintended consequences on banks' operational efficiency and profitability metrics underscore the need for more nuanced research. Adebayo et al. (2022) and Yusuf and Osagie (2024) recommended that future studies examine how CRR can be optimized to balance liquidity control with the growth imperatives of DMBs. Similarly, Adamu and Suleiman (2023) emphasized the importance of aligning CRR policies with broader economic objectives, such as fostering innovation and supporting underfunded sectors.

This study seeks to address critical gaps in the understanding of how CRR policies influence the financial performance of Nigerian DMBs. By analyzing performance proxies such as ROA, ROE, Liquidity Rate, and Loan-to-Deposit Ratio, the research aims to provide actionable insights that inform more balanced and effective monetary policies. Such insights are essential for enhancing financial system stability, promoting economic resilience, and ensuring the sustainable growth of Nigeria's banking sector. specific objectives of the study

i. To examine the impact of CRR on the Return on Assets (ROA) of DMBs in Nigeria.
ii. To evaluate the effect of CRR on the Return on Equity (ROE) of DMBs in Nigeria.
iii. To assess the impact of CRR on the Liquidity Rate of DMBs in Nigeria
iv. To investigate the relationship between CRR and the Loan-to-Deposit Ratio of DMBs in Nigeria.

Research Hypotheses

H_{01}: CRR has no significant impact on the Return on Assets (ROA) of DMBs in Nigeria.

H_{02}: CRR does not significantly affect the Return on Equity (ROE) of DMBs in Nigeria.

H_{03}: There is no significant relationship between CRR and the Liquidity Rate of DMBs in Nigeria.

H_{04}: CRR has no significant impact on the Loan-to-Deposit Ratio of DMBs in Nigeria.

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LITERATURE REVIEW

Conceptual Framework

Cash Reserve Requirement (CRR)

The Cash Reserve Requirement (CRR) represents the independent variable in this study, serving as a regulatory instrument imposed by the Central Bank of Nigeria (CBN). CRR mandates banks to retain a percentage of their total deposits as reserves, either with the CBN or within their vaults. This measure is designed to control systemic liquidity, stabilize inflation, and ensure financial stability. By restricting the funds available for lending and investment, CRR directly affects banks' capacity to generate income, impacting their financial performance metrics (Adebayo et al., 2022; Obi et al., 2022). In Nigeria, where macroeconomic instability is prevalent, CRR plays an outsized role in shaping the operational strategies of banks, influencing their ability to meet regulatory and business objectives (Hassan & Yusuf, 2024). Higher CRR levels, while beneficial for monetary control, may reduce credit availability and dampen profitability.

Return on Assets (ROA)

Return on Assets (ROA) measures the efficiency of a bank in generating profit relative to its total assets. It is a key indicator of a bank's operational performance and profitability. CRR impacts ROA by limiting the funds available for income-generating activities, such as lending and investment in financial markets (Obi & Chukwuma, 2021). When banks are required to hold a larger portion of their deposits as reserves, their ability to maximize asset utilization diminishes, potentially lowering ROA (Salami, 2023). In the Nigerian context, where DMBs are critical to economic growth, any reduction in ROA caused by stringent CRR policies could have broader implications for the banking sector's contribution to national development (Adamu & Suleiman, 2023). Therefore, understanding this relationship is essential for balancing regulatory objectives with operational efficiency.

Return on Equity (ROE)

Return on Equity (ROE) is another critical performance metric, reflecting a bank's ability to generate profit from shareholders' equity. It is an essential measure of financial health, especially for evaluating returns to investors. CRR can influence ROE by reducing banks' profitability, as funds held in reserve do not contribute to revenue generation (Yusuf & Osagie, 2024). A higher CRR often translates to reduced income from interest-earning activities, diminishing the returns available for distribution to shareholders (Adamu & Suleiman, 2023). In Nigeria, where many banks rely heavily on shareholder investments for growth, the negative impact of stringent CRR on ROE could deter further capital inflows into the banking sector. Understanding how CRR shapes ROE provides valuable insights into its implications for investor confidence and bank stability.

Liquidity Rate

The Liquidity Rate measures a bank's ability to meet its short-term obligations and regulatory liquidity requirements. It is a critical component of financial stability, as it ensures that banks can respond effectively to deposit withdrawals and other liquidity demands. CRR directly influences liquidity by reducing the amount of funds banks can allocate for operational and emergency needs (Hassan & Yusuf, 2024). Higher CRR requirements often compel banks to hold more reserves, leaving less room for maintaining optimal liquidity levels (Alabi et al., 2023). This constraint can lead to difficulties in meeting short-term obligations, potentially eroding customer confidence and increasing the risk of liquidity crises. By analyzing the relationship between CRR and liquidity rate, the study aims to shed light on how regulatory policies can be optimized to support both stability and operational flexibility.

Loan-to-Deposit Ratio

The Loan-to-Deposit Ratio (LDR) captures the proportion of a bank's deposits that are converted into loans. It is a key indicator of credit availability and the bank's role in supporting economic activities through lending. CRR policies influence LDR by reducing the pool of funds available for loans, thereby limiting credit supply to businesses and individuals (Eze, 2023). In Nigeria, where access to credit is a critical driver of economic growth, the negative impact of stringent CRR policies on LDR could hinder the banking sector's contribution to development (Omotayo et al., 2023). Moreover, reduced lending capacity may affect sectors such as agriculture and infrastructure, which are vital for economic diversification. This study investigates how CRR-induced changes in LDR affect the broader economic landscape, providing insights for more effective regulatory frameworks.

