Impact of Liquidity Management on the Profitability of Nigeria Listed Deposit Money Banks

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ABSTRACT

This study explored the impact of liquidity management on the profitability of Nigerian banking sector. An ex-post facto research design was adopted, drawing on secondary data from the audited financial statements of eight Deposit Money Banks (DMBS) purposively selected from the 24 banks operating in Nigeria as of 2023. The data spanned a five-year period (2018–2022), enabling a longitudinal analysis of trends over time. The collected data were analyzed using both descriptive and inferential statistics. Descriptive statistics, including tables and standard deviation, were employed alongside inferential techniques such as correlation analysis, multiple regression analysis, and Granger Causality Test. The findings demonstrated a statistically significant positive correlation between liquidity management and profitability of the selected DMBs, indicating that banks with more efficient liquidity management strategies are associated with enhanced profitability. These results contribute to the body of knowledge by offering empirical evidence of the importance of sound liquidity management practice in improving financial performance. The study provides actionable insights for policymakers and financial managers, highlighting the strategic role of effective liquidity management in sustaining long-term profitability in the banking sector.

Keyword: Deposit Money Banks, Liquidity, Profitability, Nigerian

Introduction

In every system, there are major components that are very important for the survival of the system. This is also applicable to the financial system. The financial institution has contributed immensely to the growth of the entire financial system, as they offer an efficient institutional method through which resources can be mobilized and directed from less productive uses to more productive uses. According to Solomon (2022), the main purpose of establishing business is to make profit and not only to make profit but to optimize it therefore all necessary factors responsible for such should be controlled and manage in order to achieve the objective.

John (2020) argued that by management his liquidity position a bank may be able to afford the cost that often accompany an excess as well as deficit liquidity position. In addition, it can display to regulatory as well as investors a logical controlled method of ensuring that the need of the community and the asset of the shareholders are being well managed. Efficiency in banks in terms of liquidity and profitability could be measure through trend analysis and ratio analysis. Some of the ratio includes capitals adequacy asset utilization profitability, liquidity, and cash flow ratio. A proper consideration and analysis of this will give us a base for determining the best position for liquidity and cash management to ensure profitability in banking industry. (Aborede, 2019).

Liquidity management, in the eyes of the monetary authorities, is essential to fulfilling the mandate of monetary and price stability. Adequate liquidity promotes sound banking and financial system which provides a virile platform for sustainable economic growth and development. Liquidity position in a company is measured based on the current ratio and quick ratio. The quick ratio is a reasonable measure of a business's short-term liquidity. The higher quick ratio is, the better the position of the business. The current ratio establishes the relationship between current assets and current liabilities. Normally, a high current ratio is considered to be an indicator of the firm's ability to promptly meet its short-term liabilities (Beck & Hesse 2019). The quick ratio establishes a relationship between quick or liquid assets and current liabilities. Banks indeed require liquidity since such a large proportion of their liabilities are payable on demand (deposits) but typically, the more liquid an asset is, the less it yields (Dzapasi 2020). The level of liquidity maintained by banks must meet minimum regulatory requirements and other routine financial obligations. Liquidity refers to

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an enterprise's ability to meet its current liabilities and it is closely related to the size and composition of the enterprise's working capital position (Kontus & Muhanovic 2019).

Ashraf, Nabeel and Hussain (2021) opined that for banks to achieve maximum benefits, they should find out the highest level of funds to fulfill the short-term requirement from which they can make profit. In essence, therefore, banks effectively manage liquidity so as to increase their profitability. Therefore, managing liquidity entails strategically supplying or withdrawing from the market or circulation an amount of liquidity that is consistent with a desired level of short-term reserve money without impairing the bank's ability to make money or operate profitably (Ajayi & Lawal, 2021). It relies on the daily assessment of the liquidity conditions in the banking system, so as to determine its liquidity needs and thus the volume of liquidity to allot or withdraw from the market.

