**Impact of Liquidity Management on the Profitability Selected Nigerian Deposit Money Banks (NDMBs)**

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**Abstract**

This study examines the impact of liquidity management on the profitability of Nigerian deposit money banks. The research leverages historical financial statements, industry reports, and macroeconomic data to analyze the relationship between liquidity management practices and profitability indicators such as ROA, Liquidity, Capital adequacy , Assets Quality, Bank Size Management, Quality, Management. The study adopted expose facto research design with secondary data sourced from audited financial reports of sampled banks over a 16 years period 2006-2021. Seven (7) Nigerian Deposit Money Banks (NDMBs) constitute the sample using purposive sampling technique. Panel regression analysis techniques were used to test for the relationship between of liquidity management and the profitability of Nigerian deposit money banks. Findings indicate a significant positive relationship between effective liquidity management and enhanced profitability, suggesting that banks with robust liquidity strategies tend to achieve better financial performance. Findings from the result of granger causality showed 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. indicate a significant positive relationship between effective liquidity management and enhanced profitability, suggesting that banks with robust liquidity strategies tend to achieve better financial performance. According to the results of the summary statistics, the average return on assets (ROA) for commercial banks is 1.65%, or 0.01654. The result indicates that the average liquidity is 0.40795, which indicate that the average liquidity of the commercial banks is 40.79%. 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 is less than the suggested value of two, the kurtosis and skewness values show that the date is normally distributed. Coefficients, using the observations 1 - 175 5% critical value (two-tailed) = 0.1484The study highlights the critical role of maintaining optimal liquidity levels to support financial stability and profitability. These insights provide valuable implications for banking sector policymakers and financial managers in Nigeria, emphasizing the need for strategic liquidity management to drive sustainable profit growth.

**Keyword:** Liquidity, Profitability, Nigerian Deposit Money Banks

**1.0** **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) argue 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 is essential for the macroeconomic processes of monetary policy, soundness of the financial system, and economic expansion. Business concerns need effective liquidity management in order to succeed and survive. Liquidity management and profitability are very important issues in the growth and survival of businesses including financial institutions and the ability to handle trade-off between the two is a source of concern for financial managers. (Ajayi & Lawal, 2021). 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 and 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 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 and 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 shortterm 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.

# Statement of Problem

By investing these funds in other classes of financial asset investments, commercial banks are able to put to use the idle funds they have borrowed from lenders. Since these deposits, which the bank has invested for the purpose of maximizing profits, are subject to demand at any time, the business activities of the bank are not conducted without difficulty. When a bank is unable to pay its debts, the public starts to lose faith in them, which will lead to increased competition in the financial sector. Every commercial bank should strive to operate profitably while also meeting the financial needs of its depositors by maintaining adequate liquidity in light of the fierce increase in competition in the banking sector (Ajayi & Lawal, 2021). The problem then becomes how to select the optimum point at which commercial bank can maintain its assets in order to optimize these two objectives.

# Research Questions

Based on the study the following research questions are asked:

1. What factors influence liquidity management?
2. What are the components of liquidity management?
3. How is the relationship between liquidity management and banks profitability?

# Objective of the Study

This study is primarily focused on the liquidity objective, which ensures that it can meet depositor demand while also maximising its value. Therefore, the following objectives of this study are pursued:

1. To identify components of liquidity management.
2. To analyse factor influencing liquidity management of bank.
3. To examine the relationship between liquidity management and profitability of banks.

# Research Hypothesis

From the statement of problem, objective of study and research questions of the study, the following hypothesis are formulated:

**H01:** There is no statistically significant relationship between the components of liquidity management and financial data and practices within organizations. ***Alternative Hypothesis***

**H02:** There are no significant factors that influence liquidity management in banks.

**H03:** Liquidity management does not have a significant impact on the profitability of banks.

# 2.0 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 commercial banks in their bid not to contravene the regulation 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 commercial banks need to manage their reserves adequately through effective liquidity management which involves full utilization of all reserves.

## **2.1.3 Liquidity Measures**

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 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).

## **Deposit Money Banks**

Deposit Money Banks (DMBs) represent the core of the financial system, serving as custodians of public funds and key players in economic development. Their liquidity management practices, therefore, have far-reaching implications for overall financial stability. Understanding the unique characteristics and roles of DMBs is crucial for evaluating the impact of liquidity management on their profitability (Uchendu, 2022). Deposit Money Banks (DMBs) form a critical subset of financial institutions that play a significant role in liquidity management and profitability. Bassey and Moses (2022) examine the liquidity-profitability trade off of deposit money banks in Nigeria using a panel data of 2019-2021. They employed Ordinary Least Squares (OLS) techniques to estimate the variables. Findings from the study revealed that there is statistically significant relationship between bank liquidity measures of current ratio, liquid ratio cash ratio, loan to deposit ratio, loans to asset ratio and return on equity, and observed that when return on asset was used as proxy for profitability, the relationship was statically insignificant. They therefore recommend that banks should evaluate and redesign their liquidity management strategy so that it will not only optimize returns to shareholder’s equity but also to optimize assets of the bank.

