

LIQUIDITY MANAGEMENT AND FINANCIAL PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA

Adelegan, Michael Oluyomi

Faculty of Management Sciences, University of Benin
oluyomi.adelegan@mgtsci.uniben.edu

Idolor, Eseoghene Joseph

Faculty of Management Sciences, University of Benin
eseoghene.idolor@uniben.edu

Abstract

The study empirically investigates the impact of liquidity management on financial performance of deposit money bank in Nigeria using time series data from 2011 to 2020. The study analyses the data with the aid of E-view statistical package for descriptive and correlation analysis and STATA 11 after testing for the best estimator from pool OLS, fixed effect and random effect estimator based on Breusch and Pagan LM test, F-test and Hausman test. Deposit to asset ratio has negative but statistically insignificant relationship with returns on assets of DMBs in Nigeria since the P-value of 7.9% is greater than 5% significant level. Cash reserve ratio has positive but statistically insignificant relationship with returns on equity of DMBs in Nigeria since P value of 22.1% is greater than 5% significant level. Loan deposit ratio has negative but statistically insignificant relationship with net interest margin of deposit banks in Nigeria since P value of 91.8% is less than 5% significant level. The study recommends that CBN should strive to improve their regulatory capacity over all DMBs in Nigeria. Special financial court should be established by the government to prosecute serial loan defaulters. Regular training and retraining couple with professional development of staff should be encouraged by the board and management of the bank and CBN. CBN should also set a limit to the level the staff of DMBs can attain without requisite professional and academic qualifications.

KEYWORDS: *Liquidity Management, Financial Performance, Deposit Money Banks*

1.0 Introduction

The concept of liquidity management is dominant to the core business of deposit money banks (DMBs) in Nigeria and globally. Fundamentally, almost all financial transactions which include credit, financing, investment and dividend decision undertaken by DMBs are predicated on availability of adequate liquidity. Though, liquidity creation is the key role of banks but also a primary basis of their susceptibility. The availability of optimum cash flow and financial performance is very vital in the sound operation of DBMs in Nigeria. Liquidity and its effective management tremendously determine the growth and financial performance of any organization, whether financial or non-financial institutions. Thus, Kumbirai and Webb (2010) assert that liquidity indicates the capacity of the DMBs to meet its commitment in a timely and active manner.

DMBs generally experience cashflow tests when major portions of their short-term liabilities, deposits etc. are capitalized in illiquid assets, a critical position usually described as assets and liabilities mismatched. This situation becomes critical when such short-term liabilities are demanded within a short time. Thus, a bank is liquid when it is able to meet its own obligation as and when due, fund deposit and to make such payment on customer order, (Lartey, et al, 2013) and this creates a positive image for any organization in the perception of the customers, creditors and public.

Olagunju, et al (2011), opined that these two objectives flow in different direction since any effort by the management of a bank to achieve higher financial performance will affect the liquidity level and vice versa.

The unceasing existence and growth of any companies is mainly dependent on the efficient management of its liquidity. The higher the risk, the greater the potential returns, and so firms must strive to meet a trade-off between the liquidity and financial performance, (Soyemi, et al, 2014). Hence, this paper intends to ascertain the effect of liquidity management on financial performance of deposit money banks in Nigeria.

2.0 Literature and conceptual review

This section reviews related literature on liquidity management and financial performance of deposit money banks in Nigeria using 5 selected DMBs based on the strength of their total assets from a total number of 22 deposit money banks in Nigeria as at 31st December, 2020. The related literature was reviewed under the following sub-headings, conceptual review, theoretical review, review of sub-variables, empirical review of related literature, summary of the related literature, and gap in the review of literature.

2.1 Conceptual Review

This study extensively reviewed different concepts which are relevant for the purpose of establishing a sound knowledge base and principles for the research exercise, discusses some definition and explanation on the subject matter of liquidity management and financial performance of DMBs in Nigeria. Therefore, the study examines conceptual framework relating to cash management, liquidity, financial performance etc.

The Concept of Liquidity

Liquidity has been defined in different ways by different people and for different reasons. Liquidity is a financial term that means the amount of capital that is available for major investment. Today, most of this capital is credit, not cash. Adebayo, et al (2011) affirmed that liquidity is a financial term which can be said to mean the amount of capital that is readily available to banks for investment. Liquidity is a critical consideration for any business. Having enough liquidity available to meet the company's commitments is essential to the health of the organization – so it's important to manage liquidity effectively and ensure that cash is in the right place at the right time. Some assets are liquid, meaning that cash can be readily accessed whenever it is needed.