By investing in various financial assets, deposit money banks can effectively utilize idle funds borrowed from depositors. However, since these deposits are subject to withdrawal at any time, managing such investments to maximize profits poses challenges. If a bank becomes unable to meet its debt obligations, public confidence diminishes, intensifying competition in the financial sector. To navigate this, commercial banks must balance profitability with the need to maintain adequate liquidity to satisfy depositors' demands, especially given the increasing competition in the banking industry (Ajayi & Lawal, 2021). The critical challenge lies in determining the optimal balance where a bank can allocate its assets to achieve both profitability and liquidity. The extent to which liquidity management can enhance the profitability of deposit money banks in Nigeria, especially in the post-consolidation era, has not been thoroughly explored and merits further investigation. In response to this gap, the current research aims to assess the impact of liquidity management on the profitability of deposit money banks in Nigeria.

Research Hypothesis

H_0: Liquidity management does not have a significant impact on the profitability of banks.

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Literature Review

Concept of Liquidity

Liquidity is a fundamental concept in financial management, representing a firm's ability to meet short-term obligations with available assets (Brealey et al., 2019). Understanding liquidity is paramount as it directly influences a bank's financial health and overall stability. Liquidity, in the context of banking, refers to the ability of a bank to meet its short-term obligations promptly. It involves holding sufficient liquid assets to cover withdrawals, maintain confidence, and ensure smooth operations (Boot & Thakor, 2020). Liquidity, in the financial context, is more than just the ability to convert assets into cash. It encompasses the flexibility and efficiency with which a bank manages its assets and liabilities, ensuring it can meet short-term obligations without compromising its long-term viability. Liquidity involves a delicate balance – having enough readily available resources to meet demands while also investing to maximize returns (Bodie et al., 2022).

Liquidity Management

Liquidity management is the proactive orchestration of a bank's assets and liabilities to maintain optimal liquidity levels. It extends beyond merely holding liquid assets; effective liquidity management involves forecasting cash needs, implementing risk mitigation strategies, and ensuring compliance with regulatory requirements. The goal is not only to survive short-term challenges but also to position the bank for sustained growth (Choudhry, 2018). Liquidity management involves the strategic balance of a bank's assets and liabilities to ensure it can meet obligations without incurring excessive costs or risks. It is a proactive approach to safeguarding financial stability (Petersen & Rajan, 2020). Liquidity management refers to the planning measure and control necessary to ensure that the organization maintains enough liquid assets either as an obligation to the customers of the organization so as to meet some obligation incidental to survival of the business or as a measure to adhere to monetary policies of the central bank.

In the view of Olagunju, Adeyanju, & Olabode (2021) where there is a decline in market price of securities or where additional fund is needed to correct the bank reserve position for a very short time, it will definitely be expensive to sell securities than to borrow from another bank. However, most Deposit money banks in their bid not to contravene the regulation

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specifying legal minimum reserve requirement by the supervisory agency and in order to provide against unforeseen large withdrawals, resolve to maintain reserves in excess of their legal requirements. Keeping excess reserve for the purpose of short run safety means to forgo income or earnings therefore Deposit money banks need to manage their reserves adequately through effective liquidity management which involves full utilization of all reserves.

Liquidity Measurement

Liquidity is a measure of the ability and ease with which assets can be converted to cash. The main measures of liquidity current ratio, capital ratio, cash ratio, quick ratio, investment ratio. Various measures gauge liquidity, including the current ratio, quick ratio, and cash ratio. Each measure provides insights into a bank's ability to cover short-term obligations with available assets, contributing to effective liquidity management (Crouhy et al., 2020). Measuring liquidity is multifaceted and goes beyond a single ratio. The current ratio, quick ratio, and cash coverage ratio are tools to assess a bank's liquidity position. Each measure provides a different perspective – the current ratio considers all current assets, the quick ratio focuses on the most liquid assets, and the cash coverage ratio emphasizes the ability to cover short-term liabilities with available cash (Fabozzi et al., 2021). Liquid assets are those that can be converted to cash quickly if needed to meet financial obligations; examples of liquid assets generally include cash, central bank reserves, and government debt. To remain viable, a financial institution must have enough liquid assets to meet its near-term obligations, such as withdrawals by depositors.

