

LIQUIDITY MANAGEMENT AND PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA (2000 -2021)

¹Chukwu, Luke C. PhD. ²Amaefule, Leonard I. PhD. & ³Chilezie, Christiana O.

^{1&2}Department of Accounting, Imo State University, Owerri, Imo State, Nigeria

³United Bank for Africa Plc, Owerri

KEY WORDS

Liquidity; Management; Performance; Cash Reserve Ratio, Return on Equity.

ABSTRACT

This study examined liquidity management and performance of deposit money banks in Nigeria. The general purpose of the study was to examine effect of liquidity management and performance of deposit money banks in Nigeria from (2000-2021). After exhaustive literature review, secondary data was sourced from CBN statistical bulletin. Liquidity management were proxied with liquidity ratio, cash reserve ratio and loan-deposit ratio while performance was proxied with return on equity and return on asset. The study employed ordinary least square (OLS) using SPSS statistical package. Findings reveals that there is positive and insignificant relationship between liquidity ratio (LQR) and return on equity of deposit money banks in Nigeria. There is negative but significant effect of cash reserve ratio (CRR) on return on equity of deposit money banks in Nigeria. There is negative but insignificant relationship between loan to deposit ratio (LDR) and return on equity of deposit money banks in Nigeria.. We therefore concluded that Liquidity management has a negative and insignificant relationship with performance of deposit money banks in Nigeria. The study therefore recommends that DMBs in Nigeria should develop and implement a comprehensive liquidity management framework that incorporates strategies for managing both short-term and long-term liquidity risks. DMBs in Nigeria should explore the use of technology to improve liquidity management processes.

Introduction

There are major components in any systems that are critical to its survival. Profitability and liquidity are two of them. i.e. the firm's ability to pay its investors and shareholders as well as meet its creditors' short-term maturing commitments.

Liquidity is the ability of a company to pay down its current liabilities. It is essential to the efficient operation of a business's operations. Due to its effect on

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businesses' daily operations, studying liquidity is particularly beneficial for both internal and external analysts (Elangkumaran & Karthika, 2013). The amount of profitability of a corporation may depend on how important liquidity is to its performance (Zygmunt, 2013). A corporation must have liquidity since it shows that it can fulfill short-term obligations. According to Ngwu (2006), deposit money banks need liquidity to stay afloat, comply with legal obligations, handle seasonal and unforeseen loan demand, seize unanticipated profit possibilities, and handle unforeseen contingencies. When carrying out these financial obligations, businesses have shown to be good intermediaries between investors and borrowers. The profitability (performance) and liquidity of a company's businesses require the attention and effort of the management team in order for financial intermediation to be effective. Both objectives are in opposition to one another in that a firm's efforts to increase profitability will undoubtedly have an adverse effect on its liquidity and solvency situation, and vice versa (Olagunji, Adenanju, and Olabode 2011).

Every corporate entity wants to make a lot of money, raise its earnings per share (EPS), pay its shareholders, and eventually return money to borrowers (liquidity) when necessary. However, they are faced with the choice of either holding enough money (liquidity) to cover a lot of debts owed to creditors and other unforeseen expenses or appeasing their shareholders by making investments in high-yielding stocks.

The public loses trust in a firm when it fails to meet its financial obligations in terms of liquidity and profitability when they are due, which can hurt its revenues and earnings and lead to fierce competition in the industry. So how does a business simultaneously meet its profitability and liquidity needs?

Maqsood (2016) investigated how liquidity management affects the Pakistani banking industry's profitability. The profitability of banks was found to be significantly impacted by liquidity management. The effect of liquidity management on banks' profitability in Nigeria from 1989 to 2013 is examined by Ikeora and Andabai (2015). The authors confirmed a positive relationship between profitability and liquidity management. Similarly, Bassey (2016) conducted a study on liquidity management and the performance of banks in Nigeria, the study concluded that proper management of liquidity is necessary for survival and successful operations of banks.

From the various research, it is pertinent that some study had a positive impact of liquidity on profitability, some had negative impact, some were done outside Nigeria, that may not be applicable to the Nigeria system, even those done in Nigeria was not a recent work, seeing that many things have changed in the Nigeria banking sector over the years.

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In light of this context, the researcher typically evaluates liquidity management and performance of deposit money banks in Nigeria.

The study aimed at examining liquidity management and performance of deposit money banks in Nigeria.

The specific objectives are to:

- (i) Evaluate the relationship between liquidity ratio and return on equity of deposit money banks in Nigeria.
- (ii) Examine the effect of cash reserve ratio on return on equity of deposit money banks in Nigeria.
- (iii) Evaluate the relationship between loan–deposit ratio and return on equity of deposit money banks in Nigeria.