Principle of Liquidity Management

Liquidity management is a concept that is at the front burner of any discerning management team who genuinely desires to guarantee the survival, continuity and sustainability of their organization in the contemporary business world. Most companies take proactive steps to manage their liquidity as efficiently and effectively as possible to remain in the business in the future.

Liquidity management is inversely related to the financial performance of DMBs (Bassey, 2015). The cruciality of liquidity management becomes irrefutable as exemplified by the 2007-2008 global financial crisis when the banking industry came under severe liquidity strain and stress; demonstrating dire adverse consequences of liquidity mismanagement.

Concept of Financial Performance

According to Aburime (2008) profit means the difference between the revenue generated from the sale of output and the full opportunity cost of factor used in the production of that output. Normal profit is that minimum amount of profit which a firm must acquire in order to induce the firm to remain in operation.

The three accounting-based measurement tools of financial performance for this study are ROA, ROE and NIM.

2.2 Theoretical Review

The theoretical framework is a structure that provides insight into the concepts and theories that are pertinent to the topic of research. The theoretical framework that serves as the basis for the study is on asset and liability management because the concept is empirically linked and or synonymous with liquidity management and financial performance. If there is any mismatch in asset and liability management, there will be liquidity challenges for any of the banks.

Profitability Trade-Off Theory of Liquidity

This is another theory upon which this study is hosted. The theory posits that a trade-off exists between the liquidity and the financial performance of a firm and that a firm cannot pursue the two objectives of being profitable and being liquid at the same time without automatically affecting the other. Previous studies showed that banks with higher liquidity and larger capital buffers are less vulnerable to failure during the financial crisis, Bagyenda, et al (2011) and this made it imperative for the regulatory authorities to compel greater solvency and liquidity on individual banks than making it optional.

Theory of Asset and Liability Management

According to Tamiru (2013), Asset and Liability Management (ALM) can be defined as a dynamic process of planning, organizing, coordinating, and controlling the assets and liabilities; their mixes, volume, maturities, yield, and costs to achieve a specified net interest income. In other words, it deals with the optimal investment of

assets in view of meeting current goals and future liabilities. It is related to the management of the risks associated with liquidity mismatch, interest rates and foreign exchange movements. This paper is premised on the theory of asset and liability management.

2.3 Empirical Review

The absence of sound liquidity management is a major limiting factor to the financial performance of deposit money bank not only in Nigeria but anywhere in the world. Some researchers have examined the impact of liquidity management on banks financial performance in different dimensions.

Al-Ardah and Al-Okdeh. (2022) reviewed the impact of liquidity risk on financial performance of Jordanian banks, where liquidity risk was measured by (Liquidity ratio, net working capital, cash and investment ratio to total deposits), and financial performance was also measured through the index (return on assets) and the modifying variable (bank size) measured through the natural logarithm of total assets was also added. The study concluded a set of recommendations, the most important of which are: that commercial bank administrations should increase interest in exploiting their liquidity within acceptable risk limits to reach optimal ratios for financial performance by balancing the returns to be achieved with the potential risks of such expenses in a way that ensures the positive impact of liquidity risk on the financial performance of those banks.

Ariefianto, et al (2021) empirically examine banks' liquidity management dynamics: evidence from Indonesia. The dynamic process of bank liquidity management in a vast developing economy by considering the pool of funds hypothesis, signalling hypothesis and risk management hypothesis. The authors apply the dynamic common correlated effect (DCCE) method with an error correction model format to long panel data sets of 84 Indonesian banks from January 2003 to August 2019, resulting in 16,800 observations. The empirical results strongly support the pool of funds and signalling hypotheses, whereas the risk management motive appears to have secondary importance. This study is the first to analyze bank liquidity management behaviour empirically using a panel error correction mechanism. Here, the authors also try to combine a practitioner's perspective with a scientific one.

