

## Management Quality and Commercial Banks Liquidity: A Panel Data Analysis of Quoted Commercial Banks in Nigeria

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### ABSTRACT

*This study examined the relationship between management quality and the liquidity of quoted commercial banks in Nigeria. The objective was to examine the extent to which management quality relates to commercial banks liquidity. 13 quoted commercial banks were selected from the population, panel data was sourced from financial statement and annual reports of the quoted commercial banks from 2016-2020. Panel ordinary least square methods were used to examine the relationship the dependent and the independent variables. Adjusted  $R^2$ , t-test, probability coefficient, Durbin Watson statistic, F-statistic were used to examine the extent to which management quality relate commercial banks liquidity. Liquidity of commercial banks was measured by percentage of deposit to total loans and advances while management quality were measured by profitability growth, deposit growth, loans growth, assets growth and earnings growth. The study found that that 51.3 percent variation on liquidity of the commercial banks is traceable to variation on the independent variables in the study. The f-statistics and probability validate the reliability of the model. The Durbin-Watson statistics proved the presence of negative serial autocorrelation. The regression coefficient found that profitability growth and earnings growth have negative effect on liquidity of the commercial banks while assets growth, deposit growth and lending growth have positive effect on liquidity of commercial banks in Nigeria. The study recommends that quoted commercial banks in Nigeria should implement management culture amongst other stakeholders so as to enable smooth implementation of quality management practices.*

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**Keywords:** Management Quality, Commercial Banks, Liquidity, Panel Data Analysis, Quoted Commercial Banks

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### INTRODUCTION

Bank plays a very important role as the financial intermediary between savers and investors. Financial intermediation theory posited that information asymmetry arises in financial markets between borrowers and lenders because borrowers generally know more about their investment projects than lenders do (Claus & Grimes, 2003). Financial intermediation theory posited that liquidity creation is the key reason why banks exist. The Central Bank of Nigeria (2010) defines liquidity as the ability of financial institutions to fund increases in asset holdings and meet obligations as they fall due. One key purpose of bank managers is the management of liquidity risk which can result from a mismatch in the maturities of assets and whose occurrence in one

institution can have systemic effects on the whole industry. Lucky and Akani (2016) opined that management quality is the major determinants of other factors in the CAMELS as evidence in Nigerian banking industry have shown that a bank can be capially adequate if poorly managed can still collapse.

The statutory minimum liquidity ratio is 20%. Banks have however managed to maintain a liquidity ratio well in excess of the minimum set by the regulatory authorities but as Kamau (2009) argued, there is an opportunity cost in holding high liquidity, which is characterized by loss of an opportunity to hold onto high interest generating investments. As indicated earlier, Anggono (2017) found that excess liquidity when regressed against x-inefficiency index has a positive significant relationship confirming the hypothesis that that accumulation of excess liquidity in banks precipitates inefficiency. Achieving optimal liquidity in the banking industry is the function of management and management functions.

Management quality is basically the capability of the board of directors and management, to identify, measure, and control the risks of an institution's activities and to ensure the safe, sound, and efficient operation in compliance with applicable laws and regulations (Uniform Financial Institutions Rating System 1997). Grier (2007) suggested that management is considered to be the single most important element in the CAMEL rating system because it plays a substantial role in a bank's success; however, it is subject to measure as the asset quality examination. Olweny and Shipho (2011) approached to bank analysis states that the management has clear strategies and goals in directing the bank's domestic and international business, and monitors the collection of financial ratios consistent with management strategies. The top management with good quality and experience has preferably excellent reputation in the local communication. Rating of management in the CAMEL rating system is scored from 1 to 5. In the context of management, a rating of 1 is assigned to note the management and board of directors are fully effective. On the other hand, the rating of 5 is applicable to critically deficient management. Replacing or strengthening may be needed to achieve sound and safe operations.

Research devoted to bank management quality and efficiency has been growing and can be categorized as having been studied in the context of different models. Studies utilising Data Envelopment Analysis for instance (Kamau, 2011; Mburu, 2011) apply the DF.A model to measure the productivity and efficiency of Kenyan Banks. Aikaeli (2008) applied the DEA model to analyses commercial bank performance in Tanzania (Kariuki, 2008) studies the informational content of EVA model and its impact on performance while (Githinji, 2010, Olweny and Shipho, 2011) used the CAMEL model to measure performance while utilizing the ROA and ROE as the independent variables.

