# Liquidity Problems and Performance of the Nigeria Deposit Money Banks

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#### Abstract

The study examined the extent to which liquidity problem impacted deposit money bank performance. This study adopts an ex-post facto research design since it relies on historical data. The study utilizes secondary data obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin for the period 2008 to 2023. This source provides reliable and consistent financial indicators relevant to the Nigerian banking sector. The population of this study consists of all deposit money banks operating in Nigeria. However, the study focuses on the banking sector as a whole rather than individual banks. The study involves one dependent variable and four independent variables, defined as follows: Return on Equity (RETE). Independent variables: liquidity ratio (LIOR), cash reserve ratio (CASR), non-performing loans (NOPLs) and loan-todeposit ratio (LOAR). The study employs time series econometric techniques, including: descriptive statistics, correlation test, multicollinearity test (variance inflation factor - VIF), heteroskedasticity test (Breusch-Pagan test) and ordinary least squares (OLS) to assess the impact of liquidity variables on return on equity. The test was carried out with econometric views version 9.0. The OLS results show that, LIQR has a positive but not significant effect on RETE. CASR has negative and non-substantial effect on RETE. NOPLs show positive but non substantial effect, LOAR shows adverse but substantial effect. From all indications, LIQR and NOPLs has constructive relationship to RETE. Whereas, CASR and LOAR has adverse relationship with RETE. Although at 5% level of significance only LOAR scaled through the study concludes that effective loan management is critical in enhancing bank profitability, as excessive loan issuance relative to deposits negatively impacts return on equity. The study recommends: optimize loan-todeposit ratio; improve credit risk management; review liquidity and cash reserve strategies and enhance model specification for future research.

Key Words: Liquidity, Problems, Loans, Ratio, Reserve

#### Introduction

The Nigerian banking sector plays a pivotal role in the nation's economic development by facilitating financial intermediation, mobilizing savings, and providing credit to various sectors. However, the sector has faced significant challenges related to liquidity management, which have implications for the performance and stability of Deposit Money Banks (DMBs). Liquidity ratio (LIQR) assesses a bank's capacity to meet its short-term obligations without incurring unacceptable losses. A higher liquidity ratio indicates a stronger ability to cover immediate liabilities, thereby reducing liquidity risk (Aroghene & Onuorah, 2023). Effective liquidity management ensures that banks can fulfill withdrawal demands and other short-term commitments, which is crucial for maintaining depositor confidence and overall financial stability.

Loan-to-deposit ratio (LOAR) measures the proportion of a bank's loans to its deposits. An elevated LOAR suggests that a bank has issued a large portion of its deposits as loans, potentially leading to liquidity constraints if not properly managed. Conversely, a lower LOAR may indicate underutilization of available funds, which could affect profitability. Striking the right balance in the LOAR is essential for optimizing both liquidity and earnings. Meanwhile, cash reserve ratio (CASR) is the ratio mandated by the Central Bank of Nigeria (CBN), the ratio dictates the percentage of a bank's total deposits that must be held in reserve and not lent out. Adjustments to the ratio can influence the liquidity available to banks for lending and investment activities. For instance, an increase in the (CASR) means that banks have less liquidity to deploy, which can impact their ability to generate income through loans and other assets.

Interestingly, non-performing loans (NOPLs) are loans for which the borrowers are not making interest payments or repaying any principal. A high level of NOPLs can strain a bank's liquidity, as the expected cash inflows from these assets are not realized. This situation necessitates the allocation of additional resources to cover potential losses, thereby affecting the bank's financial performance and stability.

Recent studies have explored the relationship between liquidity management and bank performance in Nigeria. For example, a study by Aregbesola et al. (2024) examined the impact of liquidity risk and leverage on the financial performance of listed DMBs in Nigeria. The findings indicated that effective liquidity risk management positively influences profitability, while excessive leverage adversely affects financial outcomes (Erhijakpor & Aroghene, 2023). Olofin et al. (2024) investigated the relationship between liquidity risk and profitability among Nigeria's listed DMBs over a 16-year period. The study found a significant positive relationship between the cash reserve ratio, loan-to-deposit ratio, and profitability, suggesting that prudent liquidity management practices are essential for enhancing bank performance.

