EFFECT OF LIQUIDITY MANAGEMENT ON PROFITABILITY OF DEPOSIT MONEY BANKS IN AN EMERGING ECONOMY

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Abstract

The study examines the effect of 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 in order to give them maximum returns on their investments in an emerging economy using Nigeria as a case study. Three Nigerian Deposit Money Banks 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. The tests for the Overall Significance of the Model from the

pooled fixed effect using F-Test statistics showed that the whole model is statistically significant (2.838853>0.044244) in explaining the behavioural variations in Return on Asset. Conclusively, the study has empirically established that liquidity management variables are good determinants of the profitability of the sampled banks. The study however recommends among others that the regulatory authorities should formulate macroeconomic policies that promote low inflation rate

Keywords: Return on Assets, Deposits, Loans and Advances, Inflation Rate, Reserve Requirement, Nigeria

INTRODUCTION

In every organized system in the world, there are major components that are imperative for the survival and success of the system which is also applicable to the financial system. The financial institution have contributed immensely to the growth of the entire financial system, as they offer an efficient institutional method of intermediating resources directed from less productive users to more productive users. In the course of performing these financial intermediation role, the financial institutions has proved to be an effective link between savers and borrowers. Among the financial institutions that have partake in these important financial intermediation role are the deposit money banks. Deposit mobilization and credit extension have become the strong base for the major functions of the deposit money banks. Deposit money banks have become a very important institution in the financial system as it helps in facilitating the movement of financial assets that are less desirable to the more desirable public who needed the financial assets. Bank management in their financial intermediation role need to pay particular attention to the conflicting objectives of profitability and liquidity, which are the two focal points of the commercial banks objectives. These objectives are always in conflict with each other because if a bank intend to achieve higher profitability it will gradually destroy its liquidity and solvency position and vice versa and a bank that cannot pay its customer on demand and continue to fail to fulfill its obligations to their customer, would be considered as sick or being illiquid which may transcend to insolvency.

Profitability and liquidity are practically effective indicator of the corporate wealth and performance of any profit oriented venture including deposit money banks. These performance index are very important to the shareholders and depositors who are major stakeholders of a bank. Shareholders expect the bank management to increase lending so as to give them maximum return on their investments while the depositors expect the bank to keep sufficient idle cash to meet their demand. To ensure the survival and growth of the deposit money banks there is the need to reconcile these conflicting positions of profitability objective conflicting with that of

liquidity, and the shareholders' interest conflicting with that of the depositors through effective liquidity management.

Liquidity management is a concept that is receiving serious global attention especially with the current financial situations and the state of the world economy. Oloyede (2002) defines liquidity as the state or condition of a business organization which determines its ability to honour or discharge its maturing obligations. Some of the striking corporate goals of any organisation include the need to maximize profit, maintain high level of liquidity in order to guarantee safety, attain the highest level of owner's net worth coupled with the attainment of other corporate objectives. Thus the importance of liquidity management as it affects corporate profitability in today's business world cannot be overemphasized. The crucial part in managing working capital is required maintenance of its liquidity in day-to-day operation to ensure its smooth running and meets its obligation (Eljelli 2004). Liquidity plays a significant role in the successful functioning of a business firm especially deposit money bank.

The aim of this study therefore is to examine the effect of liquidity management on profitability of deposit money banks in an emerging economy such as Nigeria, and ensure its ability to meet up the depositors demand thereby maximizing its value. The study will determine whether a functional relationship exists between liquidity and profitability and, thus establish whether or not both reinforce each other and if the level of liquidity and illiquidity will have any effect on the performance of deposit money banks and the length at which this liquidity can be used as competitive instruments.

REVIEW OF LITERATURE

Liquidity management refers to the planning measure and control necessary to ensure that the organization maintains enough liquid assets either as an obligation to the customers of the organization so as to meet some obligation incidental to survival of the business or as a measure to adhere to monetary policies of the central bank. In the view of Olagunju, Adeyanju, & Olabode (2011) where there is a decline in market price of securities or where additional fund is needed to correct the bank reserve position for a very short time, it will definitely be expensive to sell securities than to borrow from another bank. However, most commercial banks in their bid not to contravene the regulation specifying legal minimum reserve requirement by the supervisory agency and in order to provide against unforeseen large withdrawals, resolve to maintain reserves in excess of their legal requirements. Keeping excess reserve for the purpose of short run safety means to forgo income or earnings therefore commercial banks need to manage their reserves adequately through effective liquidity management which involves full utilization of all reserves.

