CAMELS AND BANKS' PERFORMANCE IN NIGERIA 1990 – 2020

By

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Abstract

*The major macroeconomic goal of many nations is to have a sound and efficient banking sector which will in turn lead to a stable and sustainable economy. The adoption and compliance with the CAMELS indices is required to achieve such laudable economic goal. The main objective of this study is to investigate the effect of CAMELS on the performance of Deposit Money Banks in Nigeria and it covers from 1990 to 2018. Ex-post facto research design was adopted in the study and the Ordinary Least Square (OLS) technique was used for the study analysis. This study randomly selected five deposit money banks and secondary data were sourced from their various published accounts as it relates to the dependent variable Return on Assets and the CAMELS indices as the independent variables. Mixed correlation was found from the tests results as only management efficiency maintained positive and significant impact on banks' performance while other variables varied in their impact on banks' performance at different periods. The result also showed no autocorrelation, no collinearity and no hetroscadestit**y** hence the model is plausible for analytical purposes. Given these findings, it is concluded that CAMELS variables are good determinants of Banks' performance in Nigeria. The major recommendation in this study is that banks should fully comply with the prudential guidelines and other policies of the bank regulatory bodies like the CBN and NDIC which entails some of the indices used in this study.*

Keywords: *CAMELS, Return on Assets, Performance*

Introduction

The importance of the banking sector and its financial intermediation role in every economy can never be over emphasized hence it attracts high level regulations for the attainment of effective and efficient banking operations and performance. It is important to note that the performance of the banking sector is highly significant to the achievement of the goal of economic growth in every nation. Given this understanding, the Nigerian banking sector has undergone several reforms such as liberalization and banks recapitalization exercise of 2004. The essence of these reforms was to ensure adequate capital flows and the establishment of the framework for an efficient regulatory environment in the country so as to facilitate the stability of the banking system and also ensure sound financial infrastructure all geared towards achieving the macroeconomic goals of the nation. These reforms have no doubt fostered the need for increased efficiency in service delivery of most banks hence the record of high banking performance in the country. In the words of Nwankwo (2013), the stability of the banking industry will easily culminate in the stability of the overall economy of a nation hence the performance of deposit money banks is a critical index that reveals the overall state of an economy at any point in time.

Profitability is a measure of good performance and it reveals the viability of all investment effort.

Several studies have been carried out on the determinants of deposit money banks performance by considering the importance of profitability in banking sector and this has been found to be affected by different internal factors like capital adequacy, asset quality, management efficiency, earnings, liquidity, and sensitivity to macro-economic volatility (interest rate) and other external factors which include market share, industry regulations, inflation, concentration and rate of cyclic growth in the economy. Internal determinants are factors that are mainly influenced by a bank's management decisions and policy objectives. Flamini, McDonald and Schumacher (2009) averred that the internal determinants include financial statement variables and profit or loss account such as the level of liquidity, variation in loans loss provisions, capital adequacy, expense management, change in capital and asset risk, operational efficiency, and market interest rates. These internal factors are the industry specific determinants which are subsumed under the CAMELS theory which is the main crux of this work.

The CAMELS theory is a model that looks at the factors within the control of the bank in determining the level of performance that the bank will achieve. The CAMELS model is made up of Capital adequacy, Asset quality, Management efficiency, Earnings, Liquidity, and Sensitivity to interest rate.

The effort of the deposit money bank's management towards making profit is usually associated with a number of conflicts. One of such conflicts is that between profitability and liquidity. Shareholders expect returns out of their investments while customers equally expect interest payments on their deposits. Therefore deposit money banks must invest so as to yield returns high enough for them to be able to discharge its operational obligations and also declare profit from which shareholders' dividend would be paid. On the other hand, banks must maintain a reasonable

level of liquidity to meet the daily withdrawal needs of depositors. The need for liquidity indeed limits the extent to which the banks can maximize their profitability potentials.