**Theoretical Review**

Theoretical frameworks provide a lens through which we can analyze and interpret the intricate relationship between liquidity management and banks' profitability.

## **Liquidity Theory**

Liquidity theory serves as the cornerstone for understanding how markets and financial institutions manage the flow of funds. The Market Microstructure Approach, as proposed by O'Hara (2019), is a theoretical lens that explores the role of market structure in influencing liquidity provision. According to this approach, liquidity is not solely a function of the total volume of transactions but is deeply influenced by market microstructure characteristics, such as bid-ask spreads and trading mechanisms (O'Hara, 2019).

## **Anticipated Income Theory**

Prochnow (2021) formulated this theory and it presupposes that the greatest guarantee for ensuring adequate liquidity is by laying more emphases on the credit worthiness and the earning potential of a borrower (Odunayo & Oluwafeyisayo, 2021). The theory presupposes that the expected earnings of a borrower can be used to manage the bank's liquidity. This enables banks to give out loans because the settlement of those loans are linked to the borrowers expected income and are to be paid periodically and with regular premiums and that will allow the bank to offer a relatively high liquidity when cash inflows are standard and can be anticipated (Koranteng, 2021). Additionally, the anticipated income theory presumes that liquidity can be ensured if planned loan payments are made on prospect income of the borrower. The theory relates loan repayment to income than rely on collateral (Botoe, 2022). The theory also equates intrinsic soundness of term loans, with the growing significance of suitable settlement schedules adapted to the predictable earning of the borrower (Botoe, 2022). The theory asserts that a bank can also manage its liquidity through suitable directing of the issued loans, collect them when they are due and reduce any possibility of delays in repayments. The theory recognizes that certain types of loans have more liquidity than others (Botoe, 2022). This theory has encouraged and helped many deposit money banks to adopt an advanced collection of investment (Odunayo & Oluwafeyisayo, 2021). This theory holds that a bank’s liquidity can be managed through the proper phasing and structuring of the loan commitments made by a bank to the customers. Here the liquidity can be planned if the scheduled loan payments by a customer are based on the future of the borrower. According to Nzotta (2021) the theory emphasizes the earning potential and the credit worthiness of a borrower as the ultimate guarantee for ensuring adequate liquidity. Nwankwo (2019) posits that the theory points to the movement towards self-liquidating commitments by banks. This theory has encouraged many commercial banks to adopt a ladder effects in investment portfolio.

**Empirical Review**

**Components of liquidity management**

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

Abdullaev (2022) points 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.

## **Factors Influencing Liquidity Management**

Researchers differ on the factors that affect the liquidity of commercial banks. According to Zavyalova (2020) many factors affect the liquidity and solvency of a commercial bank, as well as its activities in general, so in order to identify emerging negative liquidity trends, the bank's financial analysts need to identify the main factors that led to these trends. She emphasizes the importance of analyzing the impact of factors and developing recommendations to change banking policy in order to prevent negative consequences.

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. Shyam Bhati, Anura De Zoysa, Wisuttorn Jitaree (2022) have considered the long-term effects of various regulatory, banking-specific and macroeconomic factors on liquidity determination in Indian banks. To this end, in the the authors’ study a regression model in the random effects panel was used and data from Indian banks for 21 years, covering the period from 1996 to 2016 was tested with it. This model examines the impact of regulatory factors, the ratio of cash reserves, and liquidity ratios, noting that Indian banks rely more on asset-based liquidity and less on liability-based liquidity. Wei Feng notes that with the continuous development of the Chinese economy and the deepening of commercial banking reform, all types of commercial banks are also growing. In particular, in his research he highlighted an important factor related to the future development of banks in managing the liquidity risk of commercial banks in the context of increasing competition in the financial market. His research focuses on the strengthening of liquidity risk control in the Chinese banking sector after the 2008 financial crisis and the analysis of factors affecting the liquidity of commercial banks.