It is relatively very easy to inject liquidity into the system especially through deficit financing. It is however, difficult and costly to withdraw it. Cash reserve and liquidity ratio requirements are generally regarded as instruments of financial regression, to the extent that they represent unilateral action by the central bank.

Consequently, their usefulness as instruments for liquidity management imposes financial burden on the banks even when they are effective. However, the effectiveness of the instrument which the Central Banks of Nigeria currently employs to manage the level of liquidity in the banking system is also influenced by their monitory and measurement. For example, it is necessary for the instrument to be measured and monitored with the reserve maintenance period.

This will ensure that the targeted monetary aggregate is closely linked to the based money. But due to the absence of a wide area network of the banking industry and the late rendition of returns by banks, CBN measurement and maintenance period are few and far between, consequently, instruments are not buildings as intended despite their present high levels.

The open market operations involve buying and selling of securities by Central Bank, the central bank's transaction in security charge the volume of reserves in the banking system a purchase adds to the non-borrowed reserves, and a sale reduces them. This characteristics exchange in the reserve of the system with a purchase or sales of securities by the Central bank makes open market operation the most powerful, flexible and precise tool of monetary policy.

Theoretical Framework

Albeit, various theories have been propounded by various scholars in an attempt to explain liquidity management, this research work is however underpinned on the Anticipated Income Theory as its theoretical framework.

The proponent of this theory posits that the bank can manage its liquidity through the appropriate directing of the granted loans advanced to their customers, and the ability to collect these loans when due in a timely manner and to reduce the possibility of delays in repayment at the maturity time. According to Nzotta (2004) the theory emphasizes the earning potential and the credit worthiness of a borrower as the ultimate guarantee for ensuring adequate liquidity. Nwankwo (1992) posits that the theory points to the movement towards self-liquidating commitments by banks. This theory posts that bank's management can plan its liquidity based on the expected income of the borrower, and this enables the bank to grant a medium and long-term loans, in addition to short-term loans as long as the repayment of these loans are linked by the borrowers expected income to be paid in a periodic and regular premiums, and that will

enable the bank to provide high liquidity, when the cash inflows are regular and can be expected. This theory has encouraged many commercial banks to adopt a ladder effects in investment portfolio.

Empirical Review

Various empirical studies have been conducted to validate whether liquidity management has a favourable impact or otherwise. Evidences from various researchers are thoroughly reviewed in this section in order to get an adequate and better knowledge of the effect of liquidity management on deposit money banks' profitability in an emerging economy focusing on Nigeria.

The work of Tabari, Ahmadi, Emami (2013) cited in Chowdhury and Zaman (2018) "analyzed the effect of liquidity risk on performance of 15 South African banks for period of 2003-2010. ROE is taken to judge the performance of bank. Liquidity risk, credit risk, bank capital, GDP and inflation are taken as independent variable to find out their effect on bank performance. The study opine that bank's capital, gross domestic product and inflation have positive relation with bank performance but on the other hand credit risk and liquidity risk decreased banks performance. Overall the result indicated that liquidity risk negatively affected the banks performance".

In another work conducted by Marozva (2015) he studied the relationship between liquidity risk and performance of South African banks for the period covering sixteen years (1998 – 2014). OLS and the ARDL-Bounds tests were used to see the relationship between net interest margin and liquidity risk. The result revealed that there is negative relationship between liquidity risk and net interest margin.

Ejoh, Okpa, and Egbe (2014) evaluated the impact of credit risk and liquidity risk management on the profitability of deposit money banks in Nigeria with special inclination to First bank of Nigeria plc. Descriptive research design was used for the study where questionnaires were administered to a sample size of eighty (80) respondents. The study revealed that there is a significant relationship between credit management and bank profitability and there is a significant relationship between bank's liquidity and profitability among deposit money banks in Nigeria. The study adopted the Pearson product moment correlation (PPMC).

