
Evaluation of the Liquidity Management on Deposit Money Banks' Performance in Nigeria

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Abstract

This study examined the effect of liquidity management on banks' performance in Nigeria for the period of ten (10) years (2012-2021). This is necessitated to respond to the fact that some Deposit Money Banks in Nigeria have some time ago been declared technically insolvent as a result of poor liquidity management, therefore the study is poised to find empirical evidence of the degree to which effective liquidity management affects the profitability of Deposit Money Banks, and how these banks can enhance their liquidity and profitability positions. Four proxies for liquidity management (liquidity ratio, cash ratio, efficiency ratio and loan-to-deposit ratio) were regressed against Tobin's q using Fixed Panel Least Square method in the model estimation. Other preliminary tests carried out include the descriptive statistics test, Levin, Lin and Chu (LLC) unit root and the Hausman Specification tests. The findings of the study indicate that liquidity management and efficiency ratio have a positive and significant relationship with the performance of Deposit Money Banks in Nigeria. On the other hand, the Cash Ratio has a negative and insignificant relationship with the performance of Deposit Money banks in Nigeria. Based on the above findings, the study concludes that there is a significant positive relationship between liquidity management and bank performance in Nigeria. Finally, the study recommends that banks should embrace measures that will make certain or ensure effective liquidity management rather than directing attention, time and resources to the profit maximization concept only. This, therefore, indicate that banks should invest the available excess cash in short-term instruments of the money market.

Keywords: Liquid Asset Ratio, Cash Ratio, Efficiency Ratio, Loan-to-Deposit Ratio, Tobi's q.

Introduction

The adequacy of liquidity plays a very crucial role in the successful functioning of all business firms. Adequate liquidity serves as the vehicle for profitable operations specially to sustain the confidence of depositors in meeting short-run obligations. Liquidity shortage, no matter how small, can cause great damage to a financial institution's operations and customer relationship, in particular, so to avoid insolvency, holding a considerable value of liquid assets with ease of

transformation into cash becomes very prudent. Efficient liquidity management involves planning and controlling the liquid current assets in such a manner as to eliminate the risk of the inability to meet due to short-term obligations on one hand, and avoid excessive investment in these assets, on the other hand.

High profitability in banks' business operations and adequate liquidity show that banks have a balanced structure of assets and liabilities, ensuring the banks' stability (Okoli, Ifurueze&Nweze, 2020). Inadequate capital, assets, and liabilities combined with an aggressive loan program that raises credit risk and, as a result, increases the possibility of losses, can impair the financial stability of banks over the medium term. Poor credit portfolio quality suggests that some banks' capitalization is insufficient and that unqualified credit portfolio management techniques are being implemented (Klaas&Vagizova, 2014). In this respect, some banks have not fully valued the importance of liquidity risk management and the implications of such risk (Mohanty&Mehrotra (2018).

Any profit-oriented organization, including deposit money banks, can effectively measure its corporate wealth and performance using profitability and liquidity. The shareholders and depositors, who make up the majority of a bank's stakeholders, place great importance on these performance measures. While depositors expect the bank to keep enough idle cash to meet their demand, shareholders expect the bank management to expand lending to maximize their return on investment. Effective liquidity management is required to balance the competing interests of the shareholders' and depositors' interests, as well as the profitability target and that of liquidity, to maintain the survival and expansion of deposit money banks (Mokuolu, Kolapo& Dada, 2021).

By absorbing financial surpluses from their depositors and making them available to investors (borrowers) for use in a variety of investment channels, deposit money banks fulfil their duty as intermediaries. The bank's investment activity is not without risks and issues because it aims to maximize the expected returns on these investments. This calls for the best use of the available resources because the bank is always exposed to meeting the obligations of its customers and depositors who wish to withdraw their funds, so it must always be prepared to do so (Gbegi, Abdullahi&Terseer, 2017). The issue occurs when the bank is unable to meet these demands, particularly the unforeseen ones, which could humiliate the bank in the eyes of its customers and cause the bank to gradually lose its faith given the intense competition in the banking industry brought on by the growth in local banks as well as the intense competition from banks operating in the industry.

According to Alshatti (2015), there are two types of liquidity management: By a business's ability to trade an asset at its current price, such as stocks or bonds, and secondly by its size, such as huge corporations like financial institutions. Deposit money banks are typically evaluated on their ability to supply cash needs, meet collateral requirements, and do so without suffering significant losses. Therefore, in both situations, liquidity management refers to all of the steps taken by managers and investors to reduce their exposure to liquidity risk. There have been several corporate liquidity management strategies used in the banking industry, according to Duruechi, Ojiegbe, and Otiwu (2016). These tactics may be created by monetary or regulatory authorities, as well as the bank itself, to fulfil obligations that have come due, take full advantage of market profit opportunities, or maintain the level of public confidence now in place.