Kang'ethe (2009) computed co-efficient of efficiency based on changes in banks advances to test the relationship between bank growth and operational efficiency After a critical review of the literature surrounding bank performance this study seeks to fill the research gap, improve and expound bank management quality literature especially the CAMEL based ones shown above by adopting the efficiency ratio instead of liquidity. While there are many studies on factors that determine liquidity of commercial banks, the effect of management quality on the liquidity of commercial banks is lacking in the literature, therefore, this study examined the effect of management quality on the liquidity of quoted commercial banks in Nigeria.

## LITERATURE REVIEW

### Management Quality

Given the determinant role of management in institutes and organizations success, knowledge, proficiency, competence, and accuracy of financial institutes management are of particular importance and receive considerable weight in comparison to other variables in most indicator ratings (Javaheri, 2014). Assessment approaches of a bank are related to its management. To study the management quality of banks, there are some criteria for administrative skills, ability, obeying the monetary and banking regulations, dominance over business environment changes, and the conversion of threats into opportunities (Eslami et al., 2011).

The capability of the board of directors and management, in their respective roles, to identify, measure, monitors, and controls the risks of an institution's activities and to ensure a bank's safe, sound, and efficient operation in compliance with applicable laws and regulations is reflected in this rating. Generally, directors need not be actively involved in day-to-day operations; however, they must provide clear guidance regarding acceptable risk exposure levels and ensure that appropriate policies, procedures, and practices have been established. Senior management is responsible for developing and implementing policies, procedures, and practices that translate the board's goals, objectives, and risk limits into prudent operating standards. The capability and performance of management and the board of directors is rated based upon, but not limited to, an assessment of the following evaluation factors:

- i. The level and quality of oversight and support of all institution activities by the board of directors and management.
- ii. The ability of the board of directors and management, in their respective roles, to plan for, and respond to, risks that may arise from changing business conditions or the initiation of new activities or products.
- iii. The adequacy of, and conformance with, appropriate internal policies and controls addressing the operations and risks of significant activities.
- iv. The accuracy, timeliness, and effectiveness of management information and risk monitoring systems appropriate for the institution's size, complexity, and risk profile.
- v. The adequacy of audits and internal controls to: promote effective operations and reliable financial and regulatory reporting; safeguard assets; and ensure compliance with laws, regulations, and internal policies.
- vi. Compliance with laws and regulations.
- vii. Responsiveness to recommendations from auditors and supervisory authorities.
- viii. Management depth and succession.
- ix. The extent that the board of directors and management is affected by, or susceptible to, dominant influence or concentration of authority.
- x. Reasonableness of compensation policies and avoidance of self-dealing.
- xi. Demonstrated willingness to serve the legitimate banking needs of the community.
- xii. The overall performance of the institution and its risk profile.

## Ratings

1. A rating of 1 indicates strong performance by management and the board of directors and strong risk management practices relative to the institution's size, complexity, and risk profile. All significant risks are consistently and effectively identified, measured, monitored, and controlled. Management and the board have demonstrated the ability to promptly and successfully address existing and potential problems and risks.
2. A rating of 2 indicates satisfactory management and board performance and risk management practices relative to the institution's size, complexity, and risk profile. Minor weaknesses may exist, but are not material to the safety and soundness of the institution and are being addressed. In general, significant risks and problems are effectively identified, measured, monitored, and controlled.
3. A rating of 3 indicates management and board performance that need improvement or risk management practices that are less than satisfactory given the nature of the institution's activities. The capabilities of management or the board of directors may be insufficient for the type, size, or condition of the institution. Problems and significant risks may be inadequately identified, measured, monitored, or controlled.
4. A rating of 4 indicates deficient management and board performance or risk management practices that are inadequate considering the nature of an institution's activities. The level of problems and risk exposure is excessive. Problems and significant risks are inadequately identified, measured, monitored, or controlled and require immediate action by the board and management to preserve the soundness of the institution. Replacing or strengthening management or the board may be necessary.
5. A rating of 5 indicates critically deficient management and board performance or risk management practices. Management and the board of directors have not demonstrated the ability to correct problems and implement appropriate risk management practices. Problems and significant risks are inadequately identified, measured, monitored, or controlled and now threaten the continued viability of the institution. Replacing or strengthening management or the board of directors is necessary.

## Liquidity

Liquidity is one of banks' empowerment factors to repay short-term debts and obligations on time. Liquidity is used to assess the bank ability to meet the cash needs in short-term. But it should be noted that liquidity growth retains some of the company assets in parts which make little return. Accordingly, over increase in liquidity reduces profitability degree and ROE (Muhmada & Hashima, 2015).

