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LIQUIDITY MANAGEMENT AND FINANCIAL PERFORMANCE OF SELECTED LISTED DEPOSIT MONEY BANKS IN NIGERIA

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Abstract

The study examined the effect of liquidity management on the financial performance of ten selected listed deposit money banks in Nigeria by analyzing the banks' data from 2012-2021. Financial performance was measured with return on assets while liquidity management was measured with liquidity ratio, loan to deposit ratio and cash reserve ratio. The study is based on commercial loan theory. The hypothesis of the study was analyzed using panel regression model. The study found out and concluded that the three proxies which measured the liquidity management of these banks have a joint significant effect on financial performance of deposit money banks in Nigeria with prob. (f-stats.) of 0.0000.

Keywords: Liquidity management, financial performance, cash reserve ratio, liquidity ratio, return on assets.

1 INTRODUCTION

The banking sector plays an important role in the financial system of a country. The profitable operation of banks are important for easeful operation of the financial system of a country, if the banking sector have a problem, all the sectors in the economy is affected as no sector can survive without the flow of funds from the banking sector to the economy. The banking sector is the heartbeat of any economy and its profitability is affected by many factors but liquidity is a key factor (Olanrewaju & Adeyemi, 2015).

Liquidity in the banking sector is the ability of the bank to meet the demand of the depositor when they need to withdraw their deposit and as well as loan demands of customers. Liquidity is important to banks since large amount of their financial obligations are payment on demand but normally the more liquid an asset is, the lower it captivates (Dzapasi, 2020). A firm's liquidity refers to the firm's ability to repay its short-term financial obligations, which plays an essential role in smoothing out all the activities that it conducts on a daily basis (Yameen, Farhan, & Tabash, 2019). The management of liquidity is therefore an important subject that must be addressed, especially in these days of dwindling economy.

According to Otekunrin, Nwanji, Agba, Olowookere, Fakile, Lawal, Ajayi and Falaye (2018), liquidity management in the banking institution is the ability of a bank to meet the customer's withdrawal demand and other financial obligation. A bank's ability to meet its customer withdrawal needs and other payments is a result of its liquidity management; which is an important part of a bank's operation as it affects her profitability (Otekunrin, *et. al.*, 2018).

The importance of liquidity management came up during the financial crisis between mid-2007 and early 2009, when the banking industries were affected by serious financial crisis. During this crisis, several banks had problems because they failed in their liquidity management. Banks received an ultimatum to either merge or recapitalize to improve their efficiency and liquidity position. This led to the merging of Nigerian deposit money banks from 89 to 24 banks. The Central Bank of Nigeria (CBN) developed a policy to increase their capital base from 2 million to 25 billion naira, resulting to the shutdown of many Nigerian Deposit Money Banks (Agbada & Osuji, 2013).

According to Alalade, Oseni, and Adekunle (2020), financial performance simply refers to the act of performing financial functions in a company by the manager. Also, financial performance reflects the extent to which financial objectives have been achieved over the years or certain period. According to Business dictionary, financial performance refers to "a company's overall efficiency and performance in generating a return on investment and managing its financial resources". This emphasizes that financial performance is a broad term that surrounds many different measurement, including profitability, efficiency and management of financial resources.

One of the main issues with financial performance of deposit money banks is lack of liquidity. Liquidity management refers to the process of ensuring that banks have enough liquid cash to meet its financial obligation as at when due. Banks need to ensure that they uphold sufficient liquidity that can meet the demand of their customer's withdrawal and other financial demands (Agbada & Osuji, 2013). Thus, the research hypothesis is stated as:

H_0: Liquidity management does not have significant effect on return on assets of selected listed deposit money banks in Nigeria.

2 LITERATURE REVIEW

2.1 Financial performance

Financial performance identifies the difference between expenses and income (Bassey & Moses, 2015). Financial performance shows the financial condition of an organization for a certain period. It helps to measure the ability of how an organization utilize her resources. It can be measured using different business-related formulas that enable users get specific information on the organization effectiveness. Financial performance also helps to ascertain firms' financial stability. Financial stability in form of asset quality, capital adequacy, revenue, liquidity, management and other important aspect that may have effect in determining financial performance. Financial performance is examining how effective a company is in using her assets to generate revenue, usually within the period of one year (Erasmus, 2018).