The study is carried out to provide answers to the following research questions:

The following are the research questions

- (i) What is the relationship between liquidity ratio and return on equity of deposit money banks in Nigeria?
- (ii) What is the effect of cash-reserve ratio on return on equity of deposit money banks in Nigeria?
- (iii) What is the relationship between loan-deposit ratio and return on equity of deposit money banks in Nigeria?

In order to provide empirical answers to the research questions, the following null hypothesis were tested:

H₀₁: Liquidity ratio has no significant relationship with return on equity of deposit money banks in Nigeria

H₀₂: There is no significant effect of cash reserve ratio on return on equity of deposit money banks in Nigeria.

H₀₃: There is no significant relationship between loan-deposit ratio and return on equity of deposit money banks in Nigeria.

Review of Related Literature

Liquidity management is the process of ensuring that a company has adequate liquid assets to meet obligations to customers or to follow the monetary policies of the central bank. This is done by taking the appropriate planning measures and exercising the necessary controls. According to Olagunju, Adeyanju, and Olabode (2011), selling assets will be more expensive than borrowing money from another bank in situations when there is a decrease in the market price of securities or where additional funds are required to correct the bank reserve position for a brief period of time. However, the

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majority of commercial banks decide to maintain reserves above their legal needs in an effort to comply with the regulation defining the legal minimum reserve required by the regulatory agency and to guard against unforeseen and significant withdrawals. Commercial banks must manage their reserves appropriately through proper liquidity management, which entails full utilization of all reserves. Keeping extra reserves for the purpose of short-term safety means forgoing income or earnings.

Any company needs liquidity to survive, but this is especially true for a financial institution as preserving deposits is one of their main responsibilities (Agbada & Osuji, 2013). But the effectiveness of the Central Bank of Nigeria's instrument for managing the quantity of liquidity in the banking system also depends on monitoring and measurement. For instance, during the reserve maintenance period, the instrument must be measured and monitored.

This will make sure that the monetary aggregate that is being targeted is closely related to the base currency. However, because the banking sector lacks a wide area network and banks sometimes deliver their returns late, CBN measurement and maintenance periods are few, and as a result, instruments are not constructed as intended despite their high levels at this time.

In open market operations, the central bank buys and sells securities; its actions affect the amount of reserves in the banking system; a purchase increases non-borrowed reserves, while a sale decreases them. Open market operations are the most potent, adaptable, and precise tool for monetary policy because of these qualities, which include an exchange in the system's reserve with a purchase or sale of assets by the central bank.

Operational Conceptual Framework

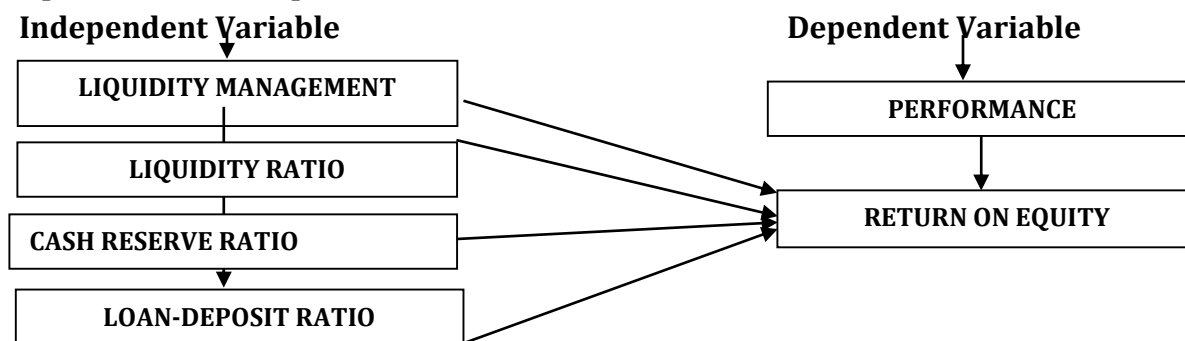


Fig 1: Conceptual Framework.

The importance of liquidity management is further emphasized by Ijomah et al. (2019), who noted that inadequate liquidity can lead to liquidity crises, which can have

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severe consequences for financial institutions and the wider economy. They cited the example of the global financial crisis of 2008, where several banks suffered significant losses due to inadequate liquidity management, leading to a credit crunch and economic downturn. As such, effective liquidity management is crucial for preventing liquidity crises and maintaining financial stability.

In addition to maintaining financial stability, effective liquidity management can also improve the profitability of DMBs. According to Sanni and Olalekan (2017), liquidity management can help DMBs optimize their cash resources, minimize the costs of borrowing, and enhance their revenue-generating activities. The authors noted that DMBs that have effective liquidity management strategies and tools can improve their operational efficiency, reduce their funding costs, and increase their profitability.