Mokuolu, et al (2021) investigated the effect of the management ability of deposit money banks in resolving how to honour or discharge its maturing obligation to its depositors as it conflicts with the expectations of shareholders that expect them to increase lending to give them maximum returns on their investments in an emerging economy using Nigeria as a case study. Three Nigerian DMBs were purposively selected on cross sectional basis using Pooled Least Square (PLS) method and regression analysis covering a period of 11 years (2008-2018) to analyse the adapted model. The results of the analysis revealed that all the explanatory variables have impact on bank performance

except the inflation rate that showed a significant inverse relation at constant effect stage but later showed an insignificant positive relationship at fixed effect stage.

Research Gap

The results obtained from various empirical findings remain divergent. Some empirical studies revealed a positive significant relationship between liquidity and financial performance of DMBs (Charmler, et al 2018; Ghurtskaia and Lemonjava, 2018; Olangunji et al., 2011; Kosmidou, 2008; Khan and Ali, 2016; Salim & Bilal, 2016; and Ibrahim, 2017). Other studies have reported a negative significant relationship between liquidity and the financial performance of deposit money banks globally (Mohanty & Mehrota, 2018; and Hakimi & Zaghdoudi 2017). The gap established in this study is theoretical. The researcher included NIM as a measure of financial performance in addition to two other ratios of financial performance, ROA and ROE and none of the researchers adopted these three proxies or sub-variables together as a measure of the financial performance of DMBs in Nigeria.

3.0 Methodology

This study is based on secondary data. This study covers the banking industry. A sample of 5 banks was purposefully considered as fairly representative of the banking sector based on age, spread, innovation and ranking respectively (CBN, 2016). The 5 banks represented by the acronym FUGAZ are strategically important banks in the country. The population of this study is 22 Deposit Money Banks listed as of 31st December, 2020. (see Table 1a) for the breakdown of the secondary data. The total asset as at 2020 for all the 22 DMBs in Nigeria is **N 50.99tn, (CBN, 2021)** and the total asset for the 5 DMBs is **N37.5tn**. Thus, the total assets of the 5 selected DMBs represent **70%** of the total asset for all the DMBs in Nigeria as 31st December 2020. The 5 selected DBMs are active players on NGX.

Table 1a: **Population**

S/N	Deposit Money Banks in Nigeria – Dec, 2020
1	First Bank of Nigeria
2	Zenith Bank
3	Guaranty Trust Bank
4	United Bank of Africa
5	Access Bank
6	Union Bank of Nigeria
7	First City Monument Bank
8	Providus Bank
9	Sterling Bank
10	Fidelity Bank
11	Ecobank
12	Stanbic IBTC Bank Nigeria Limited

13	Citi Bank
14	Keystone Bank
15	Heritage Bank
16	Wema Bank
17	Polaris Bank
18	Unity Bank
19	Standard Chartered Bank
20	Globus Bank
21	Titan Bank
22	SunTrust Bank

Source: CBN, 2020

Table 1b: Sample Size of Selected DMBs

S/N	DMBs in Nigeria – Dec, 2020
1	First Bank of Nigeria
2	United Bank of Africa
.3	Guaranty Trust Bank
4	Access Bank
5	Zenith Bank

Source: CBN, 2020

Method of Data Analysis and Statistical Treatment

The time series and cross-sectional data collected from the published financial statements were then subjected to ordinary least square (OLS) regression analysis with the aid of STATA 11 for estimating the coefficients of the independent variables in order to test the applicability of the econometric model adopted by (Mokuolu, et al, 2021). The fixed effects and random effects models are the most commonly used in analyzing panel data, (Yaffee, 2005).

The perceived functionally relationship shall be specified as follows:

$$ROA = f(DAR, CRR, LDR, ABLR) \dots\dots\dots (1a)$$

$$ROE = f(DAR, CRR, LDR, ABLR) \dots\dots\dots (2a)$$

$$NIM = f(DAR, CRR, LDR, ABLR) \dots\dots\dots (3a)$$

Where:

ROA = Total Net Income/Total Asset

ROE = Total Net Income/Total Equity

NIM = Total Interest Income – Total Interest Expenses

DAR = Total Deposit/Total Asset

CRR = Total Cash/Total Deposit

LDR = Total Loan/Total Deposit

ABLR = Total Bank Lending Rate/Total No of Banks - moderating variable.