Theoretical Framework

This study on the impact of the Central Bank of Nigeria's (CBN) Cash Reserve Requirement (CRR) on the financial performance of Deposit Money Banks (DMBs) in Nigeria is anchored in Monetary Theory and Resource Dependence Theory. These theories provide complementary perspectives on how regulatory policies, such as CRR, influence the liquidity, profitability, and operational capacity of financial institutions.

Monetary Theory

Monetary Theory, rooted in the works of scholars such as Milton Friedman and John Maynard Keynes, examines how changes in monetary policy instruments influence macroeconomic and microeconomic outcomes, including liquidity, inflation, and economic stability (Friedman, 1968; Keynes, 1936). CRR, as a key monetary policy tool, aligns closely with the principles of Monetary Theory by affecting the supply of loanable funds, credit availability, and overall banking sector performance.

In the context of this study, Monetary Theory provides a foundation for understanding how CRR policies shape the financial performance of DMBs by regulating liquidity and controlling inflation. The theory suggests that an increase in CRR reduces the loanable funds available to banks, potentially lowering their Return on Assets (ROA) and Return on Equity (ROE) (Adebayo et al., 2022; Obi et al., 2022). Similarly, higher CRR requirements can strain banks' Liquidity Rates, as more resources are held as non-lending reserves, limiting operational flexibility (Hassan & Yusuf, 2024). By restricting credit supply, stringent CRR policies also reduce Loan-to-Deposit Ratios (LDR), which impacts the ability of banks to extend credit to priority sectors such as agriculture and manufacturing (Omotayo et al., 2023).

Through the lens of Monetary Theory, this study posits that CRR-induced liquidity constraints negatively affect the financial performance of DMBs. By analyzing these dynamics, the study aims to provide insights into the trade-offs between monetary stability and banking sector profitability, which are critical for Nigeria's economic development.

Resource Dependence Theory

Resource Dependence Theory (RDT), developed by Pfeffer and Salancik (1978), focuses on how organizations manage resource constraints imposed by external environments. The theory emphasizes that organizations depend on external entities for critical resources, and their ability to acquire and control these resources determines their performance and survival.

In this study, Resource Dependence Theory highlights the dependence of DMBs on deposit funds as a key resource for generating income through lending and investment activities. CRR policies, by requiring banks to retain a percentage of deposits as reserves, limit the availability of this critical resource, thereby constraining their operational capacity and profitability (Adamu & Suleiman, 2023; Yusuf & Osagie, 2024). The theory suggests that banks with stronger resource management capabilities, such as efficient asset allocation and risk mitigation strategies, are better positioned to adapt to CRR-induced constraints.

RDT also explains how CRR affects financial metrics like ROE, as limited resources reduce the ability to generate returns for shareholders, and LDR, as constrained resources restrict banks' lending activities (Eze, 2023; Alabi et al., 2023). Moreover, the theory underscores the importance of liquidity management as a response to CRR policies, suggesting that banks with robust liquidity strategies are more likely to maintain stability under stringent reserve requirements (Salami, 2023).

The integration of Monetary Theory and Resource Dependence Theory provides a comprehensive framework for analyzing the impact of CRR on DMBs' financial performance. Monetary Theory emphasizes the macroeconomic implications of CRR as a regulatory tool, highlighting its role in liquidity management, inflation control, and credit availability. In contrast, Resource Dependence Theory provides a microeconomic perspective, focusing on how banks adapt to resource constraints imposed by CRR to sustain profitability and operational efficiency.

By grounding this study in these two theories, we gain a holistic understanding of the CRR-financial performance relationship. Monetary Theory elucidates the regulatory rationale behind CRR policies and their systemic impacts, while Resource Dependence Theory highlights the adaptive strategies banks employ to navigate resource limitations. Together, these theories offer a dual perspective that captures both the structural and operational dimensions of CRR's influence on Nigerian DMBs, ensuring a nuanced analysis of its effects on financial performance.

Empirical Review

ROA, a measure of how efficiently banks generate profit from their assets, has been shown to be significantly affected by CRR. Obi et al. (2022) investigated the role of monetary policy instruments on the profitability of DMBs in Nigeria and found that higher CRR levels constrained profitability, as funds were diverted from income-generating activities to non-lending reserves. Similarly, Salami (2023) observed that stringent CRR requirements reduced banks' capacity to optimize asset utilization, negatively impacting ROA. However, these studies largely focus on aggregate data, leaving gaps in understanding how individual bank characteristics mediate the CRR-ROA relationship. Adamu and Suleiman (2023) also noted regional disparities in ROA outcomes, suggesting that DMBs in economically vibrant regions, such as Lagos, were better able to offset CRR-induced constraints than banks in less developed areas.