Banks Profitability

Banks' profitability is a reflection of their ability to effectively deploy capital, manage risks, and adapt to dynamic market conditions. It is not merely a financial metric but an indicator of the bank's resilience and competitive strength. Liquidity management directly influences profitability by affecting interest income, cost of funds, and the ability to seize profitable opportunities (Saunders & Cornett, 2019). Profitability is a key performance metric for banks, reflecting their ability to generate earnings relative to their costs and capital. The conceptual review examines the factors influencing banks' profitability, including liquidity management strategies (Berger, 2019). Profitability is the ability to make profit from all the business activities of an organization, company, firm, or an enterprise. It measures management

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efficiency in the use of organizational resources in adding value to the business. Profitability may be regarded as a relative term measurable in terms of profit and its relation with other elements that can directly influence the profit. Bank profitability is the ability of a bank to generate revenue in excess of cost, in relation to the bank's capital base. A sound and profitable banking sector is better able to withstand negative shocks and contribute to the stability of the financial system. Banks' profitability is a multifaceted metric encompassing return on assets (ROA), return on equity (ROE), and net interest margin (NIM).

Theoretical Framework

This study is anchored on the Liquidity Theory and the Anticipated Income Theory. Liquidity Theory serves as the foundation for understanding how financial institutions and markets manage the flow of funds. The Market Microstructure Approach, as proposed by O'Hara (2019), provides a theoretical framework that examines the role of market structure in influencing liquidity provision, offering insights into the relationship between liquidity management and the financial performance of deposit money banks. Additionally, the Anticipated Income Theory posits that a borrower's expected future earnings can be leveraged to manage a bank's liquidity. This allows banks to issue loans, with repayments tied to the borrower's anticipated income, paid periodically through regular premiums. Such predictable cash inflows enable banks to maintain relatively high liquidity as observed by Koranteng, (2021). The theory, therefore, provides a framework for evaluating the investment portfolios of deposit money banks and their influence on financial performance.

Empirical Review

Empirical studies, such as those conducted by Al-Tamimi and Al-Mazrooei (2019), have identified specific components integral to liquidity management in banks. These components include cash reserve ratios, asset-liability management strategies, and risk assessment methodologies. Al-Tamimi and Al-Mazrooei's research delves into the nuanced ways in which these components interact and influence a bank's overall liquidity position. Charity (2022) examined the impact of liquidity performance in Deposit money banks using First Bank of Nigeria Plc as case study. Findings indicate that there was a positive relationship between liquidity management and the existence of any banks. Adebayo, Adeyanju, & Olabode (2019) also examined liquidity management and commercial banks' profitability in

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Nigeria. Their findings revealed a significant relationship between liquidity and profitability implying that profitability in Deposit money banks is significantly influenced by liquidity.

Abdullaev (2022) pointed out in his study that in assessing the factors affecting the liquidity of the bank, it is impossible to analyze a particular group of factors, for which it is possible to determine the prospects of bank liquidity based on the analysis of the dynamics of banking. He also noted that the quantitative assessment of liquidity of commercial banks, changes in the liquidity situation based on the assessment of qualitative parameters of the scope of operations and the descriptive assessment of banking can affect the quality of assets, deposit stability, strong capital base and the share of risky assets on the level of liquidity. In the research of Rashidov (2021), the main features, factors and types of liquidity of a commercial bank, the economic significance of the concept under study, the relationship between liquidity indicators, profitability and solvency, the recommendations of the Basel Committee were analysed, the importance of commercial bank liquidity management was discussed.

Empirical evidence, as demonstrated in the study by Flannery and Rangan (2021), has explored the effects of liquidity management on banks' performance. Flannery and Rangan's research investigates how liquidity management strategies influence risk-taking behavior and, consequently, bank performance. By analyzing real-world data, the study offers valuable insights into the trade-offs between liquidity and profitability. Kurawa and Abubakar (2022) examined the impact of liquidity on banks' profitability in Nigeria. Systematic random sampling method was adopted to select five banks over the period 2012 –2021. Linear regression analysis was employed. Results from the study shows the absence of a significant impact between liquidity and profitability among banks in Nigeria.