Many banks are encumbered by loans even when they have investments in safe, high-yielding, illiquid assets. Despite having a lot of assets, some banks suffer a significant loss as a result of taking out emergency loans because of abrupt withdrawals and a shortage of liquid capital. This, combined with the inability to turn a sufficient profit, was found to be the main reason for bank failures and nationalizations in 2008 (Barrell& Davis, 2008).

The issue with most Nigerian money deposit banks is that they prioritize profit maximization over implementing liquidity steps to satisfy customer requests and meeting client commitments on time and in full, and as a result, they are losing a significant amount of their customers (Otekunrin, Fagboro, Nwanji, Asamu, Ajiboye&Falaye, 2019). Before the Central Bank of Nigeria bailed out many banks due to illiquidity, several banks in Nigeria experienced liquidity issues as a result of a liquidity mismatch. The Assets Management Company of Nigeria (AMCON) purchased these banks as toxic assets when they became technically insolvent and could not meet their liquidity needs. Examples of these banks include Oceanic, Intercontinental, Bank PHB, etc. These banks are no longer in existence.

For instance, the Central Bank of Nigeria declared in September 2018 that Skye Bank would be liquidated and be taken over by Polaris Bank due to the bank's failure to meet liquidity criteria. The Central Bank of Nigeria also implemented measures in 2019 to strengthen a stable financial system. The goal is to increase banking system stability while emphasizing governance improvements and regaining public trust in the country's financial system (Otekunrin, Fagboro, Nwanji, Asamu, Ajiboye&Falaye, 2019). The industry average liquidity ratio increased from 50.63 per cent in 2013 to 53.65 per cent in 2014, significantly above the prudential minimal level of 30 per cent, according to NDIC (2014), which also noted that the banking industry's liquidity risk has been mitigated throughout the time under review. Each Deposit Money Bank in their industry had a liquidity ratio that was greater than the minimum prudential requirement of 30% as of December 31, 2014, according to the report, proving that they were all appropriately liquid. Given the foregoing, this study is intended to explore the connection between liquidity and bank performance. This is in response to the contradictions in previous related literature, which point to the necessity for additional research on the relationship between liquidity management and financial performance, particularly that of Deposit Money Banks in Nigeria.

Literature Review

Conceptual Review

Liquidity, according to Olagunju, Adeyanju, and Olabode (2011), is the ability of a business to pay its short-term debts or the capacity to convert its assets into cash. Therefore, a bank's liquidity can be defined as its ability to maintain sufficient money to pay for fully developed commitments at a fair price. It is the capacity to fulfil mature obligations on schedule. The value of a company's liquid assets is used to describe its liquidity; the greater the value of the company's liquid assets, the greater the company's liquidity (Vossen, 2010).According to Idowu, Essien, and Adegboyega (2017), managing liquidity is an essential part of managing financial institutions safely and soundly. To be able to service the needs of its depositors, banks must maintain a certain percentage of their cash in liquid form. It should be highlighted that a bank's liquidity position refers to its capacity to settle the maturing debt.

Sources of Liquidity

The main sources of liquidity, according to Kehinde&Solape (2019), are split into two categories, consisting of the acquired and stored liquidity.

- a. The term "stored liquidity" refers to liquidity in the form of assets, which are assets in which funds are temporarily invested with the understanding that they will mature when the need for liquidity arises. The liquidity that has been stored can take many various forms, examples of which are:
 - i. Cash and balances due to other banks.
 - ii. Cash balance with the Central Bank of Nigeria.
 - iii. Short-term government securities.
- b. The Purchased Liquidity: This concentrates on liabilities to satisfy funding requirements. The types include, among others, the following:
 - i. Loans from the Central Bank of Nigeria
 - ii. Sizeable time deposits made by state and local governments