ROE, an indicator of profitability relative to shareholders' equity, is another performance metric impacted by CRR. Yusuf and Osagie (2024) found that elevated CRR levels reduced the returns available to shareholders, as reduced loanable funds hindered banks' revenue generation. Similarly, Adebayo et al. (2022) highlighted that CRR policies limited DMBs' ability to deploy equity efficiently, thereby diminishing profitability. While these studies provide valuable insights, they often fail to explore how other factors, such as capital adequacy or market conditions, interact with CRR to influence ROE. Hassan and Yusuf (2024) emphasized the need for a more granular analysis, noting that the aggregate impact of CRR masks significant variations across banks with differing capital structures and operational efficiencies.

The liquidity rate, a critical measure of a bank's ability to meet short-term obligations, is directly influenced by CRR policies. Alabi et al. (2023) demonstrated that higher CRR requirements constrained liquidity, reducing banks' ability to meet regulatory thresholds and respond to withdrawal demands. Similarly, Egbule et al. (2021) found that DMBs struggled to maintain operational liquidity under stringent CRR conditions, particularly during periods of economic instability. Despite these findings, the studies rarely account for the adaptive strategies banks employ to mitigate liquidity challenges. For instance, Chukwu and Omoregie (2023) highlighted the role of digital banking solutions in enhancing liquidity management, but their analysis lacked a specific focus on CRR-induced constraints. Further research is needed to understand how banks balance liquidity requirements and operational demands in the face of varying CRR levels.

The Loan-to-Deposit Ratio (LDR) is a key metric reflecting the extent to which banks utilize customer deposits for lending. Eze (2023) found that higher CRR levels reduced the funds available for lending, negatively impacting the LDR and, by extension, credit availability in the economy. Omotayo et al. (2023) noted that CRR constraints disproportionately affected priority sectors, such as agriculture and manufacturing, where credit demand is high. However, these studies often fail to address the broader implications of reduced lending on economic growth and financial inclusion. Adamu and Suleiman (2023) highlighted that banks with diversified revenue streams were better positioned to maintain healthy LDR levels under high CRR conditions, but their findings were limited to a subset of DMBs, leaving room for further investigation into sector-wide trends.

While the existing body of research underscores the significant influence of CRR on financial performance, notable gaps remain. For instance, studies such as Obi et al. (2022) and Salami (2023) focus on the immediate impacts of CRR without examining its long-term effects on bank profitability and stability. Additionally, findings often generalize CRR impacts without accounting for regional and bank-specific variations, as highlighted by Hassan and Yusuf (2024). The interaction between CRR and other monetary policy tools, such as interest rate adjustments, also remains underexplored (Adebayo et al., 2022). Furthermore, while studies like Eze (2023) and Omotayo et al. (2023) address the implications of CRR on credit availability, there is limited research on how CRR influences banks' ability to invest in innovation and technology, critical for maintaining competitiveness in Nigeria's dynamic financial landscape.

The empirical evidence indicates that CRR significantly influences the financial performance of DMBs in Nigeria, particularly across metrics such as ROA, ROE, liquidity rate, and LDR. However, gaps persist in understanding the nuanced and long-term implications of CRR policies, as well as their interaction with other factors like regional dynamics, bank-specific characteristics, and complementary monetary tools. Addressing these gaps will provide valuable insights for policymakers and banking institutions, enabling the formulation of more balanced regulatory strategies that enhance financial stability while supporting the profitability and operational efficiency of DMBs.

METHODOLOGY

Research Design

The study adopts an ex-post facto research design, which is appropriate for analyzing historical data to determine the causal relationships between variables. This design is particularly suitable for assessing the impact of CRR policies on financial performance, as it utilizes secondary data from audited financial statements and other reliable sources. By focusing on data spanning from 2018 to 2023, the study captures trends and variations in CRR policies and their effects on the financial performance of DMBs over time. The use of this design ensures objectivity and robustness in identifying the relationships between the variables.

Population and Sampling

The population for this study consists of second-tier Deposit Money Banks listed on the NSE. These banks are mid-sized institutions that play a vital role in Nigeria's banking sector and are particularly susceptible to the effects of CRR policies due to their size and operational dynamics. A purposive sampling technique is employed to select six banks that meet the following criteria: consistent listing on the NSE during the study period, availability of audited financial statements, and relevance to the study's objectives. The selected banks include Fidelity Bank Plc, First City Monument Bank (FCMB) Plc, Sterling Bank Plc, Union Bank of Nigeria Plc, Unity Bank Plc, and Wema Bank Plc. These banks provide a representative sample of second-tier institutions, ensuring the generalizability of the findings.

Data Collection

The study relies entirely on secondary data, which is sourced from publicly available audited financial statements, annual reports of the selected banks, CBN publications, and NSE filings. Financial statements provide detailed data on ROA, ROE, Liquidity Rate, and LDR, while CBN publications offer information on CRR levels and related monetary policies. The data collection process ensures accuracy and consistency, as all sources are verified and publicly accessible. The use of secondary data eliminates the risk of bias often associated with primary data collection, ensuring reliability and validity.

2018 to 2023

Variables and Operational Definitions

The study examines the impact of CRR on the following financial performance metrics:

Cash Reserve Requirement (CRR): Represented as the percentage of total deposits that banks are required to hold as reserves with the CBN.

Return on Assets (ROA): A profitability metric calculated as net income divided by total assets, indicating how efficiently a bank utilizes its assets to generate profit.

Return on Equity (ROE): A measure of profitability relative to shareholders' equity, reflecting the returns generated for investors.

Liquidity Rate: The ratio of liquid assets to total liabilities, assessing a bank's ability to meet short-term obligations.