## **Effects of Liquidity Management on Banks' Performance**

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. This result is not in consonance with the empirical works of Agbada and Osuji on Nigeria examined above

# 3.0 Methodology

To accomplish the stated objective, a descriptive research design was adopted. A descriptive design provides the general idea and gives some valuable pointers as to what variables are worth testing quantitatively. Additionally, a descriptive design allows the researcher to explain the determination of measurements extensively or scores using a variety of statistical techniques (Cooper & Schindler, 2019). This research targets a population of all the commercial banks in Nigeria. Based on the Nigerian banking sector annual supervision report (2022) there are 24 commercial banks available in Nigeria as at 31 December 2022. Data was obtained from published accounting reports of the 24 commercial banks. The sample size is determined using the formula for a finite population. A stratified random sampling is employed to select a representative sample from the population.Data for the study were collected mainly from secondary sources as they were obtained. from five (5) sampled Deposit Money Banks’ financial reports and Central Bank of Nigeria (CBN) Statistical Bulletin for a period of ten years (2018 - 2022). The sampled banks are Fidelity Bank, Guaranty Trust Bank, United Bank for Africa, Unity Bank as well as Diamond Bank. The choice of the banks was done in such a way so as to make it representative of the whole banks in Nigeria hence banks were drawn from the old banks as well as the new banks. The five banks financial statements were obtained from their databases for the ten-year period (2018 - 2022). A structured questionnaire is designed to collect quantitative data on liquidity management components, factors influencing liquidity management, and profitability indicators. The questionnaire will undergo pilot testing to assess clarity, relevance, and reliability. Validity is ensured through content validity, expert review, while reliability is assessed through test-retest. Analysis of data was done through descriptive statistics, the Karl Pearson correlation, the granger causality test and the multiple linear regressions using MS Excel. Descriptive statistics was used to summarize the data using mean, minimum values, maximum values and the standard deviation. The Karl Pearson correlation was adopted to determine the degree of association among the research variables.

## **Model Specification**

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

### **Regression Model**

The regression model will be generated in the following way

𝑌 = 𝛽0 + 𝛽1𝑋1 + 𝛽2𝑋2 + 𝛽3𝑋3 + 𝛽4𝑋4 + 𝛽5𝑋5 + 𝜀

Where;

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

𝛽0 = Intercept of the equation

𝛽1 𝑡𝑜 𝛽5 = the regression coefficients

𝑋1 = Liquidity measured using the ratio of total loans to total assets

𝑋2 = Capital adequacy measured using the ratio of total capital to total risk weighted assets

𝑋3 = Assets quality measured using the ratio of nonperforming loans to total loans

𝑋4 = Bank size determined through the natural log of assets

𝑋5 = Management efficiency measured using the cost to income ratio

𝜀 = Regression error term

**Test of Significance**

The F - test statistic and the t - test statistic was employed to establish the significance of the whole equation and of the study variables respectively. The test was carried out at the 95% confidence level. This is usually tested using the following statistics:

𝑀𝑆𝑅

𝐹∗ =

𝑀𝑆𝐸

To test the significance of the relationship between the dependent and independent variables, the critical value of 𝐹 and the test statistic are compared taking cognizance of the degree of freedom 𝑘 and 𝑛 − 𝑘 − 1. Thus, if the absolute value of the 𝐹 statistic is less than the absolute value of the critical value of 𝐹, the null hypothesis 𝐻0 is accepted otherwise 𝐻0 is rejected

## **Table 1: Variable, Definition and Meaning**

|  |  |  |
| --- | --- | --- |
| **Variables**  | **Definition**  | **Meaning**  |
| ROA  | Return on Assets  | Profit after Tax/Net income divided by average total assets  |
| LTA  | Loan to Total Assets Ratio  | Total Loan and Advances divided by Total Assets  |
| LR  | Liquidity Ratio  | Using one of the divisions of liquidity ratio which is current ratio (Current assets divided by current liabilities)  |
| LTD  | Loan to Deposit Ratio  | Total Loan divided by Total Deposit  |

**4.0 DATA ANALYSIS, RESULTS AND INTERPRETATION**

## **Response Rate**

The study targeted the 24 deposit money banks banks available in Nigeria as at December 31, 2022. compete data was obtained from 5 commercial banks therefore achieving a response rate of 83.3%

**Result of Descriptive Statistics**

According to the results of the summary statistics, the average return on assets (ROA) for commercial banks is 1.65%, or 0.01654. The table indicates that the average liquidity is 0.40795, which indicate that the average liquidity of the commercial banks 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 is less than the suggested value of two, the kurtosis and skewness values show that the date is normally distributed.