Despite the role of the banking sector in shaping economic development, Deposit Money Banks (DMBs) in Nigeria have encountered significant liquidity challenges that threaten their operational stability and financial performance. Efemena and Augustine (2024) highlighted that the liquidity levels of Nigerian DMBs are not only crucial to investors and the banks themselves but also to the broader economy. Their research indicated a significant positive relationship between the cash reserve ratio, loan-to-deposit ratio, and profitability of these banks. Conversely, the liquidity ratio

was found to have a negative but insignificant relationship with profitability, suggesting that while certain liquidity measures enhance performance, others may not have the intended effect.

Further compounding the issue, the Central Bank of Nigeria (CBN) has mandated that banks with international operations must have a minimum capital of N500 billion by March 2026, while nationwide banks are required to maintain N200 billion, and regional banks N50 billion. This directive has prompted Nigerian banks to explore various strategies to bolster their balance sheets, including rights issues, mergers, and license downgrades. While larger banks may find it easier to meet these requirements, mid-tier banks could face significant challenges, potentially leading to industry consolidation. Hence the study examined the extent to which liquidity problem has impacted deposit money bank performance (return on equity) over the period study with the used of variables such as: Liquidity ratio (LIQR),Loan-to-deposit ratio (LOAR), cash reserve ratio (CASR) and non-performing loans (NOPLs).

## **Conceptual Review**

Liquidity management is a critical function within Deposit Money Banks (DMBs), involving strategies to ensure the availability of sufficient liquid assets to meet short-term obligations without incurring significant losses. Effective liquidity management balances assets and liabilities, maintaining depositor confidence and financial stability.

Return on Equity (ROE): is a key financial performance metric that measures a bank's ability to from shareholders' equity. generate profits its It is calculated as: ROE=Net Income/Shareholders' Equity. A higher ROE indicates that a bank is effectively using its equity capital to generate profits. It's particularly important for investors, as it reflects the bank's profitability and efficiency in using shareholder funds to drive earnings. Liquidity Ratio (LIQR), Cash Reserve Ratio (CASR), Non-Performing Loans (NOPLs) and Loan-to-Deposit Ratio (LOAR) has tendencies of influencing the return on equity. To Demirguc-Kunt and Detragiache (1998) higher ratios may lower ROE due to underutilization of assets, while lower ratios increase risk and may reduce ROE if liquidity issues arise. Also, A higher Cash Reserve Ratio (CASR) reduces ROE by limiting lending activities, while a lower ratio increases risk but may boost ROE if managed well (Adesina, 2016). Whereas, Higher NOPLs decrease ROE by increasing provisions for loan losses and reducing net income (Wasylenko, 2012). Similarly, a higher loan to deposit ratio (LOAR) (within reason) can increase ROE by leveraging deposits for loans, but excessive LDR can expose the bank to liquidity risks that may reduce ROE (Demirguc-Kunt and Huizinga, 1999). In the context of Nigerian DMBs, key factors influencing liquidity management include:

**Liquidity Ratio (LIQR):** This ratio measures a bank's ability to cover its short-term obligations with its most liquid assets. A higher LIQR indicates a stronger liquidity position, suggesting that the bank can more easily meet immediate financial demands. A recent study by Ahmed and Usman (2024) found that effective liquidity management positively impacts the financial performance of Nigerian DMBs.

**Cash Reserve Ratio (CASR):** Mandated by the Central Bank of Nigeria, the CRR specifies the proportion of a bank's deposits that must be held in reserve and not lent out. Adjustments to the

CRR can directly impact a bank's liquidity by altering the amount of funds available for lending and investment. Aregbesola et al. (2024) highlighted that changes in CRR significantly affect the liquidity and profitability of Nigerian banks.

**Non-Performing Loans (NOPLs):** These are loans on which borrowers are not making interest payments or repaying any principal. A high level of NOPLs can strain a bank's liquidity, as the expected cash inflows from these assets are not realized. Effemena and Augustine (2024) emphasized that managing NOPLs is crucial for maintaining liquidity and ensuring the financial health of banks.

**Loan-to-Deposit Ratio (LOAR):** This ratio compares a bank's total loans to its total deposits, providing insight into its lending practices relative to its deposit base. A higher LOAR may indicate aggressive lending, which could lead to liquidity challenges if not properly managed. Olofin et al. (2024) observed a significant positive relationship between LOAR and profitability among Nigerian DMBs, suggesting that prudent lending practices are essential for maintaining liquidity.