Loan-to-Deposit Ratio (LDR): The proportion of customer deposits allocated to lending, calculated as total loans divided by customer deposits.

Data Analysis Techniques

The study employs three analytical methods: descriptive statistics, correlation analysis, and simple regression analysis. Each method provides a unique perspective on the data:

Descriptive Statistics:
Descriptive statistics summarize the data, providing insights into variability, and distribution.

Correlation Analysis:
Correlation analysis evaluates the strength and direction of the relationships between CRR and the dependent variables.

Simple Regression Analysis:
Simple regression is used as the primary tool for testing the research hypotheses. Each hypothesis is tested by modeling the relationship between CRR and one financial performance metric. The regression models are specified as follows:

Model for ROA:
$ROA = \beta_0 + \beta_1 CRR + \epsilon$

Model for ROE:
$ROE = \beta_0 + \beta_1 CRR + \epsilon$

Model for LR:
$LR = \beta_0 + \beta_1 CRR + \epsilon$

Model for LDR:
$LDR = \beta_0 + \beta_1 CRR + \epsilon$

In these models:

$\beta 0$: Intercept term representing the baseline value of the dependent variable when variable is zero.

$\beta 1$: Coefficient representing the degree of impact of independent variable on the dependent variable.

ϵ: Error term accounting for unexplained variations.

Validity and Reliability

The study ensures validity and reliability through rigorous measures. Content validity is achieved by operationalizing variables based on widely accepted financial definitions and regulatory frameworks. Construct validity is ensured by sourcing data exclusively from audited financial

statements and CBN publications, guaranteeing relevance and accuracy. To enhance reliability, data is cross-verified across multiple credible sources, ensuring consistency and completeness.

DATA PRESENTATION AND ANALYSIS

Table 1 Descriptive Statistics

	N	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
CRR	30	2.5667	1.85106	3.426	.516	.427	-1.727	.833
ROA	30	4.0333	1.15917	1.344	-.923	.427	-.050	.833
ROE	30	3.4667	1.22428	1.499	-.038	.427	-1.160	.833
LR	30	2.2667	1.41259	1.995	.749	.427	-.799	.833
LDR	30	2.4000	1.32873	1.766	.231	.427	-1.450	.833
Valid N (listwise)	30							

SOURCE: SPSS, 2025

Table 1 offers a detailed analysis of the descriptive statistics for key financial metrics: Cash Reserve Requirement (CRR), Return on Assets (ROA), Return on Equity (ROE), Liquidity Ratio (LR), and Loan-to-Deposit Ratio (LDR). CRR has a mean of 2.5667, showing moderate variability (SD = 1.85106, variance = 3.426). A positive skewness of 0.516 indicates values concentrated below the mean, while the kurtosis of -1.727 reflects a flatter distribution with fewer extreme values. This variability highlights the dynamic nature of CRR's influence on financial metrics. ROA, with a mean of 4.0333 and low variability (SD = 1.15917), shows stable asset efficiency among banks. Its moderate negative skewness (-0.923) and near-normal kurtosis (-0.050) suggest consistent performance.

For ROE, the mean is 3.4667, with moderate variability (SD = 1.22428) and a near-symmetric distribution (skewness = -0.038). A kurtosis of -1.160 reflects fewer extreme values, indicating consistent equity profitability. LR has a mean of 2.2667, with moderate variability (SD = 1.41259). Its positive skewness (0.749) suggests values slightly below the mean, and a flat distribution (kurtosis = -0.799) indicates diverse liquidity management strategies. Lastly, LDR shows a mean of 2.4000, with moderate dispersion (SD = 1.32873). A near-normal skewness (0.231) and a platykurtic distribution (-1.450) suggest consistency in how banks allocate deposits to lending. These findings underline the balance and variability within key financial performance indicators.

Table 2 Correlations

		CRR	ROA	ROE	LR	LDR
CRR	Pearson Correlation	1	.634**	.777**	.705**	.746**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	30	30	30	30	30
ROA	Pearson Correlation	.634**	1	.863**	.647**	.752**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	30	30	30	30	30
ROE	Pearson Correlation	.777**	.863**	1	.843**	.856**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	30	30	30	30	30
LR	Pearson Correlation	.705**	.647**	.843**	1	.933**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	30	30	30	30	30
LDR	Pearson Correlation	.746**	.752**	.856**	.933**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	30	30	30	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

SOURCE: SPSS, 2025

The Pearson correlation analysis reveals significant positive relationships between the Cash Reserve Requirement (CRR) and key financial performance metrics of Deposit Money Banks (DMBs) in Nigeria, with all correlations statistically significant at the 0.01 level. CRR exhibits a moderate positive correlation with Return on Assets (ROA) ($r = .634$, $p < .01$), suggesting that higher reserve requirements enhance asset utilization efficiency. A stronger positive relationship exists between CRR and Return on Equity (ROE) ($r = .777$, $p < .01$), indicating that banks adjust strategies to maintain profitability under tighter reserve constraints. Similarly, CRR correlates positively with the Liquidity Ratio (LR) ($r = .705$, $p < .01$), reflecting improved liquidity management to meet regulatory demands, and with Loan-to-Deposit Ratio (LDR) ($r = .746$, $p < .01$), highlighting optimized lending practices in response to reserve requirements.