2.2 Liquidity management

Gbenga, Abass, Idera, and Adebayo (2020) defined liquidity management as process, methods as well as ways of planning, organizing, analyzing, directing, and controlling the resources of an organization in a manner that has adequate liquid assets in stock as well as effective, accurate and economic transformation

of assets into cash immediately when the need arises. Inadequate management of liquidity of bank may lead to the banks' inability to meet the financial demands of their customer as at when needed (Ajose & Balogun, 2021).

Liquidity management is an on-going process that ensures that bank's funds need can be met at a reasonable cost. It is the process that ensures that bank maintains the required reserve level with the central bank and can meet expected and unforeseen cash needs in the economy (Shekhar & Jena, 2020). Bhattacharyya and Sahoo (2011) states that liquidity management involves the discussion of sufficient cash balance and its correlating balance to give fulfilment to the need of the customer at any point in time and making sure that there is money available to perform the day–day operation of the bank. Liquidity management comprises all the activities, policies, and measures put in place by a bank in ensuring that it has enough cash to meet its short-term obligations and reduce its vulnerability to liquidity risk. There are number of management measures which can be taken such as CBN reserve requirement for deposit money banks, cash balances owing to other deposit money banks (Duruechi, Ojiegbe, & Otiwu, 2016).

2.3 Theoretical framework

Taking into consideration effective management of liquidity, this study is anchored on commercial loan theory as it helps to determine the suitable method for managing liquidity which is, banks can invest some of their funds generated in a short term self-liquidated loan for the purpose of their net working capital. By doing so, banks can generate interest on loan, get back the funds on time and be able to meet the demands for cash investors and depositors.

2.4 Empirical Review

Daniel (2017) did an investigation on liquidity management and performance of deposit money banks in Nigeria. The main aim of the study was to find empirical evidence on the impact of liquidity management on performance of deposit money banks for the period 1986-2011. Data from the study was obtained from the annual reports of twenty-four (24) deposit money banks. The result revealed positive impact between return on equity and liquidity management variable, liquidity and cash reserve ratio, whereas loan to deposit ratio shows negative impact.

Shreeram and Hatarirat (2019) investigate the impact of liquidity management on the financial performance of Nepalese commercial banks. Data for the study was obtained from the financial statements of selected commercial banks in Nepalese for the period 2006-2007; 2015-2016. Using Pearson correlation co-efficient, the results show that credit deposit ratio is negatively correlated to Tobin's Q.

Ogochukwu, Udem, Oluseun, Efanga, Okenya, Emarii, and Enya (2021) studied liquidity management and commercial banks performance in Nigeria (an auto-regression distributed lag model approach). The aim of the study was to analyze the impact of liquidity management on commercial banks (deposit money banks) performance for the period of 1981-2019. Data from the study was obtained from 2019 statistical bulletin of the Central Bank of Nigeria for the financial sector, using Auto Regressive distributed lag (ARDL) model. The result revealed the significant impact that liquidity management has on the Nigerian deposit money banks' performance.

Igboroje and Akpokerere (2021) examine the effect of liquidity management on banks performance in Nigeria. The major aim of the study was to find empirical evidence of the degree to which effective liquidity management affects banks' performance and how to improve banks' performance and liquidity position. Data for the study was obtained from Central Bank of Nigeria annual reports, covering the period 1980 - 2017. Data was analyzed using Co-integration and Error correction techniques (ECT) produced by Auto

Regression Distributed Lag (ARDL) techniques as well as granger causality test, the result revealed that there is a long run relationship between bank performances and liquidity ratio.

Following the review of different theoretical and empirical literature, this study tries to add value on the area of liquidity management and financial performance of deposit money banks listed on the Nigerian exchange group in the following areas: Some previous studies do not focus on the three variables (liquidity ratio, cash reserve ratio, loan to deposit ratio) used as measurement of liquidity management in this study (Dzapasi, 2020). This study therefore contributes to the literature by examining the effect of liquidity management (proxied by liquidity ratio, cash reserve ratio, loan to deposit ratio) on the financial performance of listed deposit money banks.

3 METHODOLOGY

This study used *ex-post facto* research design with a population of fifteen listed deposit money banks on the Nigerian exchange group as at 31st December 2021. Quoted Nigerian Deposit Money Banks served as the population of the study as the banking sector financial performance greatly lies on the effective management of her liquidity. The purposive sampling technique was adopted to select ten (10) listed deposit money banks as samples based on the criteria that their financial statement are made available on their website from 2012-2021. The financial statements of these ten listed deposit banks were found to be available for the period covered by the study. Liquidity management was measured with liquidity ratio (which is calculated as current assets divided by current liability), cash reserve ratio (which is calculated as reserve requirement divided by total deposit) and Loan to Deposit Ratio (which is calculated as total loan divided by total deposit).