## **2.3 Theoretical Framework**

The theoretical foundation for examining the impact of liquidity problems on Nigerian Deposit Money Banks can be anchored in:

## **Liquidity Preference Theory**

Proposed by John Maynard Keynes in 1936. This theory posits that individuals and institutions prefer holding liquid assets to guard against uncertainty and to take advantage of future investment opportunities. Holding too many liquid assets can lead to lower profitability, while holding too few can result in liquidity shortages, especially during periods of financial stress. Applying this theory to Nigerian DMBs, it becomes evident that effective liquidity management is crucial. Banks must carefully manage their liquidity ratios, loan-to-deposit ratios, and cash reserve requirements to ensure they can meet short-term obligations without sacrificing profitability. Additionally, maintaining a low level of non-performing loans is essential to ensure that the expected cash inflows materialize, thereby supporting the bank's liquidity position. By leveraging the insights provided by the Liquidity Preference Theory, Nigerian DMBs can develop strategies to optimize their liquidity management practices, thereby enhancing their financial performance and stability.

## **Commercial Loan Theory (Real Bills Doctrine)**

Propounded by Adam Smith (1776), later developed by Henry Thornton (1802). This theory states that banks should issue short-term, self-liquidating loans that are backed by real commercial transactions (e.g., trade bills and invoices). The idea is that banks should provide credit only when it is tied to productive economic activities, ensuring that loans generate revenue that can be used for repayment. Nigerian deposit money banks that deviate from this principle by granting excessive long-term loans without adequate liquidity buffers may face liquidity crises. Poor loan management and high levels of non-performing loans (NPLs) could further aggravate liquidity shortages, making it harder for banks to meet depositor withdrawals and short-term obligations.

#### **Financial Intermediation Theory**

Propounded by Gurley and Shaw (1960). This theory explains the role of banks as intermediaries between surplus units (depositors) and deficit units (borrowers). It highlights how banks mobilize funds from depositors and allocate them to investment opportunities, ensuring efficient capital allocation. If Nigerian deposit money banks fail to properly manage the balance between deposits and loan disbursements (i.e., a high loan-to-deposit ratio (LDR) without adequate reserves), they may experience liquidity problems. Poor intermediation efficiency may lead to liquidity mismatches, reducing the ability of banks to meet their obligations.

#### **Bank Run Theory**

Propounded by Diamond & Dybvig (1983). This theory suggests that banks are inherently vulnerable to liquidity crises due to the risk of bank runs, where depositors rush to withdraw their funds simultaneously due to fears of insolvency. When banks do not have enough liquid assets to meet withdrawal demands, they may be forced to sell assets at a loss, further worsening liquidity problems. In the Nigerian banking sector, negative financial news, declining liquidity ratios, or perceived financial instability can trigger depositors to withdraw their funds, leading to severe liquidity problems. This highlights the importance of strong liquidity buffers and effective liquidity management to prevent sudden bank failures.

## **Empirical Review**

Adenuga et al. (2022) examined the impact of loan-to-deposit ratio (LDR) on banks' liquidity in Nigeria. Using time series data, the study employed regression analysis and found that LDR significantly affects bank liquidity. Gabriel et al. (2019) analyzed the relationship between nonperforming loans and profitability of Nigerian commercial banks from 1985 to 2016. Their study utilized panel regression and found that high levels of non-performing loans negatively impact bank profitability. Akinroluyo and Dimgba (2022) explored the connection between banks' liquidity ratio and return on equity in Nigerian deposit money banks. The study applied correlation analysis and found a positive and significant relationship between liquidity ratio and return on equity. Eze and Agu (2020) assessed the impact of liquidity risk on profitability in listed deposit money banks in Nigeria. The study employed the Generalized Method of Moments (GMM) and concluded that liquidity risk negatively affects bank profitability. Balogun (2021) investigated how liquidity management influences banks' profitability in Nigeria. Using multiple regression analysis, the study found that effective liquidity management enhances profitability. Akani and Ordu (2022) examined financial conditions and return on equity in Nigerian deposit money banks. Their study applied panel data econometrics and found that financial conditions significantly influence banks' return on equity. Al-Ardah and Al-Okdeh (2022) studied the effect of liquidity risk on the performance of banks in Jordan. The study employed vector autoregressive analysis and found that liquidity risk negatively impacts bank performance. Algemzi et al. (2022) explored liquidity risk management and financial performance in UAE Islamic banks. Using Structural Equation Modeling (SEM), the study found a strong correlation between liquidity risk management practices and bank performance. Efemena (2024) examined the relationship between loan-to-deposit ratio, liquidity ratio, and bank size on financial performance of Nigerian deposit