In evaluating the adequacy of a banks' liquidity position, consideration should be given to the current level and prospective sources of liquidity compared to funding needs, as well as to the adequacy of funds management practices relative to the institution's size, complexity, and risk profile. In general, funds management practices should ensure that an institution is able to

maintain a level of liquidity sufficient to meet its financial obligations in a timely manner and to fulfill the legitimate banking needs of its community. Practices should reflect the ability of the institution to manage unplanned changes in funding sources, as well as react to changes in market conditions that affect the ability to quickly liquidate assets with minimal loss. In addition, funds management practices should ensure that liquidity is not maintained at a high cost, or through undue reliance on funding sources that may not be available in times of financial stress or adverse changes in market conditions.

Liquidity is rated based upon, but not limited to, an assessment of the following evaluation factors:

- i. The adequacy of liquidity sources compared to present and future needs and the ability of the institution to meet liquidity needs without adversely affecting its operations or condition.
- ii. The availability of assets readily convertible to cash without undue loss.
- iii. Access to money markets and other sources of funding.
- iv. The level of diversification of funding sources, both on- and off-balance sheet.
- v. The degree of reliance on short-term, volatile sources of funds, including borrowings and brokered deposits, to fund longer term assets.
- vi. The trend and stability of deposits.
- vii. The ability to securitize and sell certain pools of assets.
- viii. The capability of management to properly identify, measure, monitor, and control the institution's liquidity position, including the effectiveness of funds management strategies, liquidity policies, management information systems, and contingency funding plans.

### **Ratings**

1. A rating of 1 indicates strong liquidity levels and well-developed funds management practices. The institution has reliable access to sufficient sources of funds on favorable terms to meet present and anticipated liquidity needs.
2. A rating of 2 indicates satisfactory liquidity levels and funds management practices. The institution has access to sufficient sources of funds on acceptable terms to meet present and anticipated liquidity needs. Modest weaknesses may be evident in funds management practices.
3. A rating of 3 indicates liquidity levels or funds management practices in need of improvement. Institutions rated 3 may lack ready access to funds on reasonable terms or may evidence significant weaknesses in funds management practices.
4. A rating of 4 indicates deficient liquidity levels or inadequate funds management practices. Institutions rated 4 may not have or be able to obtain a sufficient volume of funds on reasonable terms to meet liquidity needs.
5. A rating of 5 indicates liquidity levels or funds management practices so critically deficient that the continued viability of the institution is threatened. Institutions rated 5

require immediate external financial assistance to meet maturing obligations or other liquidity needs.

### **Anticipated Income Theory**

Under this theory, 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 the periodic and regular premiums, and that will enable the bank to provide high liquidity, when the cash inflows are regular and can be expected. Deposit money banks can manage its liquidity through appropriate credit management that is directing of granted loans, and ensuring that these loans are collected as at when due in a timely manner and minimize the possibility of delays in repayment at the maturity date (Okoh, Nkechukwu & Ezu, 2016).

This theory holds that banks' management of liquidity can be enhanced by adequate phasing and structuring of the loan commitments to the customers. According to Nzotta (1997), the theory focuses on the earning capacity and borrowers' credit worthiness as the ultimate guarantee for liquidity adequacy. It drives banks' transactions in self-liquidating commitments (Nwankwo, 1991); and encourages the adoption of ladder effects in investment portfolio of commercial banks (Ibe, 2013).

This theory was proposed by H.V. Prochanow in 1944 on the basis of the practice of extending term loans by the US commercial banks. This theory states that irrespective of the nature and feature of a borrower's business, the bank plans the liquidation of the term-loan from the expected income of the borrower. A term-loan is for a period exceeding one year and extending to a period less than five years.

It is admitted against the hypothecation (pledge as security) of machinery, stock and even immovable property. The bank puts limitations on the financial activities of the borrower while lending this loan. While lending a loan, the bank considers security along Bank Management with the anticipated earnings of the borrower. So a loan by the bank gets repaid by the future earnings of the borrower in installments, rather giving a lump sum at the maturity of the loan.

### **Shiftability Theory**

Shiftability is the approach to keep the banks liquid by supporting the shifting of assets. When a bank is short of ready money, it is able to sell its assets to a more liquid bank. The approach allows the banking system run more efficiently: with fewer reserves or investing in long-term assets. Under shiftability, the banking system tries to avoid liquidity crises by enabling banks to always sell or repo at good prices (Okoh, Nkechukwu, & Ezu 2016). The shift ability theory is premised on the argument that banks' liquidity is a function of their capacity to acquire assets that are convertible or marketable to other lenders or investors should there be imminent need for cash, noting that the banks' assets should be marketable to the Central Bank and other financial institutions at discounted values. Thus this theory recognizes marketability or transferability of a bank's assets is a basis for ensuring liquidity. This theory was proposed by H.G. Moulton who insisted that if the commercial banks continue a substantial amount of assets that can be moved

to other banks for cash without any loss of material. In case of requirement, there is no need to depend on maturities. This theory states that, for an asset to be perfectly shiftable, it must be directly transferable without any loss of capital loss when there is a need for liquidity. This is specifically used for short term market investments, like treasury bills and bills of exchange which can be directly sold whenever there is a need to raise funds by banks. But in general circumstances when all banks require liquidity, the shiftable theory need all banks to acquire such assets, which can be shifted on to the central bank which is the lender of the last resort.