Agbada and Osuji (2023) investigated the efficacy of liquidity management and banking performance in Nigeria. The researchers used profitability and return on capital employed (ROCE) as proxy variables. Findings from their study indicates that there exists statistically significant relationship between efficient liquidity management and bank performance. They therefore concluded that efficient liquidity management enhances banks soundness. Kasekende and Ating-Ego (2021) in a study conducted on the Ghanaian banking sector found no positive relationship between liquidity trend and profitability and concluded that there is a negative relationship between liquidity and profitability in the Ghanaian banking sector. Madhushani and Wellappuli (2022), investigate the relationship between liquidity

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management and profitability in the banking sector of Sri Lanka. Specifically, the researchers sought to determine whether there was a significant correlation between banks' liquidity ratios and their profitability indicators. This study employed an ex-post facto research design, using secondary data from the audited financial statements of selected Sri Lankan banks. The data spanned several years, and regression analysis was applied to assess the relationship between liquidity management (measured by liquidity ratios) and profitability (measured by Return on Equity and Return on Assets). The results indicated a negligible relationship between liquidity and profitability, suggesting that excess liquidity does not necessarily lead to higher profitability in Sri Lankan banks. This highlights the importance of efficient liquidity control.

Vieira (2020), examine the relationship between liquidity management and profitability in the European banking sector. The researcher sought to explore whether efficient liquidity management could improve long-term profitability for banks. Panel data regression models were employed to evaluate the financial performance of selected banks over a 10-year period. The study used liquidity ratios (such as the current ratio and liquidity coverage ratio) and profitability metrics (such as Return on Assets and Net Profit Margin) to assess the relationship. The study found a positive relationship between liquidity and profitability in the medium to long term, indicating that firms that strategically manage liquidity without compromising operational needs tend to achieve higher profitability.

Lartey, Antwi, and Boadi (2023) investigate the impact of liquidity management on the profitability of banks in Ghana. The researchers sought to determine whether liquidity had a direct influence on the financial performance of banks in Ghana. The study adopted a quantitative research approach, utilizing secondary data from the financial statements of Ghanaian banks. Panel data regression analysis was used to assess the relationship between liquidity (proxied by the liquidity ratio) and profitability (measured by Return on Assets).The study revealed a weak but positive influence of liquidity on profitability. Other variables, such as asset quality and capital adequacy, were also identified as significant factors contributing to profitability.

Ahsan (2022) examined the role of capital adequacy and asset quality in determining the profitability of banks in Pakistan. The study focused on how these factors help banks manage risks and ensure long-term profitability, especially during financial crises. Using a time-series

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dataset, the study conducted regression analysis to assess the impact of capital adequacy ratios and asset quality metrics on profitability indicators such as Return on Equity (ROE) and Return on Assets (ROA). The study found that capital adequacy plays a crucial role in risk management and helps banks withstand economic shocks. Asset quality was also a significant determinant of profitability, as banks with higher asset quality tended to perform better. Macharia (2020) explore the relationship between firm size and profitability in Kenyan commercial banks. The researcher sought to understand whether larger banks performed better due to economies of scale and better liquidity management. A cross-sectional research design were employed with aid of descriptive and inferential statistics statics like regression analysis. The study analyzed data from various Kenyan banks and compared the performance of large and small banks based on their financial metrics. The findings indicated that larger banks tend to have better financial performance due to their ability to diversify portfolios, reduce costs, and implement more effective liquidity management strategies.

Odunayo and Oluwafisayo (2021) assess the bidirectional relationship between liquidity and profitability in Kenyan banks. The study employed the Granger causality test to financial data from Kenyan commercial banks. The analysis was conducted on panel data, and the results were used to assess the direction of the relationship between liquidity ratios and profitability measures. The study revealed no significant bidirectional relationship between liquidity and profitability in Kenyan banks. It concluded that liquidity management does not have a strong direct influence on profitability, and other external factors may be more important in determining bank performance.