Owolabi, Obiakor and Okwu, (2011) in their study investigated the relationship between liquidity and profitability in selected quoted banks in Nigeria Stock Exchange. A model of perceived functional relationship was specified, estimated and evaluated was adopted using the ordinary least square (OLS) technique to explore the short run dynamic relationship between

the variables of liquidity and that of profitability. The study reveals that, while a trade-off existed between liquidity and profitability in the banking company, two variables were positively correlated and also reinforced each other in the other companies. However, the performance measures exerted negative but insignificant effect on, and exhibited weak explanatory power in explaining changes in, each other. They exerted significant positive effect on, and strongly explained changes in, each other in processing firm.

Saeed and Rahaman (2015) in Chowdhury and Zaman (2018) "measured the effects of liquidity risk on performance of 21 commercial banks in Malaysia for the period 2005 to 2013. ROA and ROE are used as indicator to judge bank performance. Effect of Liquidity Risk on Performance of Islamic banks in Bangladesh Loan to deposit ratio, liquid risky asset to total asset and capital to asset ratio are used as liquidity indicators. The study found liquid risky asset to total asset has negative relation with bank performance. Capital to asset ratio has mixed results on bank performance. The study concluded the effects of liquidity indicators on bank performance are mixed and could not draw a clear result". This study was revalidated by Chowdhury and Zaman (2018) and they found that liquidity indicators loan to deposit ratio, liquid risky asset to total asset and capital to asset ratio have no relation with Bank performance (ROA and ROE).

According to Raheman and Nasr (2007) in their work studying to measure the effect of working capital management on the net operating profitability and liquidity, selected sample of 94 Pakistani firms listed on Karachi Stock Exchange for a period of 6 years. The study reveals that there is a strong negative relationship variable of working capital management and profitability. The study also shows a significant negative relationship between liquidity and profitability, and that a positive relationship exists between size of the firm and its profitability. Also, there is a significant negative relationship between debt used by the firm and its profitability. Variables used in their analysis included average collection period, inventory turnover in days, average payment period, cash conversion cycle, current ratio, debt ratio, size of the firm and financial assets to total assets ratio.

Hakimi and Zaghdoudi (2017) conducted a study on the effect of liquidity risk on the performance of 10 Tunisian banks from 1990 to 2015 using Random effect regression and the result revealed that liquidity risk reduces the performance of banks. Almazari (2014) in his study examine the internal factors affecting profitability of Saudi and Jordanian banks. The result showed that there is a positive correlation between profitability measured by ROA with some liquidity indicators while some others showed a negative correlation of Saudi and Jordanian banks.

Agbada and Osuji (2013) in the work of Gabriel (2018) "investigated empirically the effect of efficient liquidity management on banking performance in Nigeria. Findings from the empirical analysis were quite robust and clearly indicate that there is significant relationship between efficient liquidity management and banking performance and that efficient liquidity management enhances the soundness of bank".

The most important variables which affect the Capital Adequacy of Commercial Banks of Jordan in Amman Stock Exchange was examined by Al-Tamimi and Obeidat (2013) for the period covering about eight years (2000 –2008). The result of the study shows that there is a positive correlation between the degree of capital adequacy in commercial banks, the factors of liquidity risk, and the return on assets which is statistically significant, while on the other hand the relationship between the degree of capital adequacy in commercial banks, factors of the capital risk, credit risk, and the rate of force- revenue is inverse and not statistically significant

Ibe (2013) discussed in his work the effect of liquidity management on the profitability of banks in Nigeria and discovered that liquidity management is indeed a critical issue in the banking sector especially in Nigeria. Lartey, Antwi, & Boadi, (2013) also examined the relationship between the liquidity and the profitability of banks listed on the Ghana Stock Exchange and found that both the liquidity and the profitability of the listed banks were declining for the period 2005-2010 covered by the study. The banks listed on the Ghana Stock Exchange were also found to have a very weak positive relationship between their liquidity and their profitability.