Liquidity Risk

Oluwalaiye, Akintola, and Banwo (2020) define liquidity risk as the risk associated with a bank's inability to fulfil its obligations when they are due without suffering unacceptable losses. Liquidity risk is the chance that, during a certain time frame, the bank will not be able to immediately fulfil commitments. It is a danger brought on by a bank's failure to complete its tasks by the due date without suffering unacceptably high losses. Both the capital and the earnings of banks may be negatively impacted by this risk. Therefore, ensuring the availability of enough money to meet future requests from providers and borrowers at fair prices becomes the main objective of a bank's management (Eriki&Osifo, 2015). The ability of the bank to meet its obligations, mostly to depositors, is referred to as liquidity. Banks that maintain adequate amounts of liquidity typically have higher levels of profitability, according to Daniel's (2017) research on the subject. Deposit money institutions' ability to survive is largely dependent on their level of liquidity since illiquidity, which is a symptom of impending trouble, can swiftly destroy the public's faith in the banking industry and lead to withdrawals of deposits. In this situation, banks are in major trouble because the rate of return on investment is lower, the more liquid an asset is. There are no accepted criteria for determining the ideal level of liquidity that banks should maintain. It is important to keep in mind that the majority of the bank's liquid assets, which include cash, call money, Treasury bills, Treasury certificates, etc., earn little or very little income. However, because the majority of banks' liabilities are demand-payable and to maintain sufficient liquidity at all times, banks are required to invest their money and make short-term loans, often known as "self-liquidity loans" (Nzotta 2018).

Concept of Liquidity Management

All corporate organizations must effectively manage their liquidity, but financial institutions in particular need to do so because customers' faith in banks is greatly influenced by their ability to obtain funds when needed. Insufficient liquidity might hinder banks' ability to run well even if they are unable to promptly satisfy clients' financial needs. It is crucial to develop strategies for the effective management of liquidity because this would lead to a close relationship with their

clients. This could take the shape of appropriate courses of action for the assessment, supervision, and management of liquidity (Andrew & Osuji, 2013). According to Bhattacharyya and Sahoo (2011), liquidity management entails maintaining a sufficient cash balance and its related balances to satisfy customers' needs at any time as well as making sure that there is money available to carry out the daily tasks of the bank. The banks must be able to generate a profit while performing these duties to benefit all of the stakeholders who are essential to their ongoing existence and operation. However, stabilizing liquidity and how it is managed is necessary for achieving profitability.

Theoretical Literature

Liquid Assets Theory

This theory, as put forth by Crick (1927), has to do with asset management. According to this, banks must seek out excessive rewards, reduce potential risk, and make adequate provisions by maintaining liquid assets. This theory supports the idea that maintaining short-term assets is essential for reducing the impact of uncertainties on bank operations. Banks must boost liquidity without incurring significant costs by lending to borrowers who are willing to pay high-interest rates and are unlikely to default on their loans. Banks are not entirely funded by assets, but collateral loans, which are unreliable during a financial crisis, make up the majority of their funding. This relates to loans that provide the lender with the authority to demand a specific asset as well as a general demand on all of the debtor's other assets. The ultimate amount of liquid assets to be held depends on the bank's explicit need for liquidity, the state of the stock market, and financial guidelines. There are certain issues with the idea of asset management. It gives the declaration of financial position's assets all the focus, which severely undermines the notion in the present stock markets. In addition, it fails to take into consideration the fact that huge returns are linked with high risks.

The Liabilities Management Theory

Following Kane & Burton (1965), banks can borrow reserve funds on the money market if necessary, negating the requirement for them to make self-liquidating loans and maintain liquid assets. A bank can accumulate reserves by incurring more liabilities from various sources against itself. The issuance of time certificates of deposit, borrowing from other commercial banks, borrowing from central banks, obtaining capital money through the issuance of shares, and reinvested earnings are a few examples of these sources. We briefly go over various bank funding options.

Time Certificates of Deposits: Firstly, time deposit certificates cannot be sold in the market if, during a boom, the interest rate structure in the money market is higher than the ceiling rate set by the central bank. They do not provide commercial banks with a reliable supply of funding, either. Because they have huge certificates that they can afford to sell at even low-interest rates, larger commercial banks have an edge when selling these certificates. So, in this regard, smaller banks are at a disadvantage.

Borrowing from other Commercial Banks: A bank can take on more debt by borrowing from other banks with surplus reserves. However, these loans are often usually taken out for a day or a

week at most. The interest rate on these loans is based on the rate that is currently being offered in the money market. However, it is only possible to borrow money from other banks when the economy is generally stable. No bank can afford to lend to others in abnormal times.

Borrowing from the Central Bank: Additionally, banks incur liabilities on themselves when they borrow money from the nation's central bank. They borrow to cover their short-term liquidity needs and do so by discounting central bank notes. However, compared to borrowing from other sources, such borrowings are more expensive.