The question now becomes how strategic and effective are the banks in managing their assets and liabilities in handling these conflicting targets. Most banks' management fail in striking the required strategic balance between profit maximization and liquidity management objectives giving rise to increasing presence of non-performing credits, poor performance and subsequent distress in the industry

Again, there seems to be some level of agreement among researchers that bank-specific factors are the most critical determinants of bank performance. The CAMELS is the rating system that represents some of the banks-specific factors. They are; capital adequacy, asset quality, management efficiency, earnings, liquidity and sensitivity of interest. This rate rating system has been globally accepted as drivers of deposit money banks' performance. It has significantly influenced the variations in the performance of deposit money banks in the developed economies but this has not been the case in less developed economies such as Nigeria with developing banking system characterized by high volatility and instability. An example of the above can be seen when the Nigerian banking industry experienced negative performance between 2009-2011, few years after full implementation of industry wide policy that consolidated eighty-nine (89) banks to twenty-five (25) banks that was adjudged sound and strong based on CAMELS rating system index.

Nigeria as a developing country operates in a prevailing economic conditions and the banks' operational environment that is not suitable as the necessary conditions for the applicability of CAMELS rating system as such the profitability model having CAMELS as predictor may be over-parameterized. This further implies that there is every need to further simplify the CAMELS rating system profitability modeling to suit the peculiarity of the Nigerian environment using fewer critical predictors. Based on this observations there became the begging need to carry out the investigation of CAMELS indices as the determinants of deposit money banks' performance in Nigeria.

The main objective of this study is to empirically investigate the effect of bank specifics (CAMELS) as the determinants of deposit money banks' performance in Nigeria and it specifically aimed at determining;

the effect of capital adequacy on the performance of deposit money banks in Nigeria, the relationship between asset quality and the performance of deposit money banks in Nigeria, whether management efficiency have impact on the performance of deposit money banks in Nigeria, the effect of earnings on the performance of deposit money banks in Nigeria, the impact of liquidity on the performance of deposit money banks in Nigeria, the extent to which deposit money banks performance in Nigeria is affected by interest rate sensitivity

This findings in this study will be of benefit to some stakeholders: policy makers to measure the impact of the banking industry performance on the economy and its implications on the issues of policy,

top management of deposit money banks will find this study helpful in policy formulation, business developments, operations management and adjusting general bank management systems and mechanisms with a view of achieving sustainable profit margin, investors will benefit from this work as it will help them in measuring the performance of their portfolios and proceed with re-adjustments as required and it is also expected that this study will form an addition to the body of knowledge that will provide worthy empirical literature evidence for scholars who may be interested in conducting research work in this and other similar areas.

This study covers the period between 1990 and 2018. It is limited to only five (5) deposit money banks that have maintained their corporate identity and have complete financial records for the stated period. The five banks include; United Bank for Africa Plc, First Bank Plc, Access Bank Plc, Guarantee Trust Bank Plc and Union Bank Plc.

Literature Review

Conceptual Dialectics

It is necessary to make some clarifications on the related concepts examined in this study.

Performance of Deposit Money Banks

Deposit money banks have played important role in the global financial system by contributing towards the stabilization of the economies of many nations. Good performance which is usually measured by the level of a firm's profitability is the central goal of every organization including the deposit money banks. According Abata (2014) the performance of a firm serves as a benchmark in judging the efficiency and effectiveness of their business unit, department, branch and the organization as a whole and banks are not exempted. Bank performance has always attracted the interest of researchers and bank stakeholders (depositors, management, investors, shareholders, regulators and government) who hinge their confidence on it.

Bank performance can be referred to the extent to which a bank accomplishes useful operations estimated in terms of timely discharge of her obligations to its publics with minimal risk and remarkable level of profiting. Sivaperumaan (2013) posit that banks' performance among other things means the ability of a bank to be in the position to consecutively maintain good financial position and actively meet the needs of its shareholders and other stakeholders.

In order to achieve these profits, banks must employ the funds obtained from different sources and work effectively to reduce its operating expenses and costs

Banks' performance is traditionally measured by their profitability margin hence the most critical challenge facing every bank management in the present competitive financial market is how to

maximize profit while operating within the ethical, professional and prudential limits as prescribed by their regulatory bodies. The extent of a bank's success and/or failure is what explains whether such bank is performing well or not and this is usually revealed through a careful study of their financial statements. Profit is the general increase of cash generated over capital invested within a given period of time. Kelvin (2016) noted that profitability is always related with performance and productivity. He further stated that pure profit is the increase that an investor realizes out of his investment efforts after considering all costs associated with such investment including the opportunity costs. According to Alajezera (2017), profitability is defined as the relationship or difference between earnings and operating cost (margins) and investments made to the achievement of such margins. He also puts it as the ability of the firm to achieve an increase in the value of invested assets.