Liquidity management is also important for regulatory compliance. According to Chikere et al. (2020), financial institutions, including DMBs, are required by regulators to maintain certain levels of liquidity to ensure that they can meet their obligations to depositors and other creditors. Regulators impose liquidity requirements to prevent financial institutions from taking excessive risks, which could lead to insolvency and systemic risk. As such, effective liquidity management is crucial for DMBs to comply with regulatory requirements and avoid penalties or sanctions.

There are various ratios used to measure liquidity according to which includes Current Ratio, Quick Ratio and Cash Ratio.

Current ratio is the simplest and popular financial ratio used to test a company's liquidity (also referred to as its current or working capital position) by deriving the proportion of current assets available to cover current liabilities, it is used extensively in financial reporting. But despite being simple to understand, it may be deceptive in both positive and negative ways. A high current ratio shows a company's ability to repay short-term debts, whereas a low current ratio indicates a company's ability to fulfill long-term liabilities (Ezekwesili, 2021). In a high current ratio is not necessarily good and allow current ratio is not necessarily bad. Formula for calculating current ratio;

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current liabilities}}$$

Quick ratio ascertains by deducting inventories from current assets and then dividing by current liabilities. Because it doesn't include inventories and other current assets, which are more challenging to convert into cash, the fast ratio is more cautious than the current ratio. Consequently, a larger ratio denotes a current position that is

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more liquid. By excluding inventory, the quick ratio focuses on the more- liquid assets of a company.

Formula;

$$\text{Quick Ratio} = \frac{\text{Cash} + \text{Cash equivalents} + \text{Marketable securities} + \text{Current account Receivables}}{\text{Current liabilities}}$$

The strictest and most cautious of the three short-term liquidity ratios (current, quick, and cash) is the cash ratio. It solely considers the company's most readily repaid current holder cavity assets, also known as net assets or assets minus obligations, which are also known as the company's most liquid short-term assets. ROA demonstrates how effectively a business uses investments to produce earring growth.

Cash Reserve Ratio (CRR) is a monetary policy tool used by central banks to regulate the amount of money that commercial banks hold as reserves with the central bank. It is the percentage of a bank's total deposit liabilities that must be held in reserve with the central bank in the form of cash or deposits. The aim of CRR is to control the amount of money in circulation in the economy and maintain financial stability.

The use of CRR as a monetary policy tool has been effective in controlling inflation and maintaining financial stability in Nigeria. The move helped to reduce inflation from a high of 13.7% in March 2011 to 11.7% in August 2011.

Loan-deposit ratio (LDR) is one of the critical liquidity management tools used by Deposit Money Banks (DMBs) in Nigeria. The LDR is the percentage of loans that banks issue in relation to their deposit base. Banks use this ratio to determine the amount of liquidity they have available to them and to ensure that they do not overextend themselves with lending activities. The LDR requirement is set by the Central Bank of Nigeria (CBN) as part of its monetary policy framework. In July 2019, the CBN increased the LDR requirement from 60% to 65% to encourage banks to lend more and stimulate economic growth.

Furthermore, the loan-deposit ratio (LDR) is a financial ratio used by banks to measure their ability to lend money from their deposits. In order to calculate it, divide a bank's total loans by its total deposits.. The ratio is a crucial metric for assessing a bank's liquidity and lending activities. A high LDR indicates that a bank is using most of its deposits to extend loans, while a low LDR may suggest that a bank is not fully utilizing its deposits.

Profitability ratios measure the efficiency with which a company converts business activity into profits. Profitability in general is a relationship between the

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profits generated by enterprises and the investments that contributed to the achievement of these profits, and profitability in general is a relationship between the profits generated by enterprises and the investments that contributed to the achievement of these profits. Profit margins measure a company's capacity to convert revenue into profit. The ability to generate net income from assets is measured by return on assets. Return on equity evaluates shareholder equality and net income.

According to Sunny (2013) corporate profit planning remains one of the most difficult and time consuming aspects of financial management because of the many variables involved in the decision which are often outside the control of the company. It is even more difficult if the company is operating in a highly competitive economic environment. A business unit can only grow focusing on its inner strength to exploit the opportunities in the market consequently, the best definition is opined by Tsomocos (2003) should be adopted from a survival growth perspective as business unit should think of surviving before making profit. Again optimizing profit involves two variables; revenue and cost. An ongoing consideration for a business is how to maximize profitability. In its most basic form, profitability is concerned with the degree of turnover that must be attained in order to pay costs and generate a profit.

Ratio analysis, breakeven analysis, marginal analysis, cost reduction, and financial control can all help increase corporate profitability. As a result, whether a bank is planning for profit or taking initiatives to increase its profitability, it must ensure that it has adequate liquidity to conduct business and finance operations. If the plan is to improve or increase profitability by increasing the income level, the bank must be able to determine the financing needs for the new income level.