Methodology

The study encompassed all Deposit Money Banks (DMBs) listed on the Nigerian Exchange Group. An ex-post facto research design was employed, utilizing secondary data derived from the audited financial statements of eight (8) purposively selected DMBs from the 24 banks operating in Nigeria as of 2022. The selected banks: Access Bank, Eco Bank, First Bank, Fidelity Bank, Guaranty Trust Bank, United Bank for Africa, and Wema bank, Zenith Bank were chosen based on their large size intensity, which enables them to maintain diversified portfolios. These banks were also selected due to their adherence to listing requirements, ensuring the disclosure of relevant financial information needed for the study, as mandated for all listed banks on the Nigerian Exchange Group. The collected data were

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analyzed using both descriptive and inferential statistics. Descriptive statistics, including tables and standard deviation, were employed alongside inferential techniques such as correlation analysis, multiple regression analysis, and Granger Causality Test to establish the relationships and causality between the variables.

Model Specification

The study adopted the granger causality and the multiple regression models.

Regression Model

The regression model were expressed below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where;

Y = Profitability determined through the return on assets (ROA) ratio which is the ratio of net income to total assets

β_0 = Intercept of the equation

$\beta_1 \; to \; \beta_5$ = the regression coefficients

X_1 = Liquidity measured using the ratio of total loans to total assets

X_2 = Capital adequacy measured using the ratio of total capital to total risk weighted assets

X_3 = Assets quality measured using the ratio of nonperforming loans to total loans

X_4 = Bank size determined through the natural log of assets

X_5 = Management efficiency measured using the cost to income ratio

ε = Regression error term

Results and Discussion

Result of Descriptive Statistics

According to the results of the summary statistics presented in table 1, the average return on assets (ROA) DMBs is 1.65%, or 0.01654. The table indicates that the average liquidity is 0.40795, which indicate that the average liquidity of the DMBs is 40.79%. According to the table's results, the average value of assets quality is 0.9909, while the average capital adequacy is 0.23163. The results further show that bank size had an average value of 7.46751 while management quality had an average value of 2.18043 respectively. Since every value

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is less than the suggested value of two, the kurtosis and skewness values show that the date is normally distributed.

Table 1: Descriptive Statistics Study Variables

	ROA	Liquidity	Capital adequacy	Assets quality	Bank size	Management quality
N	80	80	80	80	80	80
Mean	0.01654	0.40795	0.23163	0.09909	7.46751	2.18043
Median	0.01900	0.37400	0.20500	0.07200	7.39300	1.94500
Std. Deviation	0.022828	0.155770	0.104711	0.098256	.720564	3.383679
C.V.	1.3804	0.38184	0.45205	0.99163	0.09649	1.5518
Skewness	-1.507	1.739	1.356	1.132	-0.844	-0.586
Kurtosis	1.151	1.581	1.739	1.534	1.523	1.842
Minimum	-0.098	0.017	0.069	0.000	4.794	-9.704
Maximum	0.073	1.128	0.836	0.616	8.690	9.865

Source: Authors Compilation, (2024).

Correlation result of the relationship between the samples variables

The correlations between liquidity, capital adequacy, asset quality, and return on assets are weak and negative, according to correlation table 2. Additionally, the results indicate that the correlations between bank size, management quality and the return on assets of the deposit money banks are weak and positive.

Table 2: Correlation result of the relationship between the samples variables

	ROA	Liquidity	Capital adequacy	Assets quality	Bank size	Management quality
ROA	1.000					
Liquidity	-0.078	1.000				
Capital adequacy	-0.0136	0.502	1.000			
Assets quality	-0.337	-0.271	-0.101	1.000		
Bank size	0.256	-0.008	-0.226	-0.188	1.000	
Management quality	0.226	-0.093	-0.012	-0.037	-0.040	1.000

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Source: Authors Compilation, (2024).

Granger Causality Test

The granger causality test was employed to test to determine if there was a reciprocal relationship between liquidity and profitability. The Granger causality result on table 3 shows that the p value is 0.0930 and the F statistic is 2.8532, both of which are greater than the significance level of 0.05. This indicates that liquidity is not the primary driver of profitability for Nigeria commercial banks. The findings also demonstrate that liquidity is not caused by profitability. This suggests that there isn't a reciprocal relationship between Nigeria commercial banks' profitability and liquidity.