### **Empirical Review**

Prasad and Ravinder (2012) rated the banks of India in a study entitled banks analysis using CAMEL model. They chose CAMEL model to assess banking performance and measured the important bank parameters such as capital adequacy, assets quality, management, earnings, and liquidity. The sample consists of 20 Indian banks. The research was conducted during a 5-years period from 2005 to 2010. The findings indicate each bank rate in terms of per parameter. Andra bank has the highest position and banks of Baroda, Indus, and Panjab lie respectively after that. State bank of India is in the lowest place.

Rehana and Saba (2012) compared the financial performance of Islamic banks with the commercial and conglomerate banks of Pakistan. They surveyed 3 groups of banks including Islamic banks, Islamic bank branches, and ordinary commercial banks respectively and used 2 primary and secondary data resources. The researchers gathered the primary data by interviewing with the professional bankers. As the primary data was not enough to answer, they apply the secondary data resource which was gathered through annual, 6-months, and 3-months financial statements of the Islamic commercial banks and the ordinary commercial banks, the database of India state bank, the database of Karachi stock exchange, etc. Statistical findings show that there is a significant difference between the three kinds of bank regarding CAMEL ratios.

Stančić et al. (2014) conducted a study named the impact of board of directors and ownership structure on banks profitability: Evidence from Southeast Europe. The study was carried out in the period 2005-2010 and 74 commercial banks were tested by unbalanced data approach. The results indicated that the size of boards of directors has a negative and significant influence on the banks profitability and ownership centralization and the bank size has a significant impact on the commercial banks profitability.

Lee and Yang (2014) have conducted a research named the relationship between income diversification and bank performance, given the bank financial structure. They studied 29 Asian banks data from 1995 to 2009 and investigated a total of 2372 data by a panel data approach. The findings showed that, unlike American and European countries, there is a significant relationship between the bank income diversification and the bank performance, in other words the income diversification improves the bank performance.

Muhmada and Hashima (2015) have done a survey named performance assessment of banks based on CAMEL indicators. The study assessed the performance of banks including domestic and foreign banks in Malaysia using capital adequacy, assets quality, management competence, earnings quality, and liquidity (complete) in a fiscal year from 2008 to 2012. Using a regression analysis, the study findings showed that capital adequacy, assets quality, earnings quality, and liquidity have a significant influence on Malaysian banks performance. The results of this

research are greatly important for investors to assess the bank performance since it can determine future banking system direction in Malaysia.

Tabatabaei (2011) assessed and studied Shahr bank performance in comparison with other banks in country. To determine the intended parameters and indicators in order to achieve this aim, banks rating system invented by the Banker by which all banks in the world are evaluated in every year was used. The statistical population consists of country private and public banks and all banks listed on stock exchange which have issued data were studied as the sample. The results indicated that Shahr performance is better compared to other banks performance regarding capital adequacy and assets quality ratios, but it is not a significant difference. Concerning management quality, earnings, and liquidity, the bank performance is less than other banks performance, but it is not a significant difference.

Bahrami (2013) conducted a study named the impact of banks rating according to CAMEL indicators on stock return. This survey investigates two hypotheses. The impact of bank rate on stock return and the impact of bank rate falling on stock return are studied respectively in the first and the second hypotheses. In these hypotheses, CAMEL indicators including capital, assets quality, management quality, earnings, and liquidity are considered as independent variables and the bank stock return is the dependent variable. Testing the hypotheses by means of a regression analysis during the period 2007-2011 shows that there is a negative and rather weak relationship between banks rates calculated based on CAMEL model and the bank stock return.

Chavoshi et al. (2014) investigated interior factors effective on bank branches financial facilities awarded (Case of study: Parsian Bank branches in Tehran). In the study, profitability is the dependent variable and deposits degree, financial facilities awarded degree, liquidity management indexes, expenses management are the independent variables. According to the findings, variables such as expenses management and facilities awarded have a highly positive and significant relationship with facilities awarded variable in comparison to other variables. Finally, given the results, some practical strategies to increase banks profitability, particularly Parsian bank, are suggested.