Return on Equity (ROE) is a critical measure of profitability and financial performance for banks. It is an indicator of how much profit a bank generates for each unit of shareholder equity invested. ROE is a crucial metric in assessing the effectiveness of a bank's liquidity management strategy as it shows the bank's ability to generate returns on its equity capital.

Theoretical framework

The theories are explained in this section.

1. Commercial loan Theory: The commercial loan theory which was developed by Adam Smith in 1776 is a short term self validating loan. It states that banks should lend short term loans, due to the fact that depositors are of short term in nature. The emphasis of short-term is to enable the banks to meet demand deposit liabilities and when called upon to pay. This theory stresses the matching principles of banks (short-

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term funds for short term loans). However, there are some limitations to this theory they includes; by Dodds (1982) and Nwankwo (1992).

- It deemphasizes on short-term self liquidating loan.
- The -major limitation is that the theory is inconsistent with the demands of economic development, especially for developing countries since it excludes long term loans which are the engine of growth.
- Furthermore, the theory places a strong emphasis on the maturity structure of bank assets (loans and investments), rather than necessarily the asset's marketability or transferability.
- The idea also presupposes that payback from the bank's self-liquidating assets would be adequate to supply liquidity. This disregards the possibility of seasonal deposit withdrawals and fulfilling credit requests having a negative impact on the liquidity situation.
- It does not accurately reflect the typical stability of demand deposits, which allows one to comprehend long-term lending.

2. Shiftability theory According to Onyekwelu, Chukwuani, and Onyeka (2018), the shiftability theory says that a bank's liquidity is maintained if it possesses assets that might be transferred or sold to other lenders or investors for money. This argument highlights that bank assets are preferable possibilities for investing bank funds since they are shitfable, transferable, or marketable. The hypothesis, which was put forth by H.G. Moulton, recognizes the long-term, permanent form of bank financing.

- a. Recognizes the diminished importance of a short-term self-liquidating debt.
- b. Investment banking's expanding significance.
- c. Takes into account the assets of banks' marketability.

Limitations

Shiftability of assets is typically impacted in a banking crisis. The marketability of bank assets is impacted by the current state of the banking industry.

3. Anticipated Income Theory: Based on the US commercial banks' practice of extending term loans, H.V. Prochanow proposed the anticipated theory in 1944. According to this hypothesis, if periodic loan payments are made from the borrower's unrestricted income, liquidity can be guaranteed. Nzotta (2004) claims that the idea highlights a borrower's earning potential and credit worthiness as the ultimate assurance for making sure there is enough liquidity. Instead of relying on collateral, this strategy links loan repayment to income. The maturity structure of a bank's loan and investment portfolios can have an impact on its liabilities, according to this theory,

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which also acknowledges that some loan types are more liquid than others. The ladder effect was implemented in the investment portfolio by bank management on the basis of this hypothesis.

The main criticism of this idea is that it is difficult to anticipate with any degree of accuracy what the borrower's future income will be.

Empirical Review

In Pakistan, Fatima (2015) looked into the connection between the reserve requirement ratio and bank profitability. It places emphasis on how changes in CRR impact commercial banking profitability and how they impact ROE and ROA. For the ten-year period 2005–2014, secondary, quantitative time series data were collected for the research project. The study's empirical analysis is carried out using correlation analysis, followed by linear regression. The study's findings show that ROA and ROE have a substantial inverse relationship with CRR when used as a measure of reserve need.

Du, Wu and Liang (2016) for listed firms in China for the 2013 fiscal year, apply the Pearson correlation analysis to investigate the relationship between company liquidity and corporate value. Cash ratio is used to gauge a company's liquidity, while Tobin Q is used to gauge its worth. Profitability (ROE), size (natural logarithm of total assets), growth, leverage, and industry concentration are all included as controls in the model. They discover, among other things, that business value has a negative relationship with size but a positive relationship with liquidity. Additionally, these connections are statistically significant.

Alimi (2019) conducted a study to investigate the impact of liquidity management on the financial performance of DMBs in Nigeria using panel data analysis. The study aimed to explore the relationship between liquidity management and the financial performance of DMBs as measured by the ROA and ROE ratios. The study employed secondary data obtained from the annual reports and financial statements of 11 DMBs in Nigeria for the period between 2011 and 2017. The findings of the study revealed a positive and significant relationship between liquidity management and financial performance of DMBs, as measured by the ROA and ROE ratios.

Ahmad, Bhatti, Butt, & Tariq. (2019) conducted a study to examine the impact of CRR on the performance of Pakistani banks. The study used panel data for 29 banks operating in Pakistan for the period 2008-2017. The study employed multiple regression analysis to test the relationship between CRR and the profitability of banks. The findings of the study indicated that the CRR has a negative effect on the profitability

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of banks in Pakistan. The study found that an increase in CRR leads to a decrease in the return on assets (ROA) and return on equity (ROE) of banks.