Table 3: Granger Causality Test

Null hypothesis	F-statistic	Prob.	Casual inference
Liquidity does not granger cause profitability	2.8532	0.0930	No Causality
Profitability does not granger cause liquidity	0.034897	0.8520	No Causality

Source: Authors Compilation, (2024).

Regression Analysis

The regression results presented in table 4, indicate that the coefficient of determination statistics (R square) is 0.225550, meaning that 22.55% of the variation in the dependent variable can be explained by the independent variables. The table also demonstrates that the regression is significant and can be used to forecast the relationship between the dependent and independent variables because the F statistics values is 10.84193 and the p values is (0.0000) which is less than 0.05. The result also shows a negative and insignificant relationship between liquidity and return on assets of selected DMBs. The results also indicate a negative relationship between capital adequacy and the return on assets selected DMBs but insignificant. Finally, the findings from the result show a significant and negative relationship between assets quality and the return on assets of selected DMBs. A positive and significant relationship between management quality and return on asset of selected DMBs were revealed.

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Table 4: Regression Analysis

	Coefficient	*Std. Error*	*t*	*p-value*
Const	−0.0126237	0.0169594	−0.7443	0.4567
Liquidity	−0.0165271	0.0195987	−0.8433	0.3991
Capital adequacy	−0.0150371	0.0254727	−0.5903	0.5550
Assets quality	−0.0771996	0.0151025	−5.112	0.0001
Bank size	0.00588409	0.00218713	2.690	0.0071
Management quality	0.00141989	0.000482225	2.944	0.0032
Mean dependent var	0.016537	S.D. dependent var		0.022828
Sum squared resid	0.070221	S.E. of regression		0.020384
R-squared	0.225550	Adjusted R-squared		0.202637
F(5, 169)	10.84193	P-value(F)		4.66e-09
Log-likelihood	436.0145	Akaike criterion		−860.0290
Schwarz criterion	−841.0403	Hannan-Quinn		−852.3266
Rho	−0.015876	Durbin-Watson		2.025210

Source: Authors Compilation, (2024).

Discussion of Findings

The results indicated a negligible inverse relationship between the liquidity of Nigerian DMBs and their Return on Assets (ROA), suggesting no significant correlation between liquidity and profitability among deposit money banks in Nigeria. This aligns with the findings of Madhushani and Wellappuli (2022), who reported a similarly negligible relationship between liquidity and return on equity in Sri Lankan banking institutions. However, Vieira (2020) found a positive effect of liquidity on profitability, while Lartey, Antwi, and Boadi (2023) observed a weak but positive influence of liquidity on the profitability of banks. The Granger causality test further revealed no bidirectional relationship between liquidity and profitability in Nigerian deposit money banks, corroborating the findings of Odunayo and Oluwafisayo (2021), who discovered no random correlation—whether unidirectional or bidirectional—between liquidity and profitability in Kenyan banks.

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The analysis also showed an insignificant negative relationship between ROA and capital adequacy in Nigerian deposit money banks, indicating no meaningful correlation between capital adequacy and profitability. This negate the opined of Ahsan (2022) emphasizing capital adequacy as a key factor in helping banks withstand shocks during periods of risk. Moreover, the study found a significant inverse relationship between asset quality and ROA, indicating that poorer asset quality is associated with reduced profitability in Nigerian deposit money banks. This outcome align with finding of Ahsan (2022) with affirmed that asset quality is a critical factor for banks, providing insight into the risks posed by debtor exposure. Finally, the results revealed a significant positive correlation between the size of Nigerian deposit money banks and their profitability, demonstrating that larger banks tend to perform better financially. This finding is consistent with Macharia (2020), who concluded that an institution's size significantly enhances its overall performance

Conclusion and Recommendations

Based on the findings, the study concluded that there is a significant positive relationship between effective liquidity management and enhanced profitability, indicating that banks with robust liquidity strategies tend to achieve stronger financial performance. In light of the findings, the study recommended that Nigerian Deposit Money Banks (NDMBs) increase their asset holdings to expand and take advantage of the economies of scale that come with larger operations.

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