Interrelationships among performance metrics also reveal strong positive correlations, emphasizing their interconnected nature. ROA strongly correlates with ROE ($r = .863$, $p < .01$), demonstrating that efficient asset use aligns with profitability for shareholders. Additionally, ROE shares robust correlations with LR ($r = .843$, $p < .01$) and LDR ($r = .856$, $p < .01$), further underscoring the synergy between profitability, liquidity, and lending practices. The highest correlation is observed between LR and LDR ($r = .933$, $p < .01$), indicating that effective liquidity management supports enhanced lending capacity, central to banking operations. These findings

highlight the critical interplay between CRR, financial stability, and operational efficiency in the Nigerian banking sector.

Table 3 Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.634[a]	.402	.380	.91256	.402	18.791	1	28	.000	1.513

a. Predictors: (Constant), CRR
b. Dependent Variable: ROA
SOURCE: SPSS, 2025

Table 3 provides a summary of the simple regression analysis examining the relationship between the Cash Reserve Requirement (CRR) and Return on Assets (ROA). The correlation coefficient (R) of 0.634 indicates a moderate positive relationship, suggesting that increases in CRR are associated with improvements in ROA. The R Square value of 0.402 demonstrates that 40.2% of the variability in ROA is explained by CRR, with the adjusted R Square of 0.380 confirming the model's robustness and accounting for potential overfitting.
The standard error of the estimate (0.91256) reflects the average deviation of predicted ROA values from actual observations, indicating some variability but overall reliable predictions. The F Change statistic of 18.791, with a significance level of 0.000, confirms that the model is statistically significant at the 1% level, meaning CRR has a meaningful and non-random effect on ROA.

The Durbin-Watson statistic of 1.513 suggests minimal autocorrelation in the residuals, supporting the model's reliability and meeting the assumption of independence. In conclusion, CRR is a significant predictor of ROA, explaining a considerable portion of its variability, with results supported by robust statistical indicators.

Table 4 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.649	1	15.649	18.791	.000[b]
	Residual	23.318	28	.833		
	Total	38.967	29			

a. Dependent Variable: ROA
b. Predictors: (Constant), CRR
SOURCE: SPSS, 2025

Table 4 presents the ANOVA results, confirming the statistical significance of the regression model examining the relationship between Cash Reserve Requirement (CRR) and Return on Assets (ROA). The F-statistic of 18.791, with a p-value of 0.000, indicates that the model is significant at the 1% level. This establishes that CRR has a meaningful impact on ROA and that the observed relationship is not due to random chance.

The regression sum of squares (15.649) reflects the variation in ROA explained by CRR, while the residual sum of squares (23.318) represents the unexplained variation attributed to factors outside the model. Together, these yield a total sum of squares of 38.967, representing the overall variability in ROA. The mean square for regression (15.649) is substantially higher than the residual mean square (0.833), further validating the model's ability to explain the variability in ROA.

Table 5 Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	3.015	.288		10.466	.000
	CRR	.397	.092	.634	4.335	.000

a. Dependent Variable: ROA

SOURCE: SPSS, 2025

Table 5 displays the regression coefficients, indicating the relationship between Cash Reserve Requirement (CRR) and Return on Assets (ROA). The constant (B = 3.015, p = 0.000) represents the predicted value of ROA when CRR is zero. This suggests that in the absence of CRR, the baseline ROA is 3.015. The unstandardized coefficient for CRR (B = 0.397, p = 0.000) indicates that for each unit increase in CRR, ROA increases by 0.397 units. This relationship is statistically significant at the 1% level, as reflected by the t-value of 4.335 and the p-value of 0.000. The standardized coefficient (Beta = 0.634) further confirms a moderate positive effect of CRR on ROA, aligning with previous findings on the significance of CRR as a predictor. The regression coefficients reveal a strong, positive, and statistically significant relationship between CRR and ROA, emphasizing CRR's role in influencing banks' profitability.

Table 6 Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.777[a]	.604	.590	.78427	.604	42.668	1	28	.000	1.516

a. Predictors: (Constant), CRR

b. Dependent Variable: ROE

SOURCE: SPSS, 2025

Table 6 presents the model summary for the regression analysis evaluating the relationship between Cash Reserve Requirement (CRR) and Return on Equity (ROE). The correlation coefficient (R) is 0.777, indicating a strong positive relationship between CRR and ROE. The R Square value of 0.604 shows that 60.4% of the variance in ROE is explained by CRR, demonstrating the model's substantial explanatory power. The Adjusted R Square of 0.590 confirms this robustness, accounting for potential overfitting.

The standard error of the estimate (0.78427) reflects the average deviation of predicted ROE values from actual observations, suggesting relatively accurate predictions. The F Change statistic of 42.668, with a significance level of 0.000, indicates that the model is statistically significant at the 1% level. This confirms that CRR significantly impacts ROE.

The Durbin-Watson statistic of 1.516 is close to the ideal range of 2, suggesting minimal autocorrelation in the residuals and supporting the reliability of the model.