Raising Capital Funds: To raise money, commercial banks issue new shares or debentures. However, the amount of dividend or interest rate that the bank is willing to offer determines the quantity of money that is accessible through these sources. Typically, banks are unable to offer interest rates that are greater than those offered by trading and manufacturing firms. As a result, they are unable to obtain enough funding from these sources.

Ploughing Back Profits: A commercial bank can also use its profits as a source of liquid capital. However, how much it may earn from this source will rely on its profit margin and dividend payout schedule. The bigger banks are the ones who can rely on this source, not the smaller institutions.

The Shift-Ability Theory

According to Moulton's (1918) shift-ability theory of bank liquidity, commercial banks do not need to rely on maturities if they hold a sizeable quantity of assets that can be transferred to other banks for cash without suffering a significant loss. This point of view contends that for an asset to be completely transferable, it must be able to be sold right away without suffering a capital loss. This is especially true for short-term market investments like Treasury Bills and Bills of Exchange, which banks can sell right away whenever they need to raise money. However, the shift-ability hypothesis mandates that all banks should have such assets that can be transferred to the central bank, which is the lender of last resort, in a global crisis when all banks need cash.

There are true parts of this hypothesis. Banks now accept reliable assets that can be transferred to different banks. Treasury bills, bills of exchange, major company shares, and debentures are all recognized as liquid assets. This has prompted banks to offer term loans.

However, this theory has its weakness.

1. The financial system does not receive liquidity from the simple shiftability of assets. The economic environment is the only factor that matters.
2. The shift-ability argument ignores the fact that banks cannot transfer shares and debentures to others during periods of a severe downturn. When this occurs, there are no buyers and everyone who owns them wants to sell them.
3. A single bank may have enough shiftable assets, but if it tries to sell them during a bank run, it might harm the entire financial system.

4. It would be devastating for both lenders and borrowers if all banks started moving their assets at once.
5. Both lenders and borrowers would suffer the worst outcomes if all banks started moving their assets at once.

Empirical Literature

The relationship between liquidity management and financial success has been studied extensively in the literature. While some of these studies' the empirical relationships with the topic were found to be favourable, others were found to be negative. We will review various pertinent literatures and their corresponding findings in this area of the study.

Otekunrin, Fagboro, Nwanji, Asamu, Ajiboye, and Falaye (2019) looked at the liquidity management and performance of a few Nigerian-listed deposit banks. Out of the 17 deposit money banks on the Nigerian Stock Exchange, secondary data were taken from the financial statements of 15 of them for the years 2012 to 2017 (six years). The ordinary least square approach was used to examine the data collected. The capital ratio (CTR), current ratio (CR), and cash ratio (CSR) were used to monitor liquidity management, while return on assets was used to gauge performance. According to the study's findings, there is a positive correlation between the firm's performance as measured by return on assets and liquidity management as measured by capital ratios, current ratios, and cash ratios. The outcome demonstrates that managing liquidity is a crucial aspect of corporate operations, which ultimately results in business profitability. Therefore, effective liquidity management aids in resolving the agency theory issue of agency costs that arises when control and ownership of companies are separated, whereby managers can use the resources of the company for personal gain instead of maximizing the value of the company or the wealth of the shareholders.

For 25 years (1986–2011), Daniel (2017) studied the management of liquidity and its effects on bank efficiency for 24 banks. The SPSS software was used to gather test data for the study from secondary data and evaluate it. According to the study's findings, deposit money institutions' operations are favourably impacted by liquidity management. Equity returns and the cash liquidity reserve ratio are found to be positively correlated using correlation analysis, but equity returns and the deposit loan ratio are found to be adversely correlated.

Kehinde&Solape's (2021) researched on bank performance and liquidity management, conducted from 2011 to 2020. They examined the effect of liquidity management on the financial performance of Nigeria's deposit money banks. Secondary data from the annual reports of deposit money banks listed on the Nigerian Stock Exchange were used for the study, while financial performance were measured using return on asset, return on equity, and net profit margin. As proxies for managing liquidity, the liquidity ratio, loan-to-deposit ratio, cash reserve ratio, and deposit rate were employed. The relationship between the variables were determined using the panel least squares regression technique. The results demonstrate that liquidity management affects deposit money institutions' financial performance in Nigeria in a favourable and significant way.

By determining whether the banks have specific liquidity goals they are working toward and by identifying the collection of factors that affect bank liquidity ratios, Tafirei&Farai (2017) set out to determine the present liquid management practices of South African banks. The study looked

at a sample of six commercial banks that were active in South Africa between 1993 and 2009. To obtain optimality, the study's findings suggest that South African banks have successfully controlled their liquidity and, to a lesser extent, adjusted their liquidity levels.