The econometric model is functionally specified and re-stated as:

$$ROAt = \beta_0 + \beta_1DARt + \beta_2CRRt + \beta_3LDRt + \beta_4ABLRt + \mu_1 \dots\dots\dots(1b)$$

$$ROEt = \alpha_0 + \alpha_1DARt + \alpha_2CRRt + \alpha_3LDRt + \alpha_4ABLRt + \mu_2 \dots\dots\dots(2b)$$

$$NIM_t = \Theta_0 + \Theta_1 DAR_t + \Theta_2 CRR_t + \Theta_3 LDR_t + \Theta_4 ABLR_t + \mu_3 \dots \dots \dots (3c)$$

Where:

$\beta_0, \alpha_0, \Theta_0$ = Constant parameter/Intercept

$\beta_1 - \beta_3$ = Coefficients of independent variables

$\alpha_1 - \alpha_3$ = Coefficients of independent variables

$\Theta_1 - \Theta_3$ = Coefficients of independent variables

μ_1, μ_2, μ_3 = Error term/White Noise/Stochastic Variables

The “a priori expectation” in the model is that all the independent variables of liquidity management expected to have a negative relationship with all the dependent variables of financial performance of the 5 selected DMBs in Nigeria measured by ROA, ROE and NIM. The mathematical expression is represented as $\beta_1, \beta_2,$ and $\beta_3 < 0, \alpha_1, \alpha_2,$ and $\alpha_3 < 0$ and $\Theta_1, \Theta_2,$ and $\Theta_3 < 0$ implying that a certain increase in the independent variables will lead to decrease in ROA, ROE and NIM by a certain unit. The multiple regressions were for the data analysis of the study because it will be easier to forecast the relationship between variables and estimate the influence of each explanatory independent variable to the dependent variable.

4.0 Data analysis, results and discussion of findings

This chapter presents the results, analysis and interpretations of the secondary data collected and analysed for this study by reporting the descriptive statistics of variables used, correlation matrix as well as the presentation of panel regression analysis, along with the discussion of findings.

Preliminary Analysis

Table 2 depicted the descriptive statistics of all the variables used for this study. The dependent variables were ROA, ROE and NIM. The independent variables used were DAR, CRR, LDR and ABLR during the period 2011 to 2020 for 5 DMBs in Nigeria. As shown in the table, ROA has a mean value of 2.7654 with maximum and minimum values of 7.0100 and -1.6000 respectively. This implies that the average return on assets of the sampled DMBs in the country for the period was considerably low. The mean value of ROE was 1.0252 which equally indicates a considerably low return on equity of the sampled DMBs with maximum and minimum values of 12.6000 and -0.1600 respectively.

Table 2 **Summary of Statistics**

Variable	Observation	Mean	Std. Dev.	Minimum	Maximum
Return on Asset (ROA)	50	2.7654	1.7923	-1.6000	7.0100
Return on Equity (ROE)	50	1.0252	2.8731	-0.1600	12.6000
Net Interest Margin (NIM)	50	0.1238	0.2088	0.0100	0.7700
Deposit to Asset Ratio (DAR)	50	0.6904	0.0671	0.5060	0.8070
Cash Reserve Ratio (CRR)	50	23	1.5152	22.5000	27.5000

Loan Deposit Ratio (LDR)	50	2.2296	10.9351	0.4000	78.0000
Average Bank Lending Rate (ABLR)	50	0.1950	0.0287	0.1400	0.2500

Source: Author's Computations, 2022

Correlation Analysis

Table 3 (a, b, and c) displayed the correlation matrix of both the dependent and independent variables of this study. The primary essence of this is to measure the linear relationship between the endogenous and exogenous variables (ROA, ROE, NIM, DAR, CRR, LDR, and ABLR). This correlation matrix reflects the relative strength of the linear relationship between these variables. According to Gujarati (2004), linearity could only be a problem if the pair-wise correlation coefficient is above 0.80. However, it is obvious that the variables in Table 3 (a, b, and c) are orthogonal.

Table 3a: Correlation Matrix

VARIABLES	ROA	DAR	CRR	LDR	ABLR
ROA	1.0000				
DAR	-0.3536	1.0000			
CRR	-0.0623	0.2237	1.0000		
LDR	-0.1352	0.0774	-0.0531	1.0000	
ABLR	0.1844	-0.1086	-0.6462	-0.0248	1.0000

Source: Author's Computations, 2022

Table 3b Correlation Matrix

VARIABLES	ROE	DAR	CRR	LDR	ABLR
ROE	1.0000				
DAR	0.2771	1.0000			
CRR	0.1949	0.2337	1.0000		
LDR	0.3534	0.0774	-0.0531	1.0000	
ABLR	-0.1856	-0.1086	-0.6462	-0.0248	1.0000