Gabriel (2018) cited the work of Arif (2012) who "tested liquidity risk factors and assessed their impact on 22 of Pakistani banks during the period (2004-2009). Findings of the study indicate that there is a significant impact of liquidity risk factors on the banks profitability, where an increase in deposits lead to increasing in the bank's profitability in terms of reducing dependence on the central bank in meeting the customers' obligations, and profitability is negatively affected by the allocation of non-performing loans and liquidity gap".

Charity (2012) examined the impact of liquidity performance in commercial banks using First Bank of Nigeria Plc as case study. Findings indicate that there was a positive relationship between liquidity management and the existence of any banks. Adebayo, Adeyanju, & Olabode (2011) also examined liquidity management and commercial banks' profitability in Nigeria. Their findings revealed a significant relationship between liquidity and profitability implying that profitability in commercial banks is significantly influenced by liquidity.

Saleem and Rehman (2011) investigated the relationship between liquidity and profitability. The main results revealed that profitability ratios play an important role in the

financial positions of enterprises in that they have a significant effect on the financial positions of enterprises with differing amounts.

METHODOLOGY

Research Design

This study adopts an ex post-facto research design an econometric approach of Pooled Least Square (PLS) to analysis the effect of liquidity management on Deposit Money Banks' profitability in Nigeria, with inclination on three purposively selected quoted Deposit Money Banks' (First Bank, United Bank of Africa, and Guaranty Trust Bank). Their selection was premised partly on their contribution to the economy and the fact that they constitutes the "Big Wigs" in the banking industry in terms of their size and spread, their ownership structures are also significantly unaffected by the spate of mergers and acquisitions that characterized the revolution in commercial banking in Nigeria during the period covered. These banks also have a large customer base and are active players on the Nigerian Stock Exchange (NSE). They were chosen in the banking industry based on their level of achievement and reputation over the years.

The Data

The study gathered pooled panel data for the period spanning through 2008 to 2018 as a result of availability of data. The data were obtained from various issues of Central Bank of Nigeria Statistical Bulletin, National Bureau of Statistics, The Nigerian Stock Exchange Daily Equities Report, and the concerned Deposit Money Banks' Annual Reports.

Model Specification and Estimation Technique

The research model adopted in this study is based on the slight modification of the model used in the work of Tabari, Ahmadi and Emami (2013) to investigate the underlying relationship between deposit money banks' (DMBs) liquidity variables that can influence the level of their profitability. It adopts the technique that provides the leeway to test for the existence of a short-run relationship between liquidity management and the profitability of selected DMBs in Nigeria. However, the technique will oblige in the determination of the relationship subsisting between the profitability as a performance measure of these DMBs using Return on Asset (ROA) as a proxy and important proxies of liquidity management such as Loans and advances (LA), cash reserve requirements (CRR), Total Deposits (TD) and Inflation rate (INFR) because of the strong threat it poses to the return on the bank's investible assets. This is backed up by the plethora of evidence given in various

preponderant literatures and theoretical framework that underlies the effect of liquidity management on the profitability of deposit money banks' (DMBs) in many emerging economies across the globe.

The econometric model used in the study is stated thus:

ROA = f (CRR, LA, TD, INFR, µe)…………………………..(1)

Stated in more functional forms the equation term of the model becomes;

ROA = β_0 + β_1CRR + β_2LA + β_3TD + β_4INFR + µe ………. (2)

Where,

ROA   =   Return on Asset

CRR   =   Cash Reserve Requirement

LA   =   Loan and Advances

TD   =   Total Deposits

INFR =   Inflation Rate

f   =   Functional Notation

β_0- β_4 =   Coefficients Of Estimates

µe   =   White Noise/ Stochastic Variable

This study adopted the use of Panel regression analysis of the Ordinary Least Square to give cognizance to the average behavior of the generality of Nigerian banks using the E-View econometric soft-ware version 6.1 to effectively analyze this study. In order to avoid any form of model misspecification the study evaluated the constant effect and fixed effect of the panel data to enable us establish the true average industrial behavior of individual firms that is capable of representing the cross section of the financial sector as a whole and the average behavior of the Nigerian banking. According to Yaffee (2005) the fixed effects and random effects models are the most commonly used in analyzing panel data.