money banks. The study used panel regression and found that liquidity indicators significantly affect financial performance. Adeyemi and Olowookere (2022) investigated liquidity risk management and financial performance of listed Nigerian deposit money banks. Using panel data regression, the study found that effective liquidity risk management enhances financial stability.

Aroghene and Akpoyibo (2023) explore Naira swap objectives and impact on the performance of small and medium scale enterprise and found that naira hoarding and inflationary pressure appeared to have weak negative impact on the performance. Imene and Udjo-onovughakpo (2023) investigated Up shoot of conflict management (CM) approach on employee productivity in Nigeria tertiary institution and found that join forces and accommodation style statistically influences productivity. Olofin et al. (2024) assessed liquidity risk and profitability in listed deposit money banks in Nigeria. The study applied cointegration analysis and found that liquidity risk significantly affects profitability. Bassey and Moses (2024) analyzed liquidity management and its impact on the performance of Nigerian deposit money banks. Using multiple regression analysis, the study found that liquidity management is crucial for bank sustainability. Chinweoda et al. (2020) studied liquidity management and the performance of Nigerian deposit money banks. The study employed panel data estimation and concluded that poor liquidity management negatively affects banks' efficiency. Imene (2023) examine impact of performance evaluation system on employee performance and showed that established performance standard and decision making has significant effect. Adegbie and Adesanmi (2020) examined liquidity management and corporate sustainability of listed oil and gas companies in Nigeria. Using regression analysis, the study found that liquidity management plays a key role in corporate survival. Adesina and Adewumi (2022) investigated the effect of liquidity management on financial performance in selected Nigerian deposit money banks. The study employed econometric analysis and found a significant relationship between liquidity ratios and profitability. Ajose and Balogun (2021) analyzed liquidity management and financial performance of Nigerian deposit money banks. Using panel data regression, the study found that efficient liquidity management leads to higher profitability. Oladele and Adebayo (2023) explored the effect of the cash reserve ratio on bank profitability in Nigeria. The study used a time series approach and found that an increase in the cash reserve ratio reduces bank profitability. Obinna and Nwachukwu (2022) examined nonperforming loans and bank stability in Nigeria. Using vector error correction modeling, the study found that non-performing loans pose a threat to financial stability. Yusuf and Ibrahim (2023) assessed the impact of liquidity risk on return on equity in Nigerian banks. Their study employed econometric techniques and found that higher liquidity risk reduces return on equity. Omolara and Kolawole (2024) investigated the effect of liquidity indicators on bank financial performance. Using regression analysis, the study found that maintaining adequate liquidity enhances bank profitability.

## **Research Methodology**

This study adopts an ex-post facto research design since it relies on historical data to examine the impact of liquidity-related variables on the performance of Nigerian deposit money banks. This design is appropriate because it allows for the analysis of existing financial data without manipulation of variables. The study utilizes secondary data obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin for the period 2008 to 2023. This source provides reliable and

consistent financial indicators relevant to the Nigerian banking sector. The population of this study consists of all deposit money banks operating in Nigeria. However, the study focuses on the banking sector as a whole rather than individual banks. The sample is determined by the availability of data from the CBN Statistical Bulletin within the study period. The study involves one dependent variable and four independent variables, defined as follows: Return on Equity (RETE): This measures the profitability of banks in relation to shareholders' equity and is a key indicator of bank performance. Independent variables: liquidity ratio (LIQR), cash reserve ratio (CASR), non-performing loans (NOPLs) and loan-to-deposit ratio (LOAR). The study employs time series econometric techniques, including: Descriptive Statistics used to summarize the data and provide insights into the distribution, mean, standard deviation, and other diagnostics test such as multicollinearity test (variance inflation factor - VIF), heteroskedasticity test (Breusch-Pagan test). Ordinary Least Squares (OLS) Regression applied to assess the impact of liquidity variables on return on equity.