Measurement of Banks' Performance

In line with earlier studies that examined the determinants of banks' performance, there are different measures of performance.

Banks' performance can be measured through their profit after tax (PAT), return on asset (ROA), return on equity (ROE), net interest margins (NIM), profit after tax (PAT), earnings per share (EPS) etc.

Return on Assets (ROA)

ROA is calculated as net profit after tax divided by average total assets. This is probably the most important measure used in comparing the operating performance of banks. This is supported by the view of Epure and Lafuente (2012) that many regulators believe ROA is the best measure of bank efficiency and is often seen as the key ratio for evaluating the performance of banks given that it is not distorted by high equity multipliers.

Return on Equity (ROE)

ROE indicates the return to shareholders on their equity. Epure and Lafuente (2012) insist that ROE reflects how effectively bank management is using shareholders' funds. It is calculated by dividing net income with total equity capital or ROA times the total equity ratio-to-asset. According to Ebiringa and Chigbu (2012), ROE is often referred to as the bank's equity multiplier, which measures financial leverage. Banks with lower leverage (higher equity) will generally report higher ROA, but lower ROE. A bank's ROE is affected by its ROA as well as by the bank's degree of financial leverage (equity/asset). ROE is hardly used as a single measure of profitability. ROE disregards the risks associated with high financial leverage and it is often used for checking for consistency with ROA.

Net Interest Margin (NIM)

The net interest margin (NIM) is also used as proxy for .banks' performance. It is calculated as interest income (income from loans and securities) minus interest expense.

Determinants of Deposit Money Banks' Performance:

These are the CAMEL indices. They represent that banks' internal specific factors that affect their financial performances. C represents Capital Adequacy, A presents Assets Quality, M represents Management Efficiency, E represents Earnings, L represents Liquidity and S represents Sensitivity and they are explained below

Capital Adequacy and Banks' Performance

Capital adequacy refers to the gross unimpaired capital resources needed by a bank to sustain its operations (Kelvin, 2016). It is an important variable in determining the performance of deposit money banks. A bank requires an optimal capital that will lead to the maximization of the bank's value. It takes adequate capital for a bank to effectively play its major role in achieving an efficient intermediation process and providing the desired levels of specific banks products or services thus affecting banks' performance and market value. Sufian and Chora (2008) observed that bank's capital is widely used as one of the determinants of bank profitability since it indicates the financial strength of the bank. This is supported by Ejoh and Iwara (2014) as he reported that capital ratios are positively related to profitability. They further explained this by assuming that well capitalized banks may enjoy access to cheaper and less risky sources of funds and better quality asset markets. Duru and Ejike (2014) suggested that deposit money banks achieve increased level of safety through increased capitalization which has the net benefit of enhancing the income and profit generation ability of banks.

Capital adequacy requirements generally aim to increase the stability of the banking system by decreasing the likelihood of bank failure and a number of negative externalities existing in banking that cause risk and consequential crisis in the overall system

To achieve the goals of efficient financial intermediation and desired liquidity, good performance, banking sector and economic stability, regulations are imposed on banks' management which basically cover the lending policy, deposit policy, interest rates, and liquidity requirements. In the context of this study, financial regulators require deposit money banks to maintain a minimum capital adequacy ratio to ensure that banks hold a sufficient amount of equity to absorb any shocks they might experience. Under the consolidation programme, banks that are not able to achieve a minimum paid up capital of N25billion were deemed undercapitalized. Alajezera (2017) advocates that apart from this requirement, the banking laws stipulate that banks must build up statutory reserves out of net profits before declaring dividends and this provision seeks to compel banks to build up adequate capital thereby enhancing the operational environment of the banks, their earning potentials and the protection of depositors' fund.