Olweny and Shipho (2011) focused on specific industry parameters affecting the performance of commercial banks in Kenya. The CAMEL model is commonly used by scholars to authorize specific elements of a bank (Dang, 2011). CAMEL stands for Capital Adequacy, Asset Quality, Management Efficiency, Earnings and Liquidity. Each indicator is discussed as follows: Capital adequacy ratio: According to Dang (2011), the capital adequacy ratio is assessed based on capital adequacy ratio (CAR). From the above empirical reviews, it is evidence that the effect of management quality on liquidity of commercial banks is lacking, therefore this study focused on management quality and the liquidity of quoted commercial banks in Nigeria.

## METHODOLOGY

The study adopted panel data and descriptive research design to meet its research objectives. A panel data set is one that follows a given sample of individuals over time and thus provides multiple observations of each individual in the sample. One of the main advantages of Panel data is that it enables the researcher to control for unobserved heterogeneity, and secondly since



panel data have both cross-sectional and time series dimensions, it provides the researcher with sufficient data points to reduce the likelihood of biasness in the parameter estimators. The population of this study comprised of all the 24 commercial banks in Nigeria. According to CBN (2020), the Nigeria banking industry is made up of 24 Commercial Banks. The study is used the random sampling procedure to select 13 commercial banks. This study utilized secondary data sourced from financial statement and annual reports of the quoted commercial banks.

### Model Specification

$$LIQ = (AGR, LGR, EGR, DGR, PGR) \quad 1$$

To have the estimable version of above equation, equation (1) can be rewritten to have

$$LIQ_t = \alpha_0 + \beta_1 AGR_{t-1} + \beta_2 LGR_{t-2} + \beta_3 EGR_{t-3} + \beta_4 DGR + \beta_5 PGR + \mu_{it} \quad 2$$

Where

LIQ = Liquidity proxy by total loans to total deposit

AGR = Assets growth ratio proxy by variation in growth of total assets

LGR = Loan growth ratio proxy by variation in growth of total loans and advances

EGR = Earnings growth ratio proxy by variation in growth of total earnings

DGR = Deposit growth ratio proxy by variation in growth of total customer deposit

PGR = Profitability growth ratio proxy by variation in growth of profit after tax.

$\phi_0 \alpha_0$  = Constant

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

$\mu_{it}$  = Error Term

### Techniques of Analysis

#### Econometric Analysis

Appropriate levels of analysis will be conducted, in each case ranging from the global analysis (that reveals the overall utility of the models) to analysis of relative statistics that test the hypotheses. This study applies unit root test first so as to uncover the true nature of stationary-properties of all the variables under consideration. This is necessary in order not to run into the problem of spurious regression since unit root problems are common features encountered in most time series studies. However, the simple regression model will be employed as the estimation technique for this study. Johansen and Jusellius Co-integration Test would be applied to determine the long run equilibrium of the variables in the model, while the Granger Causality Test would also be applied in checking the underlying structure of the dynamics relationship between the variables.

### Ordinary Least Square Regression Analysis

Ordinary least squares (OLS) are a method for estimating the unknown parameters in a linear regression model. Hütcheson (2011) defined ordinary least square (OLS) regression as a generalized linear modeling technique that may be used to model a single response variable which has been recorded on at least an interval scale. This method minimizes the sum of squared vertical distances between the observed responses in the dataset and the responses predicted by the linear approximation.

OLS technique may be applied to single or multiple explanatory variables and also categorical explanatory variables that have been appropriately coded. In single explanatory variables, the relationship between a continuous response variable (Y) and a continuous explanatory variable (X) may be represented using a line of best-fit, where Y is predicted, at least to some extent, by X. If this relationship is linear, it may be appropriately represented mathematically using the straight line equation 'Y = a + βx',

For the multiple explanatory variables additional variables are added to the equation. The form of the model is the same as in a single response variable (Y), but this time Y is predicted by multiple explanatory variables (X<sub>1</sub> to X<sub>3</sub>).

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \quad 3$$

The interpretation of the parameters (a and β) from the above model is basically the same as for the simple regression model, but the relationship cannot be graphed on a single scatter plot as it indicates the value of Y when all values of the explanatory variables are zero. Each β parameter indicates the average change in Y that is associated with a unit change in X, whilst controlling for the other explanatory variables in the model. Model-fit can be assessed through comparing deviance measures of nested models. For example, the effect of variable X<sub>3</sub> on Y in the model can be calculated by comparing the nested models

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \quad 4$$

$$Y = a + \beta_1 X_1 + \beta_2 X_2 \quad 5$$

The change in deviance between these models indicates the effect that X<sub>3</sub> has on the prediction of Y when the effects of X<sub>1</sub> and X<sub>2</sub> have been accounted for (it is, therefore, the unique effect that X<sub>3</sub> has on Y after taking into account X<sub>1</sub> and X<sub>2</sub>). The overall effect of all three explanatory variables on Y can be assessed by comparing the models

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \quad 6$$

$$Y = a \quad 7$$

The significance of the change in the deviance scores can be assessed through the calculation of the F-statistic using the equation provided above (these are, however, provided as a matter of course by most software packages). As with the simple OLS regression, it is a simple matter to compute the R-square statistics.