Table 7 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.244	1	26.244	42.668	.000[b]
	Residual	17.222	28	.615		
	Total	43.467	29			

a. Dependent Variable: ROE
b. Predictors: (Constant), CRR

SOURCE: SPSS, 2025

Table 7 presents the ANOVA results for the regression analysis examining the impact of Cash Reserve Requirement (CRR) on Return on Equity (ROE). The F-statistic of 42.668, with a p-value (Sig.) of 0.000, confirms that the model is statistically significant at the 1% level. This indicates that CRR has a meaningful effect on ROE, and the observed relationship is unlikely to be due to random chance. The regression sum of squares (26.244) represents the variation in ROE explained by CRR, while the residual sum of squares (17.222) reflects the unexplained variation due to factors outside the model. Together, these sum to the total sum of squares (43.467), which captures the overall variability in ROE. The mean square for regression (26.244) is substantially higher than the mean square for residuals (0.615), indicating that CRR explains a significant portion of the variance in ROE.

Table 8 Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.148	.248		8.675	.000
	CRR	.514	.079	.777	6.532	.000

a. Dependent Variable: ROE

SOURCE: SPSS, 2024

Table 8 presents the regression coefficients for the relationship between Cash Reserve Requirement (CRR) and Return on Equity (ROE). The constant term (B = 2.148, p = 0.000) indicates that when CRR is zero, the baseline value of ROE is 2.148. This represents the underlying level of equity returns independent of CRR. The unstandardized coefficient for CRR (B = 0.514, p = 0.000) shows that for every unit increase in CRR, ROE increases by 0.514 units. The standardized coefficient (Beta = 0.777) confirms a strong positive effect of CRR on ROE. The t-value of 6.532, with a significance level of 0.000, demonstrates that this relationship is statistically significant at the 1% level.

Table 9 Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.705[a]	.497	.479	1.01941	.497	27.684	1	28	.000	1.541

a. Predictors: (Constant), CRR
b. Dependent Variable: LR
SOURCE: SPSS, 2025

Table 9 summarizes the regression analysis results evaluating the relationship between Cash Reserve Requirement (CRR) and Liquidity Ratio (LR). The correlation coefficient (R) of 0.705 indicates a strong positive relationship between CRR and LR. The R Square value of 0.497 demonstrates that 49.7% of the variability in LR is explained by CRR, highlighting CRR's significant influence. The Adjusted R Square of 0.479 confirms the model's robustness after accounting for potential overfitting.

The standard error of the estimate (1.01941) reflects the average deviation of the observed LR values from the predicted values, suggesting moderate accuracy in the model's predictions. The F Change statistic of 27.684, with a significance level of 0.000, confirms that the model is statistically significant at the 1% level, indicating that CRR has a meaningful impact on LR.

The Durbin-Watson statistic of 1.541 is close to the ideal range of 2, suggesting minimal autocorrelation in the residuals and supporting the reliability of the model.

Table 10 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.769	1	28.769	27.684	.000[b]
	Residual	29.098	28	1.039		
	Total	57.867	29			

a. Dependent Variable: LR
b. Predictors: (Constant), CRR

SOURCE: SPSS, 2025

Table 10 presents the ANOVA results for the regression analysis between Cash Reserve Requirement (CRR) and Liquidity Ratio (LR). The F-statistic of 27.684, with a p-value (Sig.) of 0.000, confirms that the model is statistically significant at the 1% level, indicating that CRR has a meaningful effect on LR.

The regression sum of squares (28.769) represents the variation in LR explained by CRR, while the residual sum of squares (29.098) accounts for the unexplained variation due to factors outside the model. Together, these yield a total sum of squares (57.867), which captures the overall variability in LR.

The mean square for regression (28.769) is substantially higher than the mean square for residuals (1.039), highlighting the strong explanatory power of CRR in predicting changes in LR.

Table 11 Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.886	.322		2.752	.010
	CRR	.538	.102	.705	5.262	.000

a. Dependent Variable: LR

SOURCE: SPSS, 2025

Table 11 provides the regression coefficients for the relationship between Cash Reserve Requirement (CRR) and Liquidity Ratio (LR). The constant term (B = 0.886, p = 0.010) indicates that when CRR is zero, the baseline Liquidity Ratio is 0.886. This represents the inherent liquidity level independent of CRR.

The unstandardized coefficient for CRR (B = 0.538, p = 0.000) shows that for every unit increase in CRR, LR increases by 0.538 units. The standardized coefficient (Beta = 0.705) reflects a strong positive effect of CRR on LR. The t-value of 5.262, with a significance level of 0.000, confirms that this relationship is statistically significant at the 1% level.

Table 12 Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.746[a]	.556	.540	.90074	.556	35.106	1	28	.000	1.535

a. Predictors: (Constant), CRR
b. Dependent Variable: LDR

SOURCE: SPSS, 2025

Table 12 summarizes the regression analysis results for the relationship between Cash Reserve Requirement (CRR) and Loan-to-Deposit Ratio (LDR). The correlation coefficient (R) of 0.746 indicates a strong positive relationship between CRR and LDR, suggesting that changes in CRR significantly influence banks' lending relative to deposits. The R Square value of 0.556 shows that 55.6% of the variability in LDR is explained by CRR, highlighting its substantial impact. The Adjusted R Square of 0.540 confirms the robustness of the model after accounting for sample size. The standard error of the estimate (0.90074) reflects the average deviation of predicted LDR values from observed values, indicating reasonably accurate predictions. The F Change statistic of 35.106, with a significance level of 0.000, demonstrates that the model is statistically significant at the 1% level, affirming the relevance of CRR as a predictor of LDR. The Durbin-Watson statistic of 1.535 is close to the ideal value of 2, suggesting minimal autocorrelation in the residuals and supporting the reliability of the model.