Asset Quality and Banks' Performance

Asset quality is an aspect of bank management which entails the evaluation of firm's assets in order to facilitate the measurement of the level and size of credit risk associated with its operation. Asset quality is prudential determinant of money deposit banks soundness and profitability. Abata

(2014) posits that it relates to the quality of loans which provides earnings for a bank. To ensure good performance and profitability, banks must sustain sound assets quality and this can be achieved by involving in careful appraisal and granting of loans that must be compliant to banking credit rules. According to Ejoh and Iwara (2014), poor assets quality affects the financial performance and the soundness of the banking system as a whole.

Banks are financial institutions that are involved in the management of assets and liabilities. Abata (2014) unveiled that banks as well as their inspectors are generally concerned about the level of risk exposure hence the level of asset quality.

Asset quality is measured in different ways; the ratio of classified loans and advances to total loans and advances, the ratio of performance loans and advance to total loans and advances, the ratio of loan loss provision to non-performing loans, loan loss provision over gross loans and advances.

Management Efficiency and Banks' Performance

Management efficiency is a determinant of banks' profitability. It is the whole effort of banks' management executives to effectively and efficiently allocate or apply banks' resources toward satisfying the various stakeholders of the bank. It focuses on the level of efficiency and prudence which the bank managers demonstrate in the management of the operational expenses of the bank which is an attribute of its profitability level. Ahanonu (2015) confirmed that efficient cost management is a prerequisite for improved profitability of banks. The higher the efficiency level of a bank, the higher the profits level. There is always the evidence that superior management raise profits and market shares through efficient application of an organisation's capital while poor management dwells in increasing cost that ruins their profit level. According to Babalola (2008) that operating expenses appear to be an important determinant of profitability, as they found a direct negative connection between operating expenses and profitability among the banks; the implication being that there is immediate negative relation between lack of efficiency in expenses management and profitability in the banks. In other words, Doyran (2012) posits that there is a positive relation between efficient expense management (management quality) and profitability.

Effective management endeavours is required to acquire the right type of asset to yield the highest rate of return and maintain optimal balance between the cost of capital and the return from the investment. The issue is not simple for bank managers because the management of bank assets is constrained by other factors other than profitability. Bank managers are further constrained to maintain a delicate balance between the needs for liquidity and the demands for profitability. The constraint arises because the operation actions of bank managers which tend to promote profitability often endanger the liquidity position of the bank. It is the idea of Akpan and Ahmed (2012) that how well a bank operates with optimal liquidity and profitability demands amidst other BOFIA requirements are measures to determine how efficient her management could be in the view of the bank stakeholders. It therefore beholds on the banks' management to adopt operational strategies for prudent activities that would cause them to emerge successful and profitable in their endeavours.

Earnings and Banks' Performance

Earnings have proved to be a major source of financing banks operations and generating returns for the shareholders. Alajezera (2017) observed that the adequacy and sustainability of earnings over a long period is critical to the performance and survival of banks. Continued buildup of non-performing loans seriously affects the ability of banks to generate adequate income on their loan portfolio. Where a bank fails to pay close attention to any of these indices, it could have adverse effect on the bank's performance. That is to say that management of deposit money banks should strive to effectively and efficiently manage their loan and advances to ensure that they have more percentage of performing loan in the portfolio in order to stand the chance of generating fund that will be adequate to successfully carry their operations and otherwise. Ejoh and Iwara (2014) posited that substantial and sustainable earnings make a bank stable. Any attempt of successfully recapitalizing any bank must focus on the banks asset quality, management quality and experience, level of earnings and adequacy of its liquidity.

Liquidity and Banks' Performance

Liquidity is a major factor in the determination of banks' performance. It refers to the ease and certainty with which a bank's asset can be turned into cash.

Davydenko (2011) defined liquidity as being able to meet every financial need as at when due be it withdrawal or credit demands as the case may be. NDIC (2014) posits that Liquidity is the quality of an asset which makes the asset easily convertible into cash with little or no risk of loss and that a bank is considered liquid when it has sufficient cash and other liquid assets, together with the ability to raise funds quickly from other sources to enable it to meet its payment obligation and financial commitments in a timely manner.

Kelvin (2016) refers liquidity as the speed and certainty with which an asset can be converted back into cash whenever the asset holder desires. Ebochie (2013) views liquidity management as the act of storing enough funds and raising funds quickly from the market to satisfy depositors, loan customers and other parties with a view to maintaining public confidence.