Source: Author's Computations, 2022

Table 3c Correlation Matrix

VARIABLES	NIM	DAR	CRR	LDR	ABLR
NIM	1.0000				
DAR	-0.1118	1.0000			
CRR	0.0745	0.2237	1.0000		
LDR	-0.0439	0.0774	-0.0531	1.0000	
ABLR	-0.1052	-0.1086	-0.6462	-0.0248	1.0000

Source: Author's Computations, 2022

Multicollinearity Test

One of the implicit assumptions that is made when using the panel least square estimation method is that the exogenous variables are not perfectly correlated or near perfect correlation with one another. If there is no relationship between the explanatory variables, they would be said to be orthogonal to one another. Table 3c displays the relationship among the independent variables with the aid of the variance inflation factor (VIF). The result indicated that there is no multicollinearity concern among them as indicated by VIF of each variable falling below 10, and the average VIF is also less than 10.

Table 4 Variance Inflation Factor

Variable	VIF	1/VIF
CRR	1.81	0.5521
ABLR	1.73	0.5771
DAR	1.06	0.9390
LDR	1.02	0.9821
Mean VIF	1.41	

Source: Author's Computations 2022

Regression Analysis

It is conventional in running regression analysis to determine the appropriate model between the pooled ordinary least square (OLS) model, fixed effect (FE) model, as well as random effect (RE) model for the study. Therefore, the decision on whether the random effects (RE) model or fixed effects (FE) model was an appropriate model for the first model of this study (ROA) alongside the proxies of explanatory variable) depended on whether the individual effects were fixed or random. Hausman test was conducted to check which model is appropriate between fixed effects and random effects. The result of the Hausman test revealed that the random-effects model is appropriate as indicated by a p-value (0.9984) at 5% level of significance. A further step was taken to determine the appropriate model between random effect and pooled ordinary least square with the aid of Breusch and Pagan Lagrangian multiplier test for random effect, and the result confirmed the appropriateness of random effect as indicated p-value (0.0000) at 5% level of significance.

In a similar fashion, the same procedure was conducted for the second model of this study (ROE with the proxies of exogenous variable). The Hausman test result revealed that the fixed-effect model is the appropriate model as indicated by p-value (0.0001) at 5% level of significance. More so, the same procedure was followed in determining the appropriate model for the third model of this study (NIM and the proxies of independent variable), and the Hausman test result revealed that random-effects model is appropriate as indicated by p-value (0.9999) at 5% level of significance. Further step was taken to determine the appropriate model between random effect and pooled ordinary least square with the aid of Breusch and Pagan Lagrangian multiplier test for random effect, and the

result confirmed the appropriateness of random effect as indicated p-value (0.0000) at 5% level of significance. Therefore, Table 4 shows the result of the regression analysis for effect of liquidity management on financial performance of DMBs in Nigeria.

Model One

Using random effect model, the R^2 value of 0.2547 (25%) implies that 25% fitness was observed in the sample regression line, and the total variation in the financial performance (proxy with ROA) of the sampled DMBs is jointly explained by the independent variable proxies (DAR, CRR, LDR, ABLR). The Wald X^2 (14.72) as well as its corresponding p-value 0.0053 at 5% level of significance indicates strong statistical significance of the model and lend credence to the reliability and validity of the model. The description of each explanatory variable in relation with the explained variable (ROA) is as follows.

As shown in Table 4, deposit to asset ratio (DAR) had an inverse relationship with return on assets (-3.6785) but statistically insignificant with P-value of 0.079 at 5% level of significance. This result equally corroborated the correlation matrix result which revealed an inverse relationship between DAR and ROA, and this suggests that DAR impacts negatively on financial performance of the sampled DMBs, but this is found to be statistically insignificant. Therefore, the stated hypothesis that there is no significant relationship between DAR and ROA of selected DMBs in Nigeria cannot be refuted. The cash reserve ratio (CRR) on the other hand had positive relationship with return on assets (0.1532), but also found to be statistically insignificant with P-value of 0.105 at 5% level of significance. This is also in tandem with the correlation matrix result which equally found a positive relationship between CRR and ROA. This simply suggests that CRR augurs well for return on assets of the sampled DMBs, though, this is insignificant statistically. Hence, the stated hypothesis that CRR does not significantly affect ROA of selected DMBs in Nigeria cannot be refuted.