Adegbie and Fakile (2019) conducted a study to investigate the effect of liquidity management on the profitability of DMBs in Nigeria. The study used a sample of ten banks and analyzed data for the period 2010-2017. The study employed regression analysis to analyze the data. The study found that liquidity management significantly affects the profitability of DMBs, as measured by the ROE and NIM ratios. The study found a positive relationship between liquidity management and profitability. The study also found that liquidity management has a more significant effect on the profitability of DMBs compared to other factors such as capital adequacy, asset quality, and management efficiency.

Basseyy and Basseyy (2019) conducted a study to investigate the impact of CRR on the profitability of Nigerian banks. The study used secondary data from annual reports of 15 banks in Nigeria for the period 2010-2017. The study employed regression analysis to test the relationship between CRR and the profitability of banks. The findings of the study suggest that the CRR has a negative impact on the profitability of Nigerian banks. The study found that an increase in CRR leads to a decrease in the return on equity (ROE) and net interest margin (NIM) of banks.

Uwuigbe, Olugbenga, and Ganiyu (2019) conducted a study to examine the impact of liquidity management on the financial performance of Deposit Money Banks (DMBs) in Nigeria. The study utilized data from five selected banks covering the period from 2013 to 2017. The authors employed the ROA and ROE ratios as measures of financial performance while liquidity management was measured using the liquidity ratio. The authors discovered that an increase in liquidity ratio led to an improvement in the ROA and ROE ratios of the banks. The study also revealed that DMBs in Nigeria adopt effective liquidity management strategies by holding more liquid assets, which improve their financial performance. The study's findings indicated a significant and positive relationship between liquidity management and the financial performance of DMBs in Nigeria.

Afolabi and Akinlo (2020) examined the relationship between liquidity management and profitability of DMBs in Nigeria during the COVID-19 pandemic. The study aimed to assess the impact of liquidity management on the profitability of DMBs, as measured by the return on equity (ROE) and net interest margin (NIM) ratios. The researchers collected secondary data from the annual reports and accounts of ten selected DMBs for the period of January 2019 to June 2020. They used panel data regression analysis to estimate the relationship between liquidity management and

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profitability. The findings of the study showed that liquidity management significantly affects the profitability of DMBs in Nigeria during the COVID-19 pandemic. The study found a positive and significant relationship between liquidity management and ROE ratio, indicating that effective liquidity management enhances the profitability of DMBs. The study also found a positive but insignificant relationship between liquidity management and NIM ratio.

Adeniran, Adegbe, & Adeniran,(2020) conducted a study to investigate the relationship between liquidity management and the financial performance of DMBs in Nigeria. The study used a sample of ten banks in Nigeria, and the financial performance was measured using the ROA and ROE ratios. The findings of the study revealed that liquidity management significantly affects the financial performance of DMBs in Nigeria. Specifically, the study found a positive relationship between liquidity management and the ROA and ROE ratios, indicating that effective liquidity management strategies contribute to improved financial performance.

Aina Adeoye, & Adeleke, (2021) conducted a study to examine the impact of liquidity management on the financial performance of DMBs in Nigeria using panel data analysis. The study used data from ten DMBs for the period of 2015 to 2019. The study employed panel regression analysis to test the relationship between liquidity management and the financial performance of DMBs in Nigeria. The performance of DMBs was measured by the ROA and ROE ratios. According to the study, there is a strong and positive correlation between DMBs' financial success in Nigeria and their liquidity management.

Ajao, Adeyemo, & Abiona. (2021) conducted a study to investigate the impact of capital adequacy, asset quality, and liquidity management on the financial performance of Nigerian banks. The study used a sample of ten banks listed on the Nigerian Stock Exchange from 2015 to 2019 and employed a panel regression analysis to analyze the data. The study found that liquidity management significantly influences the financial performance of Nigerian banks, as measured by the return on equity (ROE) ratio. The study also found that capital adequacy and asset quality had a positive and significant impact on the financial performance of Nigerian banks. The results of the study suggest that effective liquidity management practices are critical to enhancing the financial performance of Nigerian banks.

Eze, Ihejirika, & Nwachukwu (2022) conducted a study to examine the impact of liquidity management on the financial performance of Nigerian banks. The authors collected data from ten selected banks for the period between 2015 and 2019. They employed the liquidity ratio and cash reserve ratio as measures of liquidity

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management and the return on assets (ROA) and return on equity (ROE) as measures of financial performance. The study employed the panel data regression analysis technique to analyze the data. The findings of the study revealed that liquidity management has a positive and significant impact on the financial performance of Nigerian banks. Specifically, the results indicated that the liquidity ratio and cash reserve ratio have a significant and positive relationship with both the ROA and ROE of the banks. These results suggest that effective liquidity management can improve the financial performance of Nigerian banks.