The effects of liquidity management on the financial performance of Nigerian banks from 2010 to 2018 were investigated by Wuave, Henry, and Paul in 2020. Data from five deposit money banks that are listed on the Nigeria Stock Exchange were used in the study. Liquidity ratio, Loan deposit ratio, Cash reserve ratio, and Deposit ratio were the variables used to quantify liquidity management, whereas the return on assets, return on equity, and return on net interest margin were used as proxies for financial success. As a result, the study found that liquidity management significantly affects the financial performance of Nigeria's deposit money institutions.

To better understand how liquidity management affects the financial performance of commercial banks in Mogadishu, Somalia, Stanley & Ali (2016) conducted a survey on the 112 workers of commercial banks in Modagishuas target group, and 87 respondents were chosen for the sample size using Slog Van's algorithm. According to the report, Mogadishu, Somalia's commercial banks' financial performance is heavily impacted by liquidity management.

In 2020, Sathyamoorthi, Mapharing, and Mashokoanalyzed the connection between liquidity management and the financial results of commercial banks in Botswana. From 2011 to 2019, data for the study was gathered from each of Botswana's nine commercial banks. To analyze the data, the study used descriptive statistics, correlation, and regression techniques. The study found correlations between liquidity management and financial performance that were both significant and insignificant.

The effect of liquidity management on the financial performance of quoted deposit money banks in Nigeria was evaluated by Okere, Okeke, Echeonwu, Emili, and Rufai in 2021. Secondary data was resourced from fifteen (15) banks' corporate annual reports and financial statements for the eleven (11) years from 2007 to 2017. This study was based on the agency theory as its theoretical foundation. The data were analyzed using both descriptive and inferential statistics. The findings show a strong correlation between liquidity management and the financial success of deposit money banks in Nigeria. Additionally, there was a considerable variation in Deposit Money Bank profitability in Nigeria before and after the introduction of the Treasury Single Account (TSA).

Using Nigeria as a case study, Mokuolu, Kolapo, and Dada (2021) looked at the impact of deposit money banks' management skills in determining how to honour or discharge their maturing obligations to their depositors in light of conflicts with shareholders' expectations that they increase lending to maximize returns on their investments in emerging economies. To analyze the acquired data, three Nigerian Deposit Money Banks were specifically chosen on a cross-sectional basis and subjected to regression analysis utilizing the Pooled Least Square (PLS) method for 11 years (2008-2018). The analysis's findings showed that, aside from the inflation rate, which initially showed a substantial adverse link but eventually exhibited a negligible positive relationship at the fixed effect stage, all explanatory variables had a positive impact on bank performance. Using F-Test statistics, the tests for the model's overall significance from the pooled fixed effect revealed that the entire model is statistically significant ($2.838853 > 0.044244$) in explaining the behavioural changes in Return on Asset. In conclusion, the research has

empirically proven that factors affecting liquidity management are effective predictors of the profitability of the tested institutions.

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Methodology

Research Design

This study shall make use of data with both cross-section (i) and time interval (t). In addition, the data shall have equal starting and ending dated periods for all the selected banks (cross sections). Based on this premise, this work will utilize a panel research design which is a combination of both cross-sectional and time-series design properties.

The population of the Study and Sample Size

The population of the study consists of some deposit money banks in Nigeria that have operated for at least ten (10) years and beyond. However, a sample of twelve (12) deposit money banks was selected. These banks were chosen because of the consistent disclosure of liquidity management proxies for at least 10 years. This, therefore, gives a total observation of 120 (12*10). The following are the deposit money banks in Nigeria selected for the study: Access Bank, Fidelity Bank, First Bank, FCMB, Guaranty Trust Bank, Stanbic IBTC, Sterling Bank, UBA, Union Bank, Wema Bank, Unity Bank and Zenith Bank. These banks were chosen because they are the major banks operating in Nigeria that have lasted for ten years and beyond with available data. The above deposit money banks are also all quoted on the Nigeria Stock Exchange.

Model Specification

The variables used are Tobin's q proxy for bank performance (dependent variable); current ratio, cash ratio, efficiency ratio and loan-to-deposit ratio (independent variables). To this effect, only one model shall be formulated. The functional relationship of the model is as follows:

$$TQ = f(CUR, CAR, EFR, LDR) \tag{1}$$

In the regression form, it is stated as follows:

$$TQ_{it} = \beta_0 + \beta_1 CUR_{it} + \beta_2 CAR_{it} + \beta_3 EFR_{it} + \beta_4 LDR_{it} + \mu_{it} \tag{2}$$

Where TQ is Tobin's Q (the rate of change in bank performance), CUR is the current ratio, CAR is the cash ratio, EFR is the efficiency ratio, LDR is the loan-to-deposit ratio, β_0 = The constant

term; $\beta_1 \dots \beta_4$ = Coefficients of the independent variables (indicating a unit change in the independent variables respectively; μ = error term; i = banks; t = time period, respectively.