Further, loan to deposit ratio (LDR) had an inverse relationship with return on assets (-0.0061) but was statistically insignificant with a P-value of 0.545 at 5% level of significance. This result equally corroborated the correlation matrix result which revealed an inverse relationship between LDR and ROA, and this suggests that LDR impacts negatively on the financial performance of the sampled DMBs, but this is found to be statistically insignificant. Therefore, the stated hypothesis that there is no significant relationship between LDR and ROA of selected DMBs in Nigeria cannot be refuted. On the contrary, the average bank lending rate (ABLR) had a positive relationship with return on assets (15.7721), and was found to be statistically significant with a P-value of 0.001 at 5% level of significance. This is also in consonance with the correlation matrix result which equally found a positive relationship between ABLR and ROE. This simply suggests that ABLR portends well for the return on equity of the sampled DMBs. Hence, the stated hypothesis that ABLR does not significantly affect ROE of selected DMBs in Nigeria cannot be refuted.

Model Two

The result of the Hausman test indicated that the Fixed effect model is the appropriate model for model two, and as shown in Table 4, the R^2 value of 0.1521 (15%) implies that 15% fitness was observed in the sample regression line, and the total variation in the financial performance (proxy with ROE) of the sampled DMBs is jointly explained by the independent variable proxies (DAR, CRR, LDR, ABLR). The description of each explanatory variable in relation to the explained variable (ROE) is presented as follows.

It is apparent in Table 4 that deposit to asset ratio (DAR) had an inverse relationship with return on equity (-7.1925) but was statistically insignificant with a P-value of 0.287 at 5% level of significance. This result suggests that DAR impacts negatively on the financial performance of the sampled DMBs, but this is found to be statistically insignificant. Therefore, the stated hypothesis that there is no significant relationship between DAR and ROE of selected DMBs in Nigeria cannot be refuted. On the contrary, the cash reserve ratio (CRR) had a positive relationship with return on equity (0.3719), but was also found to be statistically insignificant with P-value of 0.221 at 5% level of significance. This is also in tandem with the correlation matrix result which equally found a positive relationship between CRR and ROE. This simply suggests that CRR augurs well for return on equity of the sampled DMBs, though, this is insignificant statistically.

Table 4 Regression Result for Effect of Liquidity Management on Financial Performance of Selected DMBs in Nigeria

Variable	Model 1 (ROA) Random Effect	Model 2 (ROE) Fixed Effect Model	Model 3 (NIM) Random Effect Model
Constant	-1.2806 (0.677)	-1.2645 (0.893)	0.3338 (0.635)
DAR	-3.6785 (0.079)	-7.1925 (0.287)	-0.2515 (0.605)
CRR	0.1532 (0.105)	0.3719 (0.221)	0.0043 (0.850)
LDR	-0.0061 (0.545)	0.0511 (0.120)	-0.0002 (0.918)
ABLR	15.7721 (0.001)*	-7.2412 (0.639)	-0.6871 (0.552)
F-Statistic		1.84 (0.1398)	
Wald X^2	14.72 (0.0053)*		1.04 (0.9035)
Hausman Test	0.12 (0.9984)	23.81 (0.0001)*	0.03 (0.9999)
Breusch and Pagan Lagrangian multiplier test	130.97 (0.0000)*		18.69 (0.0000)*

*denotes 5% level of significance.

() denotes Prob., while the value denotes coefficients of the variables.

Source: Author's Computations, 2022

Hence, the stated hypothesis that CRR does not significantly affect ROE of selected DMBs in Nigeria cannot be refuted. More so, the loan to deposit ratio (LDR) equally had a positive relationship with ROE (0.0511) but statistically insignificant with P-value of 0.120 at 5% level of significance. This result equally corroborated the correlation matrix result which revealed a positive relationship between LDR and ROE, and this suggests that LDR has positive impact on financial performance of the sampled DMBs, but this is found to be statistically insignificant. Therefore, the stated hypothesis that there is no significant relationship between LDR and ROE of selected DMBs in Nigeria cannot be refuted. On the contrary, the ABLR had an inverse relationship with return on equity (-7.2412), and was equally found to be statistically insignificant with P-value of 0.639 at 5% level of significance.