Cash is an important current asset for the operation of any business. It is needed as a critical input for the business of banking to run continuously and conveniently resulting to profit-making. A deposit money bank as a business concern actually needs to have cash and liquid assets which it can easily convert into cash at short notice. For banks to remain in the business of financial intermediation, they must formulate policies to ensure the availability of cash and liquid assets in their asset portfolio at any point in time.

According to Krakah and Ameyaw (2010), deposit money banks need a high degree of liquidity in its assets portfolio to be profitable. A bank must hold a sufficient proportion of its assets in the form of cash and liquid assets for the purpose of profitability. If a bank takes liquidity as a priority, its profit will be low because it may not be engaging in profitable business ventures at its disposal just for the purpose of fear of illiquidity. Robert (2013) asserts that if a bank ignores liquidity and

aims at earning more profit, it could be disastrous for it. Bank management must therefore continuously strike a balance between the objectives of liquidity and profitability in investment portfolio of a bank. This balance must be achieved with a relatively high degree of safety and such bank will have to engage in strategic and well articulated credit and liquidity risk management policies.

Theoretical Framework

According to Kyj and Isik (2008), there is no specific theory that provides a unifying framework for studying determinants of performance in banks, hence, this study relied on some theories which are nearer in expressing views on market structure, behavours and drivers of performance in the banking industry. One of such theories is the structural approaches to investigate behaviour of market parameters on deposit money banks profitability. The Structural approach shows how market concentration weakens market competition by fostering collusive behavior among firms and it mainly focuses on the structure-conduct performance (SCP) paradigm and on the efficient structure paradigm.

Market Structure Theories of Bank Profitability

Amor (2006) posit that the market structure approach is divided into two mainstreams called the structure-conduct performance paradigm (SCP) and the efficiency structure hypothesis (ESH).

Structure Conduct Performance (SCP) Hypothesis

This model is derived from the neo-classical analysis of the markets and it was first formalized by Mason in 1939 as a method of analyzing markets and firms. It was later developed by Bain (1951). It describes the relationship between the market structure, company conduct and performance. According to Berger (1995). The SCP emphasizes the industry-specific determinants and assumed that a more concentrated system leads to less competition and higher profitability. The SCP paradigm asserts that there is a relationship between the degree of market concentration and the degree of competition among firms. It also assumes that firms' competiveness and rivalry behaviour in the market is determined by market structure conditions especially the number and size distribution of firms in the industry and the condition of entry (Smirlock, 1985). According to him, this rivalry leads to unique levels of prices, profits and other aspects of market performance. The SCP also postulates that increase in market power yields relative monopolic profits. The SCP recognizes that fact that there is a low and weak competition that exists between the small size banks and the large size banks leading to a positive relationship between market concentration and profitability. In SCP market concentration encourages collusion among large banks in the industry which subsequently leads to unfair high financial profits for the large/big banks to the detriment of the small ones therefore pointing out those changes in the market concentration that may directly influence the financial performance of banks. In the word of Gilbert (1984), firms in more concentrated markets can earn higher profits than those in less concentrated industries. The benefit of the SCP is it helps to interpret different sources of productivity and efficiency gains or losses

and it provides a rational basis for analyzing the market behaviour. However, Smirlock (1985) examines an alternative explanation for these results and finds no relationship between concentration and profitability rather between bank market share and bank profitability and created the relative market power hypothesis (RMP). This special case of the SCP, (the RMP) suggests that only firms with large market shares and well-differentiated products are able to exercise market power and earn non-competitive profits.

Efficiency Structure Hypothesis (ESH)

The Efficiency Structure Hypothesis (ESH) developed by Demsetz (1973) argues that if banks enjoy a higher degree of efficiency than their competitors, they can increase shareholder value or gain market share by reducing their prices. This theory recognizes that thee is a positive relationship between concentration and profitability which reflects a positive relationship between size and efficiency. According to Smirlock (1985), this hypothesis states that efficient banks in the market leads to increase in the firms size and market share due to the aggressive behaviour and this behaviour is what allows such banks to concentrate and earn higher profits which further helps them to enhance their market share. He further observed that these banks can maximize profits either by maintaining the present level of products or service charge and firm's size or by reducing the service charge and expanding the firm's size. The ESH theory holds that the positive relationship between profit and concentration results from the lower cost achieved through superior management and efficient production process.