Table 13 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.483	1	28.483	35.106	.000[b]
	Residual	22.717	28	.811		
	Total	51.200	29			

a. Dependent Variable: LDR
b. Predictors: (Constant), CRR

SOURCE: SPSS, 2025

Table 13 presents the ANOVA results for the regression analysis examining the relationship between Cash Reserve Requirement (CRR) and Loan-to-Deposit Ratio (LDR). The F-statistic of 35.106, with a p-value (Sig.) of 0.000, confirms that the model is statistically significant at the 1% level. This indicates that CRR has a meaningful impact on LDR, and the relationship observed is unlikely to be due to random chance. The regression sum of squares (28.483) represents the portion of the total variance in LDR explained by CRR. The residual sum of squares (22.717) captures the unexplained variance attributable to factors not included in the model. Together, these yield a total sum of squares (51.200), representing the overall variability in LDR. The mean square for regression (28.483) is significantly higher than the mean square for residuals (0.811), highlighting the model's effectiveness in explaining the variability in LDR.

Table 14 Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.026	.284		3.608	.001
	CRR	.535	.090	.746	5.925	.000

a. Dependent Variable: LDR

SOURCE: SPSS, 2025

Table 14 provides the regression coefficients for the relationship between Cash Reserve Requirement (CRR) and Loan-to-Deposit Ratio (LDR). The constant term (B = 1.026, p = 0.001) indicates that when CRR is zero, the baseline Loan-to-Deposit Ratio is 1.026, representing the fundamental lending capacity independent of CRR. The unstandardized coefficient for CRR (B = 0.535, p = 0.000) shows that for every unit increase in CRR, LDR increases by 0.535 units. The standardized coefficient (Beta = 0.746) reflects a strong positive effect of CRR on LDR. The t-value of 5.925, with a significance level of 0.000, demonstrates that this relationship is statistically significant at the 1% level.

Hypotheses Testing

H_{01}: CRR has no significant impact on the Return on Assets (ROA) of DMBs in Nigeria.

The regression results (Table 5) show that CRR significantly impacts ROA with an unstandardized coefficient (B = 0.397, p = 0.000). This means that for every unit increase in CRR, ROA increases by 0.397 units. The standardized coefficient (Beta = 0.634) indicates a moderate positive relationship, and the t-value of 4.335 supports the statistical significance of this relationship at the 1% level. The null hypothesis (H_{01}) is rejected. CRR has a significant positive impact on ROA. This result suggests that higher CRR compels banks to optimize asset utilization, driving profitability. As CRR rises, banks may enhance operational efficiency to compensate for the reduced availability of lendable funds.

H_{02}: CRR does not significantly affect the Return on Equity (ROE) of DMBs in Nigeria.

The analysis (Table 8) reveals a significant relationship between CRR and ROE, with an unstandardized coefficient (B = 0.514, p = 0.000). This indicates that for every unit increase in CRR, ROE rises by 0.514 units. The standardized coefficient (Beta = 0.777) highlights a strong positive effect, and the t-value of 6.532 confirms significance at the 1% level. The null hypothesis (H_{02}) is rejected. CRR significantly affects ROE. A strong positive relationship between CRR and ROE implies that banks effectively adjust equity management strategies under higher reserve requirements. This highlights the ability of banks to maintain or even improve shareholder returns despite regulatory constraints.

H_{03}: There is no significant relationship between CRR and the Liquidity Rate (LR) of DMBs in Nigeria.

Table 11 shows that CRR significantly impacts LR, with an unstandardized coefficient (B = 0.538, p = 0.000). For every unit increase in CRR, LR increases by 0.538 units. The standardized coefficient (Beta = 0.705) demonstrates a strong positive relationship, supported by a t-value of 5.262, significant at the 1% level. The null hypothesis (H_{03}) is rejected. CRR has a significant positive relationship with LR. Higher CRR encourages banks to maintain higher liquidity to comply with regulatory reserve requirements. While this supports financial stability, it may reduce the funds available for lending and other revenue-generating activities.

H_{04}: CRR has no significant impact on the Loan-to-Deposit Ratio (LDR) of DMBs in Nigeria.

The findings (Table 14) indicate that CRR significantly impacts LDR, with an unstandardized coefficient (B = 0.535, p = 0.000). This implies that for each unit increase in CRR, LDR increases by 0.535 units. The standardized coefficient (Beta = 0.746) confirms a strong positive effect, and the t-value of 5.925 supports statistical significance at the 1% level. The null hypothesis (H_{04}) is rejected. CRR significantly impacts LDR. A positive relationship between CRR and LDR suggests that banks optimize their lending strategies to balance reserve requirements with deposit mobilization. This relationship underscores CRR's influence on lending practices and credit allocation.

Discussion of Findings

The study examined the impact of the Central Bank of Nigeria's (CBN) Cash Reserve Requirement (CRR) on the financial performance of Deposit Money Banks (DMBs) in Nigeria, focusing on Return on Assets (ROA), Return on Equity (ROE), Liquidity Rate (LR), and Loan-to-Deposit Ratio (LDR). These findings align with the theoretical foundation of the study—Monetary Theory and Resource Dependence Theory—and provide critical insights into the nuanced dynamics between CRR and financial performance.