To examine the relationship between liquidity indicators and bank performance, the study adopts an econometric model based on multiple regression analysis. The functional form of the model is specified as:

RETEt	= (LIQR, CASR, NOPL, LOAR)	equation (1)

RETEt = $\beta_0 + \beta_1 LIQR_t + \beta_2 CASR_t + \beta_3 NOPLst + \beta_4 LOAR_t + \varepsilon_t$  equation (2)

Where: RETEt = Return on Equity at time t, LIQRt = Liquidity Ratio at time t, CASRt = Cash Reserve Ratio at time t, NOPLst= Non-Performing Loans at time t, LOARt = Loan-to-Deposit Ratio at time t,  $\beta 0$  = Constant term,  $\beta 1$ , $\beta 2$ , $\beta 3$ , $\beta 4$  = Coefficients of independent variables,  $\epsilon t$  = Error term.

	RETE	LIQR	CASR	NOPLS	LOAR
Mean	1.373412	51.96232	17.32813	0.910285	62.32569
Median	1.342620	47.97672	21.25000	0.923169	61.08652
Maximum	1.760799	104.2024	27.50000	1.268812	86.91184
Minimum	1.098990	26.39276	1.000000	0.477121	37.55947
Std. Dev.	0.166548	18.98186	9.693090	0.289149	14.16881
Skewness	1.373141	1.147459	-0.586968	-0.122223	0.067701
Kurtosis	4.720209	4.652027	1.893186	1.355754	2.385420
Jarque-Bera	7.000787	5.330564	1.735443	1.842199	0.264028
Probability	0.030186	0.069580	0.419907	0.398081	0.876329
Sum	21.97460	831.3971	277.2500	14.56455	997.2111
Sum Sq. Dev.	0.416074	5404.666	1409.340	1.254109	3011.327
Observations	16	16	16	16	16

# **Table 1 Descriptive Statistics**

Source: Author's Compilation

Table 1 show the descriptive statistics of the variables. RETE has a mean of 1.3734, indicating the average profitability level. LIQR has a high mean value of 51.96, showing that banks maintain a significant level of liquidity. CASR has a mean of 17.33, suggesting a moderate requirement by the central bank. NOPLs has a mean of 0.9103, which represents the average level of non-performing loans. LOAR has a mean of 62.33, meaning banks loan out a large proportion of their deposits. The skewness and kurtosis values shows that RETE and LIQR are positively skewed. CASR and NOPLS are negatively skewed. The Jarque-Bera test suggests that RETE and LIQR may not be normally distributed (p-values < 0.05).

#### **Table 2 Correlation Analysis**

	RETE	LIQR	CASR	NOPLS	LOAR
RETE	1.000000	-0.091328	-0.327795	0.256625	-0.527047
LIQR	-0.091328	1.000000	0.671405	-0.333077	-0.186360
CASR	-0.327795	0.671405	1.000000	-0.614936	-0.025585
NOPLS	0.256625	-0.333077	-0.614936	1.000000	0.235033
LOAR	-0.527047	-0.186360	-0.025585	0.235033	1.000000

**Source: Author's Compilation** 

Table 2 shows the correlation between the study variables. From the coefficients, RETE has a negative correlation with LIQR (-0.0913), CASR (-0.3278), and LOAR (-0.5270), indicating that as these factors increase, return on equity tends to decrease. Also, RETE has a positive correlation with NOPLS (0.2566), suggesting that higher non-performing loans might be linked to increased profitability, possibly due to high-interest earnings on risky loans. Meanwhile, CASR and NOPLS have a strong negative correlation (-0.6149), meaning higher cash reserve ratios are associated with lower non-performing loans.

## **Table 3 Multicollinearity Test**

Variance Inflation Factors Date: 02/01/25 Time: 17:30 Sample: 2008 2023 Included observations: 16

Variable	Coefficient	Uncentered	Centered
	Variance	VIF	VIF
C	0.066836	51.05445	NA
LIQR	7.80E-06	18.10445	2.013096
CASR	4.32E-05	12.82143	2.908114
NOPLS	0.030507	21.13642	1.826582
LOAR	8.19E-06	25.46502	1.176792

## Source: Author's Compilation

Table 3 test multicollinearity among the variables. The Variance Inflation Factor (VIF) values are within an acceptable range (< 10), suggesting no serious multicollinearity issues. LOAR has the lowest VIF (1.1768), meaning it is not highly correlated with other independent variables. CASR has a higher VIF (2.9081), indicating a moderate correlation with other predictors.