Table 4.1: Description of Variables with their Formula

S/N	Variable	Type	Explanation	Code
1	Tobin's Q	Dependent Variable	Market Capitalization + Total Liabilities -Cash flow divided by Total assets. Or Ratio of the Total market value of the bank to the total assets value of the bank.	TQ
2	Current Ratio	Independent Variable	$\frac{\text{Current Assets}}{\text{Current Liability}}$	CUR
3	Cash Ratio	Independent Variable	The ratio of Cash and Cash Equivalent to Current Liabilities	CAR
4	Efficiency Ratio	Independent Variable	The ratio of Cash to Total Assets	EFR
5	Loan-to-Deposit Ratio	Independent Variable	The ratio of Loan to Deposit	LDR

Source: Author's Compilation

Results of Data Analyses

Descriptive Statistics

Table 4.2 explained the results of the descriptive statistics for both the explanatory and dependent variables. Descriptive statistics is a compulsory pre-regression analysis but cannot be used to test hypotheses. This test is mostly used to provide the financial benchmark for comparing data across sampled institutions, years and special groups. It can be used to detect errors and cooked data using maximum and minimum values. It can also be used to identify the degree of variability in financial and accounting data using standard deviation etc.

Table 4.2: Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
TQ	120	2.34	.02	2.36	.2597	.46656	3.151	9.561
CUR	120	1.61	.11	1.72	1.0984	.24907	-.232	1.101
CAR	120	.45	.06	.51	.2364	.10280	.712	-.182
EFR	120	.55	.03	.58	.1702	.07606	1.616	6.015
LDR	120	332.43	.00	332.34	6.1706	35.32140	7.850	66.404
Valid N (Likewise)	120							

Tobin’s Q: The mean value of Tobin's Q is 0.2597 whereas the standard deviation is 0.46656. This implies that the stocks of Nigerian Banks are underpriced. It is also evident in the result that the maximum value is 2.35 while the minimum value is 0.02. This statistic indicates that the data for the twelve banks are skewed to the right of the distribution since the skewness is estimated at 3.151 while the kurtosis value of 9.561 which entails that the distribution is highly peaked.

Current Ratio: The mean value of the Current Ratio is 1.0984 while the standard deviation is 0.24907. This statistic implies that the Deposit Money Banks in Nigeria have liquidity in the short term and can be able to meet up with short-term liabilities. It is also seen in the result that the maximum value is 1.72 while the minimum value is 0.11. This statistic indicates that the data for the twelve banks are skewed to the left of the distribution since the skewness is estimated at -0.232 while the kurtosis value of 1.101 shows that the distribution is not peaked.

Cash Ratio: The mean value of the Cash Ratio is 0.2364 while the standard deviation is 0.10280. This statistic implies that the Deposit Money Banks in Nigeria may not have enough cash to pay up maturing obligations, and therefore are likely facing liquidity problems in the short term. It is also obvious in the result that the maximum value is 0.51 while the minimum value is 0.06. This statistic indicates that the data for the twelve banks are skewed to the right of the distribution since the skewness is estimated at 0.712.

Efficiency Ratio: The mean value of the Efficiency Ratio is 0.1702 while the standard deviation is 0.07606. This statistic implies that the Deposit Money Banks in Nigeria turnover 17.02% of their assets into cash annually. It is also obvious in the result that the maximum value is 0.58 while the minimum value is 0.06. This statistic indicates that the data for the twelve banks are skewed to the right of the distribution since the skewness is estimated at 1.616.

Loan-Deposit Ratio: The mean value of the Loan-Deposit Ratio is 6.1706, while the standard deviation is 35.32. This statistic implies that the Deposit Money Banks in Nigeria loan to deposits six times. It is also obvious in the result that the maximum value is 332.34 while the minimum value is 0.00. This statistic indicates that the data for the twelve banks are skewed to the right of the distribution since the skewness is estimated at 7.850.