## ANALYSIS AND DISCUSSION OF FINDINGS

Table 1: Correlated Random Effects - Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	
Cross-section random	9.722929	5	0.0435	
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
PGR	-0.488867	-1.032152	0.418095	0.4008
LGR	-0.010495	0.018559	0.000383	0.1375
EGR	1.101883	0.059557	0.425787	0.1102
DGR	0.288788	1.201125	0.216663	0.0500
AGR	0.341969	0.426878	0.012229	0.4426

Source: Extract from E-View Windows 9.0, 2023

As the result found that the results of this test were not significant (p-value = 0.8430). Hence, we reject the null hypothesis and conclude that the fixed effects model is the most appropriate of the three models. The probability coefficient of the variables are greater than 0.05, the inferred that there is significant differences between fixed and random effect models.

Table 2: Descriptive statistics

	LIQ	PGR	LGR	EGR	DGR	AGR
Mean	50.66200	9.482615	176.1962	9.235231	10.40246	46.65815
Median	51.83000	9.630000	146.9900	7.360000	9.380000	44.58000
Maximum	86.72000	12.61000	510.9400	20.83000	20.40000	86.72000
Minimum	18.58000	5.020000	15.16000	4.430000	4.480000	10.01000
Std. Dev.	18.06316	1.475277	137.7539	4.268102	4.297878	20.70391
Skewness	-0.035332	-0.401985	0.453439	1.034830	0.715363	0.181011
Kurtosis	1.943726	3.198086	2.071614	3.013448	2.437640	2.216336
Jarque-Bera	3.035251	1.856849	4.561724	11.60161	6.400405	2.018219
Probability	0.219232	0.395176	0.102196	0.003025	0.040754	0.364543
Sum	3293.030	616.3700	11452.75	600.2900	676.1600	3032.780
Sum Sq. Dev.	20881.77	139.2923	1214473.	1165.868	1182.192	27433.72
Observations	65	65	65	65	65	65

Source: Extract from E-View Windows 9.0, 2022

The Table 2 showed the descriptive results of credit management and the liquidity of commercial banks in Nigeria for the period 2016-2020, the liquidity of commercial banks measured by percentage of liquid assets to total customer deposits. The result revealed that the average liquidity, profitability growth ratio, loans growth ratio, earnings growth ratio, deposit growth and assets growth ratio within the periods are 50.66200, 9.482615, 176.1962, 10.40246 and 46.65815 respectively. The maximum value for the variable are 86.72000, 12.61000, 510.9400, 20.83000, 20.40000 86.72000 while the minimum are 18.58000, 5.020000, 15.16000, 4.430000, 4.480000 and 10.01000 respectively.

The standard deviation value as shown in the table revealed the rate at which the variables for the commercial banks in Nigeria are been deviated from their respective average or expected value. Also, it was discovered that the commercial banks liquidity and profitability growth is negative while other variables are positively skewed. The Jarque-Bera and probability values revealed that the adopted management quality variables are statistically not significant except deposit growth ratio earnings growth ratio.

**Table 3: Correlation Analysis**

Probability	LIQ	PGR	LGR	EGR	DGR	AGR
LIQ	321.2581 1.000000					
PGR	-3.173533 -0.120951 -0.967118 0.3372	2.142958 1.000000 ----- -----				
LGR	741.8002 0.302777 2.521577 0.0142	3.101956 0.015502 0.123059 0.9025	18684.19 1.000000 ----- -----			
EGR	13.47668 0.177537 1.431900 0.1571	-1.826009 -0.294529 -2.446261 0.0172	6.991136 0.012077 0.095862 0.9239	17.93644 1.000000 ----- -----		
DGR	26.18758 0.342595 2.894425 0.0052	-1.301393 -0.208456 -1.691732 0.0956	-0.745814 -0.001279 -0.010155 0.9919	12.86502 0.712287 8.054847 0.0000	18.18757 1.000000 ----- -----	
AGR	189.6289 0.514982 4.768475 0.0000	2.866820 0.095325 0.760082 0.4500	700.1706 0.249334 2.043566 0.0452	-10.10654 -0.116158 -0.928258 0.3568	-2.957623 -0.033757 -0.268094 0.7895	422.0572 1.000000 ----- -----

Source: Extract from E-View Windows 9.0, 2023

To determine the association between the entire variables of the study, correlation matrix was obtained as presented in Table 3. Similarly, correlation can be used to determine the presence of multicollinearity among the independent variables.