The findings reveal a statistically significant positive relationship between CRR and ROA (B = 0.397, p = 0.000). This suggests that higher CRR levels are associated with increased asset efficiency, aligning with Resource Dependence Theory, which posits that organizations adapt to resource constraints by optimizing available resources (Pfeffer & Salancik, 1978). Banks facing higher CRR requirements likely enhance asset utilization to sustain profitability. Empirical studies support this observation, with Obi et al. (2022) and Salami (2023) noting that DMBs employ strategic measures to mitigate CRR-induced constraints, leading to improved operational efficiency. However, regional variations may moderate this relationship, as Adamu and Suleiman (2023) highlighted that banks in economically vibrant regions better absorb CRR impacts.

The study also establishes a strong positive relationship between CRR and ROE (B = 0.514, p = 0.000). This finding is consistent with Monetary Theory, which emphasizes the regulatory role of monetary policies in shaping financial outcomes. By restricting excess liquidity, CRR policies compel banks to optimize equity returns to maintain shareholder confidence. This aligns with findings by Yusuf and Osagie (2024) and Adebayo et al. (2022), who observed diminished equity efficiency under stringent CRR conditions. However, these studies also suggest that other factors, such as capital adequacy and market conditions, can interact with CRR to influence ROE. This highlights the need for tailored equity management strategies to sustain profitability amidst regulatory constraints.

The results indicate a significant positive effect of CRR on LR (B = 0.538, p = 0.000), supporting the idea that higher reserve requirements enhance liquidity stability. This is consistent with Alabi et al. (2023), who observed that stringent CRR policies encourage banks to maintain higher

liquidity buffers to meet short-term obligations. Resource Dependence Theory further explains this finding by emphasizing the importance of adaptive liquidity management in response to resource constraints. However, while higher liquidity ensures regulatory compliance, it may limit the availability of funds for lending and investment, as noted by Egbule et al. (2021). These findings underscore the trade-off between maintaining liquidity stability and optimizing lending capacity under stringent reserve requirements.

The study finds that CRR significantly impacts LDR (B = 0.535, p = 0.000), with higher CRR levels associated with increased lending efficiency. This relationship aligns with Monetary Theory, which suggests that credit availability is a key macroeconomic outcome influenced by CRR. Empirical studies by Eze (2023) and Omotayo et al. (2023) corroborate this finding, highlighting that CRR policies restrict funds available for lending, particularly to priority sectors such as agriculture and manufacturing. However, the ability of banks to sustain lending practices under high CRR conditions depends on their resource management capabilities, as observed by Adamu and Suleiman (2023). Diversified revenue streams and robust credit allocation strategies are critical for maintaining healthy LDR levels under restrictive policies.

The findings align seamlessly with the dual theoretical framework of the study. Monetary Theory emphasizes the macroeconomic rationale behind CRR policies, demonstrating their role in liquidity management, inflation control, and credit allocation. The positive relationships between CRR and financial performance metrics reflect the systemic impact of CRR in stabilizing the banking sector while enforcing regulatory compliance. Conversely, Resource Dependence Theory provides a microeconomic perspective, illustrating how banks adapt to resource constraints by enhancing efficiency and optimizing resource allocation. This dual theoretical lens offers a comprehensive understanding of CRR's impact, capturing both structural and operational dimensions of banking performance.

The study extends existing research by addressing gaps highlighted in previous studies. Unlike aggregated analyses that overlook individual bank characteristics, this study provides nuanced insights into how CRR influences specific performance metrics. It also accounts for adaptive strategies, as suggested by Chukwu and Omoregie (2023), emphasizing the role of resource management in mitigating CRR-induced challenges. Furthermore, the findings offer practical insights for policymakers, demonstrating the need to balance liquidity control with profitability objectives to foster financial stability and economic growth.

CONCLUSION AND RECOMMENDATIONS

This study examined the impact of the Central Bank of Nigeria's (CBN) Cash Reserve Requirement (CRR) on the financial performance of Deposit Money Banks (DMBs) in Nigeria, focusing on key metrics such as Return on Assets (ROA), Return on Equity (ROE), Liquidity Rate (LR), and Loan-to-Deposit Ratio (LDR). The findings reveal that CRR significantly influences all four metrics, underscoring its critical role in shaping profitability, liquidity, and lending practices.

The results align with both Monetary Theory and Resource Dependence Theory, offering a dual perspective on the systemic and operational implications of CRR. While CRR promotes financial stability by enforcing liquidity controls, it also compels banks to optimize resource management to sustain performance under restrictive conditions. These insights provide a nuanced understanding of how regulatory policies impact the banking sector and highlight the trade-offs between monetary stability and profitability.

Policymakers should balance CRR adjustments to ensure liquidity controls do not overly hinder profitability and lending. Banks should invest in innovative financial technologies to enhance efficiency and adapt to CRR constraints. The CBN should offer sector-specific interventions, such as reduced reserve requirements, to support critical industries like agriculture and manufacturing. Diversifying revenue streams and prioritizing non-interest income channels can help banks maintain profitability. Regular evaluations of CRR policies, with stakeholder feedback, will ensure they remain effective and aligned with Nigeria's economic needs.

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