Financial performance was measured with return on assets which is calculated as net income divided by total assets. Data from 2012 to 2021 were analyzed using descriptive statistics and inferential statistics. The model specification is as follows:

$$ROA = \beta_0 + \beta_1 LR_{it} + \beta_2 CRR_{it} + \beta_3 LDR_{it} + \beta_4 CAG_{it} + \varepsilon_{it}$$

Where,

ROA = Return on Assets
LR = Liquidity Ratio
CRR = Cash Reserve Ratio
LDR = Loan to Deposit Ratio
CAG = Company Age
ε_{it} = Error Term
β_0 = regression intercept which is constant
β_1 …… β_4 = represent the coefficient of explanatory variables.

4 ANALYSIS AND RESULTS

The results of the analysis of liquidity management and financial performance of listed deposit money banks in Nigeria are discussed in this section.

4.1 Descriptive Statistics

This sub-section presents the summary statistics of the variables used in the study. The important statistical features of the variables such as their means, medians, maximum and minimum values as shown in Table 1.

The mean of return on assets (ROA) is 0.018443, indicating that, on average, companies in the sample had a 1.84% return on their assets. The maximum liquidity ratio (LQR) is 27,128.00, suggesting the presence of some extreme values or outliers in the dataset.

All the independent variables are positively skewed. Meanwhile, the dependent variable is negatively skewed. This means that there are some extreme values on the left side of the distribution that pull the mean towards lower values while the majority of the data is concentrated towards the higher end. In other words, there are some companies with lower returns that are pulling the mean towards negative values.

Table 1. Descriptive statistics result

	ROA	LQR	CRR	LDR	CAG
Mean	0.018443	375.6331	0.372835	0.606527	21.20202
Median	0.015200	1.031300	0.224700	0.609900	16.00000
Maximum	0.112600	27128.00	3.500400	2.967000	51.00000
Minimum	-0.095300	0.097500	0.010600	0.034500	0.000000
Std. Dev.	0.023419	2894.544	0.523818	0.341680	14.11540
Skewness	-0.810868	8.466721	4.170025	3.131497	0.829933
Kurtosis	10.97005	76.45356	22.83982	24.21268	2.461836
Jarque-Bera	272.8758	23438.94	1910.596	2017.963	12.55971
Probability	0.000000	0.000000	0.000000	0.000000	0.001874
Observations	99	99	99	99	99

Source: Authors' computation using E-views 10

4.2 Correlation analysis

Table 2 presents the correlation analysis of the variables used in the study. The correlation coefficient and accompanying probability values are presented. From the result presented in Table 2, it is observed that the correlation coefficient of variable pairs is not large enough to cause the problem of multicollinearity.

Table 2: Correlation Analysis Result

Correlation					
Probability	ROA	LQR	CRR	LDR	CAG
ROA	1.000000				

LQR	-0.027467	1.000000			
	0.7873	-----			
CRR	-0.016236	0.024238	1.000000		
	0.8733	0.8118	-----		
LDR	-0.031600	-0.086049	-0.051986	1.000000	
	0.7562	0.3971	0.6093	-----	
CAG	-0.068339	-0.063119	-0.162023	-0.069994	1.000000
	0.5015	0.5348	0.1091	0.4912	-----

Source: Author's computation using E-views 10

4.3 Inferential statistics

In this sub-section, the study presents the result of the inferential statistics used to draw insight into the relationship between liquidity management and financial performance of selected listed deposit money banks in Nigeria, by testing the hypotheses. The study used panel data to analyze this relationship. The choice of model (between the fixed effects model and random effects model) was made using the Hausman test.

H_0: Liquidity management does not have significant effect on return on assets of selected listed deposit money banks in Nigeria.

The result shows that the coefficient of LQR is positive but very close to zero, like before, indicating a negligible relationship between LQR and ROA. The t-statistic is below 2 (absolute value), just as the probability of the t-statistics is greater than 0.05 indicating that the coefficient is not statistically significant. This implies that LQR has a very small positive effect on ROA, but it is not statistically significant.