Okereke Enete, & Eke. (2022) conducted a study to investigate the relationship between liquidity management and financial performance of Nigerian banks using a sample of ten selected banks. The study used secondary data obtained from the financial statements of the banks for the period of 2017-2020. The financial performance of the banks was measured using the return on equity (ROE) ratio, while liquidity management was measured using the loan-to-deposit ratio (LDR) and the current ratio (CR). The study employed the panel data regression analysis technique to analyze the data. The results of the study indicated that there is a significant positive relationship between liquidity management and the financial performance of Nigerian banks, as measured by the ROE ratio. The study found that both the LDR and CR have a positive and significant effect on the ROE ratio of Nigerian banks. The study concluded that effective liquidity management is crucial to the financial performance of Nigerian banks.

Okeke and Ezeani (2023) conducted a study to investigate the effect of liquidity management on the financial performance of DMBs in Nigeria. The study used data from ten selected banks and analyzed the relationship between liquidity management and financial performance, as measured by the ROE ratio. The study found that liquidity management has a significant positive effect on the financial performance of DMBs in Nigeria. Specifically, the results showed that banks with effective liquidity management strategies were more likely to achieve higher ROE ratios than those with poor liquidity management practices.

Research gap gives the benefit of making this study unique from all other authors. From the various research, it is pertinent that some study had a positive impact of liquidity on profitability, some had negative impact, some were done outside Nigeria, that may not be applicable to the Nigeria system, even those done in Nigeria was not a recent work, seeing that many things have changed in the Nigeria banking sector over the years. Most scholars tend to examine liquidity and profitability using other proxies.

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Also, one possible research gap that can be identified is the limited attention given to the role of technology in liquidity management and its impact on the performance of DMBs in Nigeria, none of them explicitly expatiate the relationship between technology-enabled liquidity management practices and financial performance of DMBs in Nigeria. Furthermore, the studies mainly focused on the traditional financial performance measures, such as return on assets (ROA) and return on equity (ROE), with limited attention given to non-financial measures of performance such as customer satisfaction, market share, and employee productivity.

It is now evident from the empirical review that there is gap in literature found by the researcher. The work tends to bridge the gap in literature by focusing on the Nigeria economy and on liquidity management and performance of deposit money banks in Nigeria.

Research Methods

In this study, quasi experimental research design was used. The study utilized secondary data and was sourced from the CBN statistical bulletin of all DMBs for the period of 22 years (2000-2021).

Multiple regression model were specified which guided the analysis of the data collected on the key variables of the study. The study utilized the ordinary least square (OLS). The ordinary least square technique was adopted due to the properties of BLUE (Best, Linear and Unbiased Estimators). T-statistic is employed in establishing the individual relationship of each of the exogenous variable on the identified endogenous variable while F-statistics establishes the combine effect or relationship of the three exogenous variables on the endogenous variable. 5% level of significance was utilized in the study.

The model developed for the study is:

$$ROE = f(LQR, CRR, LDR) \text{ -----1}$$

Where

- ROE = Return on equity
- LQR = Liquidity ratio
- CRR = Cash reserve ratio
- LDR = Loan-deposit ratio

The model is specified econometrically as

$$ROE = a_0 + \alpha_1 LQR + \alpha_2 CRR + \alpha_3 LDR + e_i \text{ -----1}$$

Where

a_0 = The constant or intercept of the model

α_1 = Coefficient of the first independent variable (LQR)

α_2 = Coefficient of the second independent variable (CRR)

α_3 = Coefficient of the third independent variable (LDR)

e_i = Error term

Data analysis and presentation of Results

Table 4.1 showed the data for the study

Table 4.1 Data on Return on asset (ROA), Return on equity (ROE), Liquidity ratio (LQR), cash reserve ratio (CRR) and Loan to deposit ratio (LDR) of Deposit money bank for the period (2000-2021)

YEAR	ROA %	ROE %	LQR %	CRR %	LDR %
2000	40.36	42.00	64.1	9.80	51.00
2001	30.76	41.40	52.9	10.75	65.63
2002	22.21	29.67	52.5	10.55	62.78
2003	22.42	29.53	50.9	10.00	61.85
2004	21.79	25.17	50.5	8.58	68.63
2005	12.13	16.08	50.2	9.67	70.80
2006	12.91	23.92	81.42	2.60	96.82
2007	13.08	22.23	41.56	2.80	83.26
2008	19.28	15.80	37.72	3.0	86.91
2009	11.12	4.60	26.39	1.3	84.30
2010	15.69	13.44	27.39	1.0	52.29
2011	16.30	0.48	42.02	8.0	44.77
2012	2.03	16.73	49.72	12.0	42.31
2013	2.25	17.72	46.23	12.0	37.56
2014	2.14	15.91	38.27	20.0	63.61
2015	1.56	10.24	42.35	20.0	69.58
2016	1.28	8.67	45.95	22.5	79.95
2017	1.21	8.53	54.79	22.5	72.84
2018	1.17	8.38	65.04	22.5	60.16
2019	1.24	9.31	104.20	22.50	58.73
2020	0.94	7.46	67.60	27.50	60.33
2021	0.55	6.56	61.20	27.50	60.48