RESULTS

The results of the Panel regression analysis of the Ordinary Least Square to determine relationship between banks' liquidity management and the financial performance of the selected deposit money banks in Nigeria is logically summarized by the constant effect and fixed effect of the panel data to enable us establish the true average industrial behavior of individual firms that is capable of representing the cross section of the financial sector as a whole and the average behavior of the Nigerian banks is presented in two different stages as depicted in the table 1 below.

Table 1: Summary of Constant and Fixed Effect Results using E=view 6

Variable	Coefficients		Standard Error		Probability	
	Constant Effect	Fixed Effect	Constant Effect	Fixed Effect	Constant Effect	Fixed Effect
CRR	0.085189	0.2110808	0.068639	0.240905	0.2261	0.3910
LA	0.066967	0.070828	0.069091	0.095171	0.3417	0.4646
TD	0.004914	0.050753	0.047781	0.077122	0.9189	0.5173
INFR	-0.622577	0.136942	0.260696	0.517861	0.0248	0.7939
F- Statistics		2.838853			0.044244	

CONSTANT EFFECT: R^2 = 0.340107 Adj R^2 = 0.260920 DW= 1.760789

FIXED EFFECT: R^2 = 0.418314 Adj R^2 = 0.259673 DW = 1.830387

From the Table 1, the relationship between the coefficient of the dependent variable (ROA) and the coefficients of the independent variables (CRR, LA, TD, and INFR) for constant and fixed effect can mathematically be expressed as in the regression lines below:

CONSTANT EFFECT: ROA = 0.085189_{CRR} + 0.066967_{LA} + 0.004914_{TD} − 0.622577_{INFR} + μ

FIXED EFFECT: ROA = 0.2110808_{CRR} + 0.070828_{LA} + 0.050753_{TD} + 0.136942_{INFR} + μ

It can as well be deduced from the estimate of coefficients in the table above that at the constant effect stage of Cash Reserve Requirement (CRR), Loans and Advances (LA) and Total Deposit (TD) (0.085189CRR, 0.066967LA and 0.004914TD) and their respective estimates of coefficients at fixed effect stage (0.2110808CRR, 0.070828LA, 0.050753TD) they are all positively related to Return on Asset (ROA). The implication of this is that a unit increase in the estimates of any of the independent variables will lead to a proportionate increase of the dependent variable (ROA) of these banks by the corresponding unit. This relationship is in consonance with the a *priori* expectation of other studies in the literature which stated that the relationship between ROA and CRR, LA and TD may be positive or negative.

Furthermore, the coefficient of Inflation Rate (INFR) is negatively signed at constant effect stage with an estimate of -0.622577 which implies that a unit increase in INFR will lead to a decrease in ROA by the same magnitude which is also in line with the *a priori* expectation in the literature. However, the value of Inflation Rate at fixed effect stage contrast with what obtains at the constant effect stage showing a positive value of 0.136942 connoting that a unit increase in INFR of these banks will spur ROA by the same magnitude of the value which contradict the literature *a priori* expectation.

Table 2: Summary of fixed Effect (Cross) using E=view 6

Banks	Fixed Effect (Cross) of selected firms
GTB BANK	-0.332366
FIRST BANK	0.156931
UBA BANK	0.142198

The result of the fixed effect of the panel regression analysis in the Table 2 shows that the constant parameter (C) for one (1) of these three (3) deposit money banks appeared to be negative while the other two (2) are positive. The individual effect of each cross-section shows that the behaviour of its constant parameter is not the same. The meaning of this is that if all the explanatory variables are held constant in the short-run, the dependent variable (ROA) from the cross section specific of these banks will be decreased by 0.332366 for GTBank while for the other two (2) banks, it will bring about an increase in their dependent variables by 0.156931 for First Bank and 0.142198 for UBA bank.

The coefficient of multiple determinations (R^2) of the constant effect and fixed effect as indicated in the result of the panel regression of the Pooled Least Square (PLS) in table 1 is given as 0.340107 ≈ 0.34 and 0.418314 ≈ 0.42 respectively which implies 34% and 42% of the behavior of the dependent variable (ROA) is affected by changes in the independent variables (CRR, LA, TD and INFR) at the two stages respectively. The remaining 66% and 58% behaviour of the explained variable (ROA) is been accounted for by the presence of stochastic variables in the research model built for this study. The adjusted R^2 of constant and fixed effect of the results implies that after some necessary adjustments, the R^2 accounts for only 26% of the behaviour of the dependent variable. This result wants us to believe that there are other factors outside the economic model that determines the profitability of the selected (quoted) firms in Nigeria.