This is also in consonance with the correlation matrix result which equally found a positive relationship between ABLR and ROA. This simply suggests that ABLR portends well for return on assets of the sampled DMBs. Hence, the stated hypothesis that ABLR does not significantly affect ROA of selected DMBs in Nigeria cannot be accepted. Therefore, this study asserts that ABLR significantly impact positively on ROA.

Model Three

Using random effect model as indicated by the result of Hausman test shown in Table 4, deposit to asset ratio (DAR) had an inverse relationship with net interest margin (-0.2515) but statistically insignificant with P-value of 0.605 at 5% level of significance. This result equally corroborated the correlation matrix result which revealed an inverse relationship between DAR and NIM, and this suggests that DAR impacts negatively on financial performance of the sampled DMBs, but this is found to be statistically insignificant. Therefore, the stated hypothesis that there is no significant relationship between DAR and NIM of selected DMBs in Nigeria cannot be refuted. The cash reserve ratio (CRR) on the other hand had positive relationship with net interest margin (0.0043), but also found to be statistically insignificant with P-value of 0.850 at 5% level of significance. This is also in tandem with the correlation matrix result which equally found a positive relationship between CRR and NIM. This simply suggests that CRR augurs well for the financial performance of the sampled DMBs, though, this is insignificant statistically. Hence, the stated hypothesis that CRR does not significantly affect ROA of selected DMBs in Nigeria cannot be refuted. Further, loan to deposit ratio (LDR) had an inverse relationship with net interest margin (-0.0002) but statistically insignificant with P-value of 0.918 at 5% level of significance. This result equally corroborated the correlation matrix result which revealed an inverse relationship between LDR and NIM, and this suggests that LDR impacts negatively on financial performance of the sampled DMBs, but this is found to be statistically insignificant.

Therefore, the stated hypothesis that there is no significant relationship between LDR and NIM of selected DMBs in Nigeria cannot be refuted. More so, the average bank lending rate (ABLR) equally had an inverse relationship with net interest margin (-0.6871), and was also found to be statistically insignificant with P-value of 0.552 at 5% level of significance. This is also in consonance with the correlation matrix result which equally found a negative relationship between ABLR and NIM. This simply suggests that ABLR impact negatively on net interest margin of the sampled DMBs, though, this is statistically insignificant. Hence, the stated hypothesis that ABLR does not significantly affect NIM of selected DMBs in Nigeria cannot be refuted.

5.0 Conclusion and recommendations

This study investigated liquidity management and financial performance among deposit money banks in Nigeria. Arising from the findings, it is evident that liquidity management has a negative and insignificant positive impact on all the proxies of financial performance. This finding supports the findings of Olagunju, et al (2012); and Bassey (2017) in Nigeria. Hence, the study concludes that the financial performance of the banks in Nigeria can be improved upon by the establishment of sound and robust liquidity management structure in place to ensure that adequate liquidity is maintained to meet matured and maturing obligations as they fall due. Based on the findings presented above, the study concludes that liquidity management has a negative but statistically insignificant impact on the financial performance of DMBs in Nigeria when proxied by DAR and ROA, CRR and ROE, LDR and NIM. This means the higher the DAR the lower will be the financial performance of DMBs in Nigeria. This result is consistent with previous study of (Kayode, *et al*, 2015) but inconsistent with the previous study of (Adesugba and Bambale, 2016). The study also concludes that there is negative but insignificant relationship between liquidity management and financial performance when proxied by LD and NIM of DMBs in Nigeria. The result seems relevant for now since no previous study has been carried on liquidity management and financial performance before for the period under review using DAR, CRR and LDR and ROA, ROE and NIM as proxied respectively.

The study makes some policy recommendations as follows:

- i. CBN should strive to improve their regulatory capacity over all DMBs in Nigeria. If the CBN wish to improve liquidity of DMBs they should proactively control the volume of money in circulation through the use of CRR in order to achieve the macroeconomic objectives of the government and also stabilise the DMBs in Nigeria,
- ii. Regular training and retraining couple with professional development of staff should be encouraged by the board and management of the bank and CBN.
- iii. CIBN should enforce the policy of the maximum level a bank staff working in any DMBs cannot rise beyond without passing the final examination of the institute to become member of the institute.

- iv. Specialized financial court should be established by the government to prosecute serial loan defaulters, directors, management and staff of DMBs involve in any non-performing loan imbroglio and loan above their single obligor limit.

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