Source: Central Bank of Nigeria statistical bulletin (CBN) and NDIC reports

Results of Regression Analyses

The multiple regression models of this study as stated in chapter 3 were analyzed using the ordinary least square (OLS) regressions. The results of the analysis are detailed in the appendix but have been summarized in table 4.2

Table 4.2 Results of the Regression Analysis

@ 5% level of significance	MODEL 1 (ROE)	MODEL 2 (ROA)
(Constant) b_0	20.796	24.106
(LQR) b_1	0.209	0.124
(CRR) b_2	-0.691	-0.945
(LDR) b_3	-0.088	-0.105
Durbin Watson stat	1.553	1.503

Source: Extracts from Appendix

Table 4.2 shows that the intercept (b_0) of the regression model 1 and 2 is positive at 20.796 and 24.106 respectively, the result shows that when the proxies for independent variable in both models are zero, the dependent variable (ROE) and (ROA) will be positive. Results from the table 4.2 also indicate that the coefficient of the first (LQR) independent variables in model 1 is positive as shown in the value (0.209) and the second (CRR) and third (LDR) (-0.691) and (-0.088) are both negative respectively. This indicated that the second and third independent variable from the model 1 have a negative relationship with the dependent variable (ROE) and the first independent variable (LQR) have a positive relationship with the dependent variable (ROE).

On the other hand In the second model the first independent variable (LQR), has a positive relationship with the dependent variable (ROA) as shown (0.124) while the second (CRR) and third (LDR) independent variable shows also a negative relationship with the dependent variable (ROA) as indicated in the value -0.945, and -0.105 respectively.

The Durbin Watson result for the model confirms that the data used in the analysis is free from autocorrelation or serial correlation shown in the value (1.553) and (1.503) respectively since it's close to 2, which further indicates that the data used in the analysis is valid.

Test for significance and decisions on the hypotheses of the study

The test for significance results using t-statistics are detailed in the appendix; however a summary of the significance results which aids the decision for the six hypothesis of the study are summarized on table 4.3

Table 4.3 Test for significance results (Test of hypotheses)

@ 5% level of significance	Model 1 (ROE)			Model 2 (ROA)		
	HYP 1 (LQR)	HYP 2 (CRR)	HYP 3 (LDR)	HYP 4 (LQR)	HYP 5 (CRR)	HYP 6 (LDR)
P-Value	0.180	0.039	0.590	0.356	0.003	0.466
Remarks	INSIG.	SIG	INSIG	INSIG	SIG	INSIG

Source: *Extracts from appendix*

Hypotheses

H₀₁: There is no significant relationship between Liquidity ratio and return on equity of deposit money banks in Nigeria

From table 4.3, $P > 0.05$ for hypothesis 1 with the P-value being 0.180. This indicates that there is an insignificant relationship between liquidity ratio and return on equity of deposit money banks in Nigeria. The null hypothesis which states that there is no significant relationship between Liquidity ratio and return on equity of deposit money banks in Nigeria is accepted while the alternative hypothesis is rejected. This does not align with the work of Uwuigbe, Olugbenga, and Ganiyu (2019) that found significant and positive relationship between liquidity management and the financial performance of DMBs in Nigeria. Where liquidity management was proxied with only liquidity ratio.

H₀₂: There is no significant effect of cash reserve ratio on return on equity of deposit money banks in Nigeria.

Table 4.3 shows that P-value in respect of the second hypothesis is 0.039 which implies that $P < 0.05$. With this, there is an indication of significant effect of cash reserve ratio on return on equity of deposit money banks in Nigeria. Therefore we reject the null hypothesis and accept the alternative hypothesis and conclude that there is significant effect of cash reserve ratio on return on equity of deposit money banks in Nigeria. This aligns with the work of Basse and Basse (2019) in which they find that the CRR has a negative impact on the profitability of Nigerian banks.

H₀₃: There is no significant relationship between loan-deposit ratio and return on equity of deposit money banks in Nigeria.

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The hypothesis test table above further reveals that the P-value in respect of the third hypothesis is 0.590 ($P > 0.05$) which suggests an insignificant relationship between the independent variable (LDR) and the dependent variable (ROE). The study therefore rejects the alternative hypothesis and accept the null hypothesis and conclude that there is no significant relationship between loan-deposit ratio and return on equity of deposit money banks in Nigeria. The findings does not align with the work of Okereke ,Enete, & Eke(2022) that finds that the LDR and CR have a positive and significant effect on the ROE ratio of Nigerian banks.