Unit Root Test

To authenticate the integrity and reliability of our regression results, we must subject the data to unit root tests. This is done using the Levin, Lin & Chu (2002) panel unit root test statistic. The test is summarized in Table 4.4 below:

Table 4.3: Summary of Unit Root Test Result

Variables	Levin, Lin and Chu Test statistics			
	At Level	Stage	Decision	Order of Integration
TQ	-7.8082(0.0000)	At Levels	Stationary	I(0)
CUR	2.4515(0.0071)	At Levels	Stationary	I(0)
CAR	-2.7909(0.0026)	At Levels	Stationary	I(0)
EFR	-2.6614(0.0039)	At Levels	Stationary	I(0)
LDR	-6.2922(0.0000)	At 1 st Difference	Stationary	I(1)

Source: Extracted from Eviews 9.0 Vers. Output (see appendix)

Employing the Levin, Lin and Chu (LLC) test statistic to test for unit root, the panel data showed that all the variables (Tobin’s Q, Current Ratio, Cash Ratio, Efficiency Ratio and Loan to Deposit Ratio) are stationary at level i.e. $I(0)$, given that the probability values of the LLC statistics at the level are all less than 0.05 critical value.

Hausman Specification Tests (Fixed or Random Effect)

Before the estimation of the least square panel regression, Hausman (1978) proved that it is important to evaluate the consistency of an estimator when compared to an alternative, less efficient estimator known to be consistent. The choice of a Fixed effect or Random effect model lies on the strength of the Hausman (1978) test which was proven to determine the appropriate model for the estimation of a dynamic panel regression model. The null and alternate hypothesis for the Hausman test is given as:

Null (H_0): Random effects model is appropriate

Alternate (H_1): Fixed effects model is appropriate

We carry out the Hausman specification test to determine the appropriate model to use. If the random effect is appropriate, there will be no need for further testing, but if the fixed effect is appropriate, then there will be a need to test further for the choice between the fixed effect model and pooled OLS regression model. The result of the test is shown in Table 4.5 below:

Table 4.4: Hausman Specification Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	4.376144	4	0.0003

The result of the Hausman specification test shows that the cross-section random chi-square statistic value of 4.376144 with probability values of 0.0003 is significant at the 5% level. Thus, we reject the null hypothesis (H_0) and conclude that individual effects correlate with the explanatory variables hence, the Fixed Effect is appropriate for the estimation of the panel models.

Fixed Effect Panel Regression Results

The panel regression analysis of the dependent variables Tobin’s Q and selected independent variables are tested in this paragraph and the results are presented. The data is panel data having an equal period. Table 4.5 below presents the result of the Panel Regression.

Table 4.5: Results of Panel Regression

Dependent Variable: TQ
 Method: Panel Least Squares
 Date: 05/16/22 Time: 22:11
 Sample: 2012 2021
 Periods included: 10
 Cross-sections included: 12
 Total panel (balanced) observations: 120

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.112120	0.101004	1.110055	0.2695
CUR	1.444850	0.153528	9.411007	0.0000
CAR	-0.149687	0.262768	-0.569654	0.5701
EFR	0.431344	0.154346	2.794657	0.0087
LDR	0.000338	0.000474	0.712826	0.4775

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.905521	Mean dependent var	0.259700
Adjusted R-squared	0.891894	S.D. dependent var	0.466561
S.E. of regression	0.153403	Akaike info criterion	-0.787930
Sum squared resid	2.447380	Schwarz criterion	-0.416264
Log-likelihood	63.27579	Hannan-Quinn criteria.	-0.636995
F-statistic	66.45133	Durbin-Watson stat	1.741523
Prob(F-statistic)	0.000000		

The above result showed that the Current ratio (CUR) has a positive relationship with Tobin's Q. Its coefficient of 1.444850 indicates that a unit increase in current ratio (CUR) will increase Tobin's q (TQ) by 1.44 units all things being equal. This relationship is statistically significant at a 5% level.

Conversely, the Cash ratio (CAR) has an inverse relationship with Tobin's Q (TQ). It has a negative coefficient of 0.149687 showing that a unit increase in Cash ratio (CAR) will result in 0.149687 unit decrease in Tobin's Q (TQ). However, this inverse relationship is not statistically significant.