Empirical Review

A good number of studies have been carried out on the determinants of banks' performance in a particular country or as relates to a number of countries, it therefore becomes pertinent to review such studies in order to examine and ascertain their similarities and differences from this present study.

Amaechi and Okeke (2007) conducted a study on the determinants of banks' performance using ROA as dependent variable to measure bank profitability and bank internal characteristics (size, loans, security, deposit), bank efficiency measures, bank risk measures and external factors that are relating to environmental factors such as GDP, inflation, concentration, ownership as independent variables. They compared accounting-based and economic-based measures of efficiency. The unit root test showed a mixed order of integration hence they proceeded with the OLS based bound test and Autoregressive distributive lag which revealed a long run relationship among the variables and speed of adjustment estimated at 67% annual rate. The result of their study also showed that banks in developing countries are slightly less cost efficient and their profit efficiency is above average. They recommended among other things that researchers should focus more on profit efficiency than cost efficiency in subsequent studies

Robert (2013) studied the profitability behavior of some selected banks in Nigeria over the period 1998-2012. The study used profit after tax as the dependent variable which they regressed against the bank specific factors. They sourced their data from the NDIC annual report and conducted the various tests using the OLS statistical tool. A key result is that the effect of market concentration is positive while the macroeconomic variables have a mixed influence on banks' profitability. They recommended that the empirical results suggest that the enhancement of bank profitability in those countries requires new standards in risk management and operating efficiency which according to the evidence presented in the paper, crucially affect profits.

Akinwale and Adams (2013) investigated the impact of CAMELS on the performance of deposit money banks in Nigeria from 1990 to 2015. He used profit after tax for banks' profitability and CAMELS as the determinant variables. The unit root test result indicated a mixed order of integration hence the researchers proceeded with the bounds test and ARDL and the result disclosed that a significant relationship exists between CAMELS and banks' profitability in Nigeria given most of the independent indices showing positive coefficients in both the current year and lagged periods. The result specifically recorded that capital and management efficiency significantly affect banks' performance. The researcher recommended that the management of the deposit money banks should sustain and also enhance their management efficiency in establishing a more proactive internal control system that will effectively and efficiently monitor credit and liquidity risk mechanisms and also concluded that it will take cost prudence to avoid asset-liability mismatch and also checkmate variation between budget and actual towards attaining an ever increasing profit level.

Ahanonu (2015) examined the relationship between concentration and profitability of deposit money banks margin and profitability in Middle East and North Africa (MENA) countries during the period 1990-2015. They specified two models and used the net-interest margin (NIM) and the return of assets (ROA) as the two measures of performance while the banks specific determinants of profitability joined with other macroeconomic variables represent the independent variables. The study used the ordinary least square (OLS) regression technique and they found that bank specific characteristics, in particular bank capitalization, management efficiency and credit risk, have positive and significant impact on banks' net interest margin, cost efficiency, and profitability. On the other hand, the study revealed that macroeconomic and financial development indicators have no significant impact on bank performance and it was recommended that banks should enhance their management quality to be able to attain a desired level of profitability.

Sufian and Habibullah (2018) in their study on the determinants of bank profitability in a developing economy used ROA, ROE and NIM ratios as dependent variables for profitability and bank specific variables and macroeconomic condition as independent variables which they sourced from the CBN bulletin. They evaluated the performance of 37 Bangladeshi banks between 1990 and 2014. Using OLS regression procedure, their findings suggested that bank specific characteristics, in particular loans intensity, credit risk, and cost have positive and significant impacts on bank performance, while non-interest income exhibits negative relationship with bank

profitability. During the period under study the results also showed that the impact of size is not uniform across the various measures employed. The empirical findings suggest that size has a negative impact on return on average equity (ROAE) while it has a positive impact on return on average assets (ROAA) and net interest margins (NIM) respectively. As for the impact of macroeconomic indicators, the researchers concluded that the variables have no significant impact on bank profitability, except for inflation which has a negative relationship with Bangladeshi banks' profitability hence recommended that the government should effectively monitor the efficiency of banks' management and as well ensure that they adequately comply with the various banking regulations on ground.