On the other hand, the coefficient of CRR is negative, suggesting a negative relationship between CRR and ROA, just like in the first. The magnitude of the coefficient still remains small, indicating a relatively weak impact of CRR on ROA. This coefficient implies a 0.0046 percentage decrease in ROA for one percentage increase in CRR. The t-statistic indicates that the coefficient is not statistically significant at the 5 percent level of significance.

Furthermore, the coefficient of LDR is negative, suggesting a negative relationship between LDR and ROA. The magnitude of the relationship is relatively small, indicating a weak impact. The estimated coefficient

indicates a 0.00505 percentage decrease in ROA for one-percent increase in LDR. This relationship is not statistically significant given that probability value of the t-statistics is greater than 0.05 level of significance, and the t-statistics value itself is less than 2 in absolute terms.

The other statistics that are used in evaluating the model are explained below:

i. F-statistic (6.167024) and Prob. (F-statistic) (0.000000): The F-statistic tests the overall significance of the regression model, determining whether there is a statistically significant relationship between the independent variables as a group and the dependent variable. In this case, the F-statistic is significant with a probability value of 0.000000, indicating strong evidence against the null hypothesis that all coefficients are zero.
ii. Durbin-Watson stat (2.328049): The Durbin-Watson statistic is used to detect the presence of autocorrelation in the residuals of the model. A value close to 2 indicates no significant positive or negative autocorrelation. In this case, the value of 2.328049 suggests that the model's residuals do not exhibit significant autocorrelation.

These results are presented in Table 4.3.

Table 3. Fixed Effects Result of the Effect of Liquidity Management on Return on Assets on Selected Listed Deposit Money Banks

Dependent Variable: ROA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.004380	0.014537	0.301271	0.7639
LQR	4.91E-07	6.62E-07	0.741529	0.4604
CRR	-0.004641	0.003886	-1.194184	0.2357
LDR	-0.005054	0.005835	-0.866089	0.3889
CAG	0.000881	0.000645	1.365161	0.1758
R-squared	0.485383	Mean dependent var		0.018443
Adjusted R-squared	0.406677	S.D. dependent var		0.023419
S.E. of regression	0.018039	Akaike info criterion		-5.062212
Sum squared resid	0.027659	Schwarz criterion		-4.695225
Log likelihood	264.5795	Hannan-Quinn criter.		-4.913729
F-statistic	6.167024	Durbin-Watson stat		2.328049
Prob(F-statistic)	0.000000			

Source: Author's computation using E-views 10

5 DISCUSSION

The results show that none of the independent variables (liquidity ratio, cash reserve ratio, loan-to-deposit ratio and company age) individually has statistically significant effects on ROA. This suggests that changes in these financial ratios, which are commonly used to assess liquidity and capital adequacy, may not on their own have a substantial impact on the profitability of assets. The small magnitudes of the coefficients further support the notion that these variables separately have weak or negligible relationships with ROA. The study however indicated that, judging from the joint effect, liquidity management has significant effect on financial performance of listed deposit money banks in Nigeria.

6 CONCLUSION AND IMPLICATIONS

In conclusion, although liquidity ratio, cash reserve ratio, and loan to deposit ratio individually do not have a significant influence on the profitability of an asset, when put together, these three proxies of liquidity management have significant influence on the financial performance of the banking institution. The presence of a relationship between liquidity management and return on assets highlight that liquidity management in aggregate has direct impact on the financial performance of listed deposit money banks in Nigeria. Efficient liquidity management practices such as maintaining appropriate cash reserve and optimizing the use of short term assets and liabilities, can contribute to higher profitability and improved return on assets.

This study contributes to research by bringing to fore the joint effect liquidity ratio, cash reserve ratio and loan to deposit ratio have on the banking institution financial performance. The practical implication of this is for the management team of the banking institution to keep in check these three ratios, which jointly influence the return on assets, a measure of the banking institution financial performance.

AUTHOR DECLARATIONS

Author Contributions:
Conceptualisation: O.J.O. and D.I; methodology: O.J.O. and D.I.; software: O.J.O. and D.I.; validation: O.J.O. and D.I.; formal analysis: D.I and O.J.O.; investigation: D.I. and O.J.O.; resources: D.I. and O.J.O.; data curation: O.J.O. and D.I.; writing- original draft preparation: D.I. and O.J.O.; writing – review and editing: P.E.K.; O.J.O.; I.D., & Y.L.E.; funding acquisition: D.I.; P.E.K.