On the other hand, the Efficiency Ratio (EFR) relates positively to Tobin's Q (TQ). A positive coefficient of 0.431344 is an indication that a unit increase in Efficiency Ratio (EFR) will result in 0.431 unit increase in Tobin's Q (TQ) all things being equal. This relationship, however, is statistically significant at 5%. Loan-to-Deposit Ratio, however, has a positive coefficient of 0.000338 indicating that it has a direct relationship with Tobin's Q (TQ). A unit increase in bank leverage will cause Tobin's q to increase Loan-to-Deposit Ratio by 0.000338 units. This

relationship between Tobin's q and Loan-to-Deposit Ratio is statistically insignificant at a 5% level of significance. 0.112120

Finally, the F-statistic value of 66.45133 and its corresponding p-value of 0.0000 shows that the OLS Panel regression model overall is statistically significant at 1%, 5% and 10% levels respectively. In addition, the result shows a coefficient of determination (R^2) of 0.9055 (90.550%) and an adjusted R-square value of 0.8919 showing that about 89.190% of the systematic variations in the dependent variable (Tobin's q) in the model over the period under study was jointly explained by the independent variables (current ratio, cash ratio, efficiency ratio and loan-to-deposit ratio). The unexplained part of the dependent variable (10.81%) can be held responsible for the exclusion of important independent variables in the model. This means that the regression model is robust, valid, well fitted and can be useful in making reliable predictions.

Discussion of Results

This study is very critical and necessary, hence the findings made serious revelations about the health and survival of the deposit money banks in Nigeria. It was revealed in the study that there is a significant relationship between liquidity management and the performance of deposit money banks in Nigeria. These findings conform with the studies of Wuave, Henry & Paul (2020) and Daniel (2017), but negate the work of Bassey, Tobi, Bassey & Ekwere (2016).

On a basis of variable-by-variable analyses, liquidity management proxied by the liquidity ratio revealed a positive and significant relationship with the performance of deposit money banks in Nigeria. This statistic conforms with Kehinde & Solape (2021), Wuave, Henry & Paul (2020) and Wuave, Yua & Yua (2020). However, the study of Nabeel and Hussain (2017) proves the contrary. The import of this result may not be unconnected with the several reforms carried out in the banking sector to strengthen their liquidity management as well as performance. Most of the banks in Nigeria that could not meet up with the liquidity requirements have to wind up, leaving only the strong ones to thrive.

More so, it was discovered in the study that cash management proxied by cash ratio has a negative and insignificant relationship with the performance of deposit money banks in Nigeria, in line with the findings of Nabeel and Hussain (2017) and against Otekunrin, Fagboro, Nwanji, Asamu, Ajiboye & Falaye (2019) that revealed positive coefficient in their work. This result is against the *a priori* expectation of this study, hence establishing the culture of poor cash management in the banks.

The result of the efficiency ratio indicated a significant and positive relationship with the performance of deposit money banks in Nigeria. This, therefore, indicates that Nigerian Banks turn over their assets into cash.

Lastly, the loan-to-deposit ratio has a positive relationship with deposit money banks in Nigeria supporting the works of Kehinde & Solape (2021), Wuave, Henry & Paul (2020) and Ayunku (2017). However, the result is not significant, indicating a weak relationship. This, therefore, implies that deposit money banks in Nigeria have not lived up to the required expectation of turning their deposits into credits for maximum profitability.

Conclusion

The inventories and stock in trade for deposit money banks are cash and cash related. That made cash very critical in the day-to-day operations of banks. Therefore, whenever banks run short of cash or become illiquid, it is very dangerous and may be a sign of technical insolvency. The ability of the deposit money bank to balance profitability and liquidity structure is very important. Why banks have to make as much profit as possible, they should not sacrifice liquidity at any time, otherwise, the future of the bank is bleak.

The study revealed that deposit money banks in Nigeria have robust liquidity. This is a good development and signifies that these banks are healthy and not likely to go insolvent anytime soon. While the management of liquidity is commendable, the cash management according to the result is very poor and not a good omen to the progress of the banks. The loan-to-deposit ratio which is not significant though not negative, indicates that most of the loans of Nigerian Deposits Banks are not performing.

Recommendations

After a critical examination of the outcomes of the study, we, therefore, recommend as follows:

1. Banks should have a more realistic credit policy which would narrow the gap minimization of cash flows as well as reduction of cash conversion period which has the potential of improving liquidity.
2. Banks should embrace measures that will make certain or ensure effective liquidity management rather than directing attention, time and resources to the profit maximization concept only. This, therefore, indicate that banks should invest the available excess cash in short-term instruments of the money market.
3. Effective liquidity management is critical for businesses, as reliance on bank loans may not be sustainable due to the increase in banks' non-performing loans.
4. The Central Bank of Nigeria and other government regulatory authorities should set up a board of professionals to oversee liquidity management within Deposits Money Banks in the country, to avoid liquidity problems amongst the banks.
5. Proper credit appraisal should be done before credit is granted to safeguard against bad lending which results in the loss of assets, and income which invariably affects liquidity

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