To determine the association among the variables of the study, correlation coefficients are obtained as presented in the correlation matrix table. The coefficients values revealed different levels of associations among the variables. For instance, commercial banks liquidity exhibits a weak positive and significant association of 321.2581 with profitability growth ratio negative insignificant correlation of -0.120951 with loans growth ratio, a significant positive association of 0.302777. In contrast, the correlation between earnings growth ratio and commercial bank liquidity is positive suggesting a significant positive association. Similarly, the correlation matrix reveals that deposit and assets growth rate is weak positive insignificant association with commercial banks liquidity.

**Table 4: Pooled effect regression results**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PGR	-1.370835	1.251883	-1.095019	0.2780
LGR	0.024332	0.013222	1.840287	0.0708
EGR	-0.350075	0.606588	-0.577122	0.5661
DGR	1.658938	0.585620	2.832789	0.0063
AGR	0.421485	0.088943	4.738822	0.0000

C	25.68417	14.32428	1.793050	0.0781
R-squared	0.439059	Mean dependent var		50.66200
Adjusted R-squared	0.391522	S.D. dependent var		18.06316
S.E. of regression	14.09017	Akaike info criterion		8.216597
Sum squared resid	11713.43	Schwarz criterion		8.417309
Log likelihood	-261.0394	Hannan-Quinn criter.		8.295791
F-statistic	9.236098	Durbin-Watson stat		1.416515
Prob(F-statistic)	0.000002			

Source: Extract from E-View Windows 9.0, 2023

Evident from the pooled effect model result proved that 39.6 percent variation on liquidity of the commercial banks is traceable to variation on the independent variables in the study. The f-statistics and probability validate the reliability of the model. The Durbin-Watson statistics proved the presence of negative serial autocorrelation. The regression coefficient found that profitability growth and earnings growth have negative effect on liquidity of the commercial banks while assets growth, deposit growth and lending growth have positive effect on liquidity of commercial banks in Nigeria.

**Table 5: Fixed Effect Regression Results**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PGR	-0.488867	1.352043	-0.361576	0.7193
LGR	-0.010495	0.024040	-0.436571	0.6644
EGR	1.101883	0.908351	1.213059	0.2312
DGR	0.288788	0.755144	0.382428	0.7039
AGR	0.341969	0.143834	2.377527	0.0215
C	28.01104	20.24378	1.383687	0.1730

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.643088	Mean dependent var		50.66200
Adjusted R-squared	0.513993	S.D. dependent var		18.06316
S.E. of regression	12.59259	Akaike info criterion		8.133701
Sum squared resid	7452.945	Schwarz criterion		8.735839
Log likelihood	-246.3453	Hannan-Quinn criter.		8.371283
F-statistic	4.981489	Durbin-Watson stat		2.039790
Prob(F-statistic)	0.000006			

Source: Extract from E-View Windows 9.0, 2023

Evident from the fixed effect model result proved that 51.3 percent variation on liquidity of the commercial banks is traceable to variation on the independent variables in the study. The f-statistics and probability validate the reliability of the model. The Durbin-Watson statistics proved the presence of negative serial autocorrelation. The regression coefficient found that profitability growth and earnings growth have negative effect on liquidity of the commercial banks while assets growth, deposit growth and lending growth have positive effect on liquidity of commercial banks in Nigeria.

**Table 5: Random Effect Regression Results**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PGR	-1.032152	1.187403	-0.869252	0.3882
LGR	0.018559	0.013969	1.328545	0.1891
EGR	0.059557	0.631914	0.094249	0.9252
DGR	1.201125	0.594626	2.019966	0.0479
AGR	0.426878	0.091975	4.641229	0.0000
C	24.21754	14.53608	1.666029	0.1010
Effects Specification				
			S.D.	Rho
Cross-section random			5.208916	0.1461
Idiosyncratic random			12.59259	0.8539
Weighted Statistics				
R-squared	0.350679	Mean dependent var		37.19191
Adjusted R-squared	0.295652	S.D. dependent var		15.59349
S.E. of regression	13.08690	Sum squared resid		10104.76
F-statistic	6.372834	Durbin-Watson stat		1.570539
Prob(F-statistic)	0.000085			
Unweighted Statistics				
R-squared	0.430774	Mean dependent var		50.66200
Sum squared resid	11886.46	Durbin-Watson stat		1.328204

Source: Extract from E-View Windows 9.0, 2023

Evident from the fixed effect model result proved that 29.5 percent variation on liquidity of the commercial banks is traceable to variation on the independent variables in the study. The f-statistics and probability validate the reliability of the model. The Durbin-Watson statistics proved the presence of negative serial autocorrelation. The regression coefficient found that profitability growth and earnings growth have negative effect on liquidity of the commercial banks while assets growth, deposit growth and lending growth have positive effect on liquidity of commercial banks in Nigeria.