**Table 2: Descriptive Statistics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   | ROA   | Liquidity  | Capital adequacy  | Assets quality  | Bank size  | Management quality  |
| N  | 175  | 175  | 175  | 175  | 175  | 175  |
| 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  |

## **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 3. Additionally, the results indicate that the correlations between bank size, management quality and the return on assets of the commercial banks are weak and positive. There is not multicollinearity among the study variables when the generated correlation values are smaller than the cut point of 0.7 Correlation Coefficients, using the observations 1 - 175 5% critical value (two-tailed) = 0.1484 for n = 175

**Table 3: 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  |

## **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 4.3 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. The study results are displayed in Table 4.3

## **Table 4 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  |

## **Regression Analysis**

The regression results on 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 4.66 × 109 which is less than 0.05. Model 1: OLS, using observations 1-175, dependent variable: ROA, HAC standard errors, bandwidth 4 (Bartlett kernel) The table also shows a negative and insignificant relationship between liquidity and retur on assets of Nigeria commercial banks. The results also indicate that the relationship between capital adequacy and the return on assets of the Nigeria commercial banks is negative and insignificant. Finally, the findings show a significant and negative relationship between assets quality and the return on assets of Nigeria commercial banks, a positive and significant relationship between bank size and return on assets, and a positive and significant relationship between management quality and return on asset of Nigeria banks

## **Table 4.5 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  |

 **Discussion of Findings**

The results showed that there is a negligible inverse relationship between Nigeria commercial banks’ liquidity and ROA. This finding indicates that there is no significant relationship between the profitability and liquidity commercial banks in Nigeria. Accordingly, Madhushani and Wellappuli (2022) discovered that in Sri Lankan banking institutions, the relationship between return on equity and liquidity was negligible. Vieira (2020) however established that liquidity had a positive effect on profitability. According to Lartey, Antwi and Boadi (2023) established that liquidity had a weak and positive influence of banks profitability. The granger causality test revealed that there was no bidirectional relationship between liquidity and profitability of commercial banks in Nigeria. Similar results were obtained by Odunayo and Oluwafisayo (2021), who discovered that there was no random correlation between the profitability and liquidity of Kenya banks in either a unidirectional and bidirectional manner.

The results revealed that there is an insignificant negative relation between ROA and capital adequacy of commercial banks in Nigeria. This finding suggests that there is no meaningful correlation between Nigeria commercial banks’ capital adequacy and profitability. Ahsan (2022) however observed that capital adequacy dimensions are important factors in helping banks understand the shock attractive capability during times of risk. The ratio of equity to total assets indicates how much capital a company has. The results also revealed a noteworthy inverse relationship between Nigeria commercial banks’ assets quality and return on assets (ROA). This finding indicates that there is an inverse and significant relationship between the profitability and commercial banks in Nigeria assets quality. Ahsan (2022) affirms that banks, being highly dependent on asset quality, can gain a comprehensive understanding of the risk associated with debtor exposure by taking these dimensions into account

Furthermore, the results demonstrate a noteworthy positive correlation between ROA and the size of Nigeria’s commercial banks. This observation indicates that there is a direct and significant relationship between the profitability and size of the commercial banks in Nigeria. Macharia (2020) came to the conclusion that a company’s size greatly improves its performance. Large banks are assumed to have more advantages as compared to their smaller rivals and have a stronger bargaining capability and making it easier for them to get benefits from specialization and from economies of scale and scope. The results show a strong positive correlation between Nigeria commercial banks’ ROA and management caliber. This result indicates that there is a direct and significant relationship between the profitability and management quality of a commercial banks in Nigeria. Misra and Aspal (2021) state that competent and competent management is necessary for the bank to run smoothly and decently. When bank expenses are kept under control and productivity rises, there is ultimate likelihood of achieving higher profits.

## **Conclusion and Recommendations**

Based on this finding the study concludes that there is no significant relationship between the profitability and capital adequacy of commercial banks in Nigeria. Furthermore, the results indicated a statistically significant inverse relationship between ROA and the asset quality of Kenya's commercial banks. The study comes to the conclusion that there is a significant and inverse relationship between the assets quality and profitability of Nigeria commercial banks. Furthermore, the results of the study demonstrated a statistically significant positive correlation between ROA and the size of Nigeria’s commercial banks. Based on this finding the study concludes that there is a direct and significant relationship between the profitability and size of the commercial banks in Nigeria. Finally, the findings of the research revealed that there is a significant positive relation between ROA and management quality of commercial banks in Nigeria. The study comes to the conclusion that the profitability and management caliber of Nigeria’s commercial banks are directly and significantly correlated based on these findings. In light of this finding, the study recommends that commercial banks increase their asset holdings in order to grow larger and take advantage of the economies of scale that come with larger businesses.

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