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REFERENCES

Agbada, A.O. & Osuji, C.C. (2013), the efficacy of liquidity management and banking performance in Nigeria, *International Review of Management and Business Research*. *2*(1), 223-233.

Ajose, G., & Balogun, S. (2021). Liquidity management and financial performance of deposit money banks in Nigeria. *Nigeria Defense Journal of Economic and Finance*, *15*, 267-276.

Alalade, S.A., Oseni, E., & Adekunle, O.A. (2020). Monetary policy and performance of deposit money banks in Nigeria, *Asian Social Science.*

Bassey, G.E., & Moses, C.M. (2015). Bank profitability and liquidity management: A case study of selected Nigerian deposit money banks. *International Journal of Economics, Commerce and Management*, *3*(4), 1-24.

Bhattacharyya, I., & Sahoo, S. (2011). Comparative Statics of Central Bank Liquidity Management: Some Insights. *International Advances in Economic Research*.

Daniel, B.E. (2017). Liquidity Management and Performance of Deposit Money Banks in Nigeria (1986 – 2011): An Investigation. *International Journal of Economics, Finance and Management Sciences*, *5*(3), 146-161.

Duruechi, A.H., Ojiegbe, J.N., & Otiwu, K.C. (2016). Liquidity management measures and bank performance in Nigeria: An empirical analysis, *European Journal of Business and Management*, *8*(17), 24-35

Dzapasi, F.D. (2020). The impact of Liquidity Management on Bank Financial Performance in a subdued economic environment: A case of the Zimbabwean Banking Industry, *PM World Journal*, *4*(1).

Erasmus, E.G. (2018). Cost Management Practice and Financial Performance of Listed Deposit. Money Banks in Nigeria, *Journal of Accounting and Financial Management*, International Institute of Academic Research and Development, 7, 22021.

Gbenga, F.B., Abass, B.K., Idera, T.A., & Adebayo A.S. (2020). Liquidity risk management and the performance of deposit money banks (2011-2017). *Lapai International Journal of Management and Social Science*, 12, 1-12.

Igboroje, E.J., & Akpokerere, O.E. (2021). Liquidity management and the performance of deposit money banks in Nigeria, *IOSR Journal of Economics and Finance*, *12*, 20-34.

Shreeram, K., & Hatarirat, I. (2019). Liquidity management and financial performance of Nepalese commercial banks (NJMS). *2*, 78-87.

Ogochukwu, C., Udem, O., Oluseun, P., Efanga, Okenya, Emari, & Enya, G. (2021). Liquidity management and commercial banks performance in Nigeria (Auto-regressive Distributed Lag ARDL model approach), *Net-volatiles and Essent Oil*, *8*, 912-925.

Olanrewaju O.M., & Adeyemi O.K. (2015). Causal relationship between liquidity and profitability of Nigerian deposit money banks, *International Journal of Academic Research in Accounting Finance and Management Sciences*, *5*, 165-171.

Otekunrin, A.O., Nwanji, T.I., Agba, D.Z., Olowookere, J.K., Fakile, S.A., Lawal, S.A., Ajayi, S.A., & Falaye, A.J. (2018). Effect of Taxation on Corporate Investment: A case study of Cadbury, Nestle

and Federal Inland Revenue Service. *Proceedings of the 32nd International Business Information Management Association Conference,* 7483-7398.

Shektar & Jana (2020). The impact of liquidity management on profitability of steel authority of India Limited (SAIL): An empirical assessment. *63*(6): 23118-23133. https://www.researchgate.net/publication/349085277

Yameen, M., Farhan, N.H.S., & Tabash, M.I. (2019). The Impact of Liquidity on Firms' Performance: Empirical Investigation from Indian Pharmaceutical Companies. *Academic Journal of Interdisciplinary Studies, 8*(3).

APPENDIX

List of Deposit money Banks on the Nigerian Exchange Group as at 31st December, 2021.

1	Access Bank PLC
2	Fidelity Bank
3	Frist City Monument Bank Limited
4	First Bank
5	Guaranty Trust Bank
6	Union Bank
7	United Bank for Africa
8	Zenith bank
9	Stanbic IBTC bank
10	Eco Bank
11	Sterling Bank
12	Unity Bank PLC
13	Wema Bank PLC
14	Jaiz Bank
15	Polaris Bank

Source: Authors' Compilation (2023)