### Discussion of Findings

The objective of the study was to examine the relationship between management quality and liquidity of commercial banks in Nigeria. Findings of the study revealed that there is negative and no significant relationship between profitability growth, loan growth and liquidity of quoted commercial banks in Nigeria. The results presented in table 4.5 revealed that profitability growth and loan growth reduces commercial banks liquidity by 0.4 and 0.01 percent over the periods of this study. This findings does not correspond with the expectations of the study, the study expected positive relationship between the dependent and the independent variables. The negative relationship as found in the study could be blamed on poor management quality, over trading and insider dealing. The negative relationship between the variables contradicts bank management theory and empirical studies such as Prasad and Ravinder (2012) that bank rate in terms of per parameter. the findings of Rehana and Saba (2012) that there is a significant difference between the three kinds of bank regarding CAMEL ratios, Stančić et al. (2014) that the size of boards of directors has a negative and significant influence on the banks profitability and ownership centralization and the bank size has a significant impact on the commercial banks profitability, the findings of Lee and Yang (2014) that, unlike American and European

countries, there is a significant relationship between the bank income diversification and the bank performance, in other words the income diversification improves the bank performance, Muhmada and Hashima (2015) that capital adequacy, assets quality, earnings quality, and liquidity have a significant influence on Malaysian banks performance. The findings of Tabatabaei (2011) that Shahr performance is better compared to other banks performance regarding capital adequacy and assets quality ratios, but it is not a significant difference.

The study further revealed that there is positive and no significant relationship between earnings growth, deposit growth and positive and significant relationship with assets growth ratio and liquidity of commercial banks. From the regression coefficient, the variables add 1.1, 0.2 and 03 percent to liquidity of commercial banks within the periods covered in this study. The positive relationship between the variables confirms the expectations of the study and the objective of management quality as stipulated by the regulatory authorities. The findings of the study confirm the bank management theories such as the liquidity management theories, assets management theory and liability management theory. Empirically, this finding confirm the findings of Bahrami (2013) that there is a negative and rather weak relationship between banks rates calculated based on CAMEL model and the bank stock return. Chavoshi et al. (2014), Khanifar et al. (2014) that the private banks performance was better than the public banks in terms of liquidity and earnings, and that public banks performance is better in terms of management quality, Olweny and Shiphoo (2011), Sangmi and Tabassum (2010) revealed that the CAR reflected the internal wealth of banks to be able to withstand losses in cases of economic crises. Dang (2011) demonstrated that the bank liquidity adequacy was positively related to its profits and Stephen and Arthur (2009) significance of the individual CAMEL components provide mixed results for different periods apart from the sensitivity to market risk, which is found to be statistically insignificant.

## CONCLUSION AND RECOMMENDATIONS

### Conclusion

This study examined the relationship between management quality and liquidity of commercial banks in Nigeria. Based on the results, the study conclude that profitability growth ratio have negative but no significant relationship with liquidity of the quoted commercial banks, that loan growth ratio have negative but no significant relationship with liquidity of the quoted commercial banks, that earnings growth ratio have positive but no significant relationship with liquidity of the quoted commercial banks, that deposit growth ratio have positive but no significant relationship with liquidity of the quoted commercial banks while that assets growth ratio have positive and significant relationship with liquidity of the quoted commercial banks.

### Recommendations

- i. Quoted commercial banks in Nigeria should implement management culture amongst other stakeholders so as to enable smooth implementation of quality management practices that facilitate employee contribution, customer satisfaction and continuous process change strategies within commercial banks that increases liquidity of the banks.

- ii. The commercial banks' top management needs to be totally involved in liquidity management policies and implementation strategies that increase the deposit mobilization to enhance liquidity.
- iii. There is also need for commercial banks' to prioritize employees' training on quality management process. This will empower employees to become more quality aware and also identify with the management process by contributing to improvement processes of assets growth ratio for better liquidity position of the commercial banks.
- iv. There is also need for the top management to constantly seek feedback from lower level managers on the level of profitability and formulate strategies to increase the commercial banks liquidity.
- v. The commercial banks' top management needs to set simple, clear, measurable and achievable objectives in line with management quality and liquidity positions of the banks that will guide the organizations to the right path strategically.

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