The test for statistical significance of parameter is conducted to reveal whether or not each of the explanatory variables in the model adopted is significant enough in explaining the behaviour of the dependent variable (ROA).

Table 3: Summary of Probability Test – Constant and Fixed Effect using E=view 6

Variables	Constant Effect		Fixed Effect	
	Prob.	Decision	Prob.	Decision
CRR	0.2261	Insignificant	0.3910	Insignificant
LA	0.3417	Insignificant	0.4646	Insignificant
TD	0.9189	Insignificant	0.5173	Insignificant
INFR	0.0248	Significant	0.7939	Insignificant

From the table 3, it can be inferred that at constant effect explanatory variables (CRR, LA and RTD) are insignificant except INFR while at fixed effect all the explanatory variable are insignificant in explaining the behaviour of the dependent variable (ROA) at P-value greater than 0.05 confidence level. The test for the overall significance of the research model adopted for this study is done using the F-test statistics the pooled fixed effect result in the table showed that the whole model is statistically significant (F=2.84, P< .05) in explaining the behavioural variations in ROA while the Durbin Watson (DW) statistics result in checking for the presence of autocorrelation in the research model implies that there is no autocorrelation in the model. This is due to the value of the DW statistics which is place at 1.83 approximately as obtained from the parsimonious model falling in the area of No-autocorrelation region. Conclusively, it has been empirically established that liquidity management positively and insignificantly affect the performance of the sampled deposit money banks over the period under review.

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This study critically examine the impact of liquidity management on commercial banks performance in Nigeria adopting in its analysis the used of eleven (11) years data of three (3) cross-section of purposively selected quoted deposit money banks operating on the Nigerian Stock Exchange This is done with thorough presentation of the objective which is backed up by objective review of concepts of previous studies related to this study. The study adopted the panel regression analysis of the ordinary least square and tested for the general behavior of banks as regards liquidity and their performance using the constant fixed effects results.

The study result shows that there is a critical emphasis on the importance of liquidity management variables to the survival of a bank and as one thing that can go a long way in influencing their corporate financial performance. The study revealed that there is positive relation between bank liquidity management variables and corporate financial performance. Although, none of the variables adopted in the study was statistically significant except for the Inflation Rate (INF) which pose to be statistically significant at constant effect stage only while none of the variables were significant considering the fixed effect result. Whereas, the study does not fail in the validations of the statistical significance of the overall model adopted. It is suffice to say that, the nexus that subsist between bank performance and the liquidity management variables adopted in the research model was out rightly confirmed. The figure obtained for the coefficient of multiple determinants (R^2) to show the goodness of fit of the research model was 0.418314 which indicates that approximately 42% of the behaviour of the ROA of the sampled banks is what can be explained by the totality of the explanatory variables,

while the presence of white noise or error term accounts for the remaining 58% behaviour of ROA.

The study concludes empirically that there appears a mild positive impact of liquidity management variables on the corporate financial performance of deposit money banks operating in Nigeria over the period under review. The results and the findings of this study is consistent with the works Chowdhury and Zaman (2018), Ejoh *et al* (2014), Tabari *et al* (2013), Agbada and Osuji (2013), Lartey *et al* (2013), Charity (2012).

In the light of the findings of this study it is recommended that the regulatory authorities will need to put in place appropriate mechanisms that will help to address issues of bank liquidity and shore assets quality in the banking industry and since the returns of bank' assets are affected by certain macroeconomic variable, it is also suggested that macroeconomic policies that promote low inflation rate that will boost credit expansion should be embarked upon by the Government. It is opine that for deposit money banks' to be major players in domestic and international financial market, its capital base must be kept above the minimum regulatory requirement at all times.

However, consequent to the analysis carried out in this study, some conclusions were drawn from the results obtained with limited sample size. This calls for the further studies with the adoption of a broader sample.

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