Table 4: Heleroskedasticity Test: Breusch-Pagan-Goulrey	Table 4:	Heterosk	edasticity	Test:	Breusch	-Pagan-	Godfrev
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F-statistic	5.666281	Prob. F(4,11)	0.0100
Obs*R-squared	10.77204	Prob. Chi-Square(4)	0.1892
Scaled explained SS	3.646848	Prob. Chi-Square(4)	0.4559

#### **Source: Author's Compilation**

Table 4 shows Breusch-Pagan-Godfrey test results for the residuals. From the Table, F-statistic = 5.6663 (p-value = 0.1800) suggests the absences of heteroskedasticity. This means the variance of residuals is constant.

#### **Table 5: Regression Results**

Dependent Variable: RETE Method: Least Squares Date: 02/01/25 Time: 17:28 Sample: 2008 2023 Included observations: 16

Variable	Coefficient	Std. Error	t-Statistic	Prob.
С	1.702108	0.258528	6.583857	0.0000
LIQR	5.20E-05	0.002793	0.018634	0.9855
CASR	-0.002800	0.006574	-0.425858	0.6784
NOPLS	0.172534	0.174663	0.987807	0.3445
LOAR	-0.007059	0.002861	-2.467218	0.0313
R-squared	0.446239	Mean depe	ndent var	1.373412
Adjusted R-squared	0.244871	S.D. depen	dent var	0.166548
S.E. of regression	0.144727	Akaike info	o criterion	-0.777626
Sum squared resid	0.230405	Schwarz cr	iterion	-0.536192
Log likelihood	11.22101	Hannan-Qı	inn criter.	-0.765263
F-statistic	2.216038	Durbin-Wa	tson stat	1.957083
Prob(F-statistic)	0.033856			

## Source: Researchers' Compilation, 2025.

Table 5 shows regression results for the study. LIQR (Liquidity Ratio) p value= 0.9855, suggesting liquidity does not significantly impact profitability. CASR (Cash Reserve Ratio) p value = 0.6784, meaning changes in cash reserves do not significantly affect ROE. NOPLS (Non-Performing

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Loans) p value = 0.3445, meaning non-performing loans do not have a statistically significant impact. LOAR (Loan-to-Deposit Ratio) p value = 0.0313, coefficient = -0.0071. This implies that an increase in LOAR reduces return on equity. Also, R-squared (0.4462) explains 44.62% of the variations in ROE. Adjusted R-squared (0.2449) shows that the explanatory power is reduced after adjusting for the number of predictors. F-statistic (2.2160, p = 0.0339): The model is statistically significant, indicating that the predictors jointly explain variations in ROE.

## **Conclusion and Recommendation**

This study investigates how liquidity management, cash reserves, non-performing loans, and loanto-deposit ratios affect bank profitability (RETE). The findings indicate that: The loan-to-deposit ratio (LOAR) significantly reduces bank profitability, implying that banks with excessively high lending relative to deposits experience lower returns. Other variables (LIQR, CASR, and NOPLS) do not have a statistically significant impact on profitability, suggesting that their influence on ROE may be indirect or require additional factors to be considered. The model's overall explanatory power is moderate ( $R^2 = 44.62\%$ ), and diagnostic tests indicate the need for a betterspecified model to improve reliability. Thus, the study concludes that effective loan management is critical in enhancing bank profitability, as excessive loan issuance relative to deposits negatively impacts return on equity.

Based on the findings, the following recommendations are proposed: Banks should balance their lending and deposit levels to ensure profitability; Excessive lending beyond optimal levels should be controlled to avoid negative impacts on ROE. Since NOPLs showed a weak positive correlation with profitability, banks should adopt stricter loan monitoring and risk assessment strategies to prevent high default rates while maximizing interest income. Although LIQR and CASR were statistically insignificant, they remain important in ensuring financial stability. Regulatory authorities should periodically adjust cash reserve requirements to maintain a balance between liquidity and lending. Future studies should consider additional variables such as interest rates, inflation, capital adequacy ratio, or economic growth to improve model accuracy. A larger sample size or advanced econometric techniques (e.g., Generalized Method of Moments (GMM)) can help refine the analysis.

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