Discussion of findings

The findings from the analysis and the test statistics are discussed in line with the objective of the study in the first chapter. Discussion of the findings is as follows:

The regression model analyzed in this study took care of the objectives and hypothesis of the study; which include objectives/hypothesis 1-6. In the models, each of the proxies for Liquidity management was regressed against return on equity (ROE) and return on assets(ROA)(dependent variable). In model 1 the results reveals that Liquidity ratio (LQR) has a positive and insignificant effect on ROE. It means that a unit increase in LQR will lead to a 0.209increase in ROE. On the other hand cash reserve ratio (CRR) was found to have negative and significant impact on ROE. This means that a unit increase in cash reserve ratio will lead to a -0.691decrease in ROE. This aligns with the work of Basse and Basse (2019) in which they find that the CRR has a negative impact on the profitability of Nigerian banks. Also the loan-deposit ratio (LDR) was found to have a negative and insignificant relationship with ROE.

In model 2 the results reveals that Liquidity ratio (LQR) has a positive and insignificant effect on ROA. It means that a unit increase in LQR will lead to a 0.124 increase in ROA. On the other hand cash reserve ratio (CRR)was found to have negative and significant impact on ROA. This means that a unit increase in cash reserve ratio (CRR) will lead to a -0.945decrease in ROA. Also the loan-deposit ratio (LDR) was found to have a negative but insignificant relationship with ROA The F-statistics results do support this exertion in model 1 as the independent variables are not jointly significant to the dependent variables as indicated in the value (0.196) and in model 2 the independent variables are jointly significant to the dependent variables as indicated in the value (0.020).

Also the data are free from serial autocorrelation as indicated from the value of Durbin Watson which is (1.553) and (1.503) that indicates that the data is valid since it's close to 2.

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The findings of this research aligns with the work of Sondhi, Pattnaik,&Verma, (2023) that investigated the relationship between liquidity management and bank profitability, as measured by the return on assets (ROA) and return on equity (ROE) ratios and found that liquidity management has a negative and insignificant impact on bank profitability.

Summary of findings

The overall results of the analysis in the preceding chapter of this study provide the following findings:

1. There is positive and insignificant relationship between liquidity ratio (LQR) and return on equity of deposit money banks in Nigeria
2. There is negative but significant effect of cash reserve ratio (CRR) on return on equity of deposit money banks in Nigeria.
3. There is negative but insignificant relationship between loan to deposit ratio (LDR) and return on equity of deposit money banks in Nigeria.

Conclusion

The significant discoveries led to the following conclusions:

Liquidity management poses an insignificant negative relationship with performance of deposit money banks in Nigeria. This arises due to the fact the liquidity management and performance, move in opposite directions and the significance test indicates that the combined effect of the liquidity management in this research is statistically insignificant in explaining the performance of deposit money banks in Nigeria.

Recommendations

The following recommendations are made based on the results of the study.

1. Develop and implement a comprehensive liquidity management framework: DMBs in Nigeria should develop and implement a comprehensive liquidity management framework that incorporates strategies for managing both short-term and long-term liquidity risks. The framework should include appropriate liquidity ratios, cash flow forecasting and analysis, and contingency planning.
2. Strengthen the use of technology: DMBs in Nigeria should explore the use of technology to improve liquidity management processes. For example, they can use financial technology (FinTech) solutions to improve their cash management processes, such as real-time monitoring of cash positions, and automate cash flow forecasting and analysis.
3. Improve communication and collaboration: DMBs in Nigeria should improve communication and collaboration among themselves and with the Central Bank

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of Nigeria (CBN) to manage liquidity risks. Collaboration among DMBs can involve sharing liquidity resources through the interbank market, while communication with the CBN can involve timely reporting of liquidity positions and seeking guidance on liquidity management.

4. Enhance the effectiveness of regulatory oversight: The CBN should enhance the effectiveness of its regulatory oversight on DMBs' liquidity management practices. This can involve regular stress testing of DMBs' liquidity positions and enforcing strict compliance with liquidity requirements and guidelines.
5. Develop a sustainable funding structure: DMBs in Nigeria should develop a sustainable funding structure that balances long-term funding sources with short-term funding sources to mitigate liquidity risks. They should also diversify their funding sources and consider using innovative funding solutions such as securitization and asset-backed financing.
6. Encourage the adoption of best practices: DMBs in Nigeria should adopt global best practices in liquidity management to enhance their performance. They should benchmark their liquidity management practices against global best practices and adopt innovative approaches that suit their business models and market conditions.

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