Methodology

This study adopted the ex-poste factor research design and made use of the econometric procedure in estimating the relationship between CAMELS and the performance of deposit money banks in Nigeria.

Secondary data from the financial statements information of the selected banks for the period under review was mainly used in this study and this was obtained from the respective bank's database. Five deposit money banks were randomly selected based on the author's access to data at the time of this study.

Model Specification

According to Egbulonu (2018), model specification is a mathematical expression used to measure the relationship between economic variables (dependent and independent). In this study, ROA is used as proxy for banks' performance while the banks specific factors with the acronym CAMELS are used as the determinants of banks' performance hence the functional form of the model is given by;

$$ROA = f(C, A, M, E, L, S) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

The econometric format of equation (1) can be explicitly written as;

$$ROA = b_0 + b_1C + b_2A + b_3M + b_4E + b_5L + b_5S + Ut \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where ROA = Return on Assets of deposit money banks in Nigeria

C = Capital Adequacy of deposit money banks in Nigeria

A = Asset Quality of deposit money banks in Nigeria

M = Management Efficiency of deposit money banks in Nigeria

E = Earnings of deposit money banks in Nigeria

L = Liquidity of deposit money banks in Nigeria

S = Sensitivity to interest rate

Ut = Stochatic error term (unexplained variables in the model)

b_0 = Constant

b_1 - b_6 are the unknown parameters to be estimated

A positive relationship is stipulated between the explanatory variables and the dependent variable. Thus; $b_1 > 0$, b_2, b_3, ,b_4,b_5, $b_6 < 0$

Data Analysis and Results

The Ordinary Least Square (OLS) and other econometric technique were employed in obtaining the numerical estimates of the coefficients in the model formulated and the E-view 10 was used in this application

Stationarity / Unit Root Test Result

The Augmented Dickey Fuller (ADF) was used to check the stationarity or order of integration of variables to avoid spurious regression and the following results were obtained.

Result of Unit Root Test for Variables

VARIABLES	ADF TEST STATISTICS AT LEVEL	ADF TEST STATISTICS AT 1ST DIFF	5% CRITICAL VALUES	LEVEL OF INTERGRATION	REMARKS
ROA	-2.407068	-3.301178	-2.881541	I(1)	Stationary @ 1st difference
C	-2.392307	-4.144701	-2.881978	I(1)	Stationary @ 1st difference
A	-2.171823	-3.621565	-2.881400	I(1)	Stationary @ 1st difference
M	-2.764016	-3.091604	-2.881260	I(1)	Stationary @ 1st difference
E	-2.799300	-5.050716	-2.881260	I(1)	Stationary @ 1st difference

L	**-2.503180**	**-3.941500**	**-2.881400**	**I(1)**	**Stationary @ 1st difference**
S	**-2.773780**	**-3.681591**	**-2.881460**	**I(1)**	**Stationary @ 1st difference**

Source: E-view output/ Authors' Extract

In the unit root test result above, the ADF statistics of all the series are more negative than the 5% critical values at first difference. This implies that the series are integrated (stationary) at order one or first difference, 1(1). This affirms that the variables have statistical properties that are constant and do not change over the time period under study. Based on this order of integration, the researcher therefore resorted to testing for long run relationship using the Johansen Cointegration Test.

Result of Cointegration Test

Sample (adjusted): 6 148

Included observations: 143 after adjustments

Ttrend assumption: No deterministic trend

Series: ROA A C E L M S

Lags interval (in first differences) 1 to 4

Unrestricted CointegrationRank Test (Trace)

Hypothesized No of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.268289	167.5484	111.7805	0.0000
At most 1 *	0.240938	122.8796	83.93712	0.0000
At most 2 *	0.182187	83.45861	60.06141	0.0002
At most 3 *	0.168621	54.69829	40.17493	0.0010

At most 4 *	0.121513	28.29054	24.27596	0.0148
At most 5	0.065465	9.764333	12.32090	0.1292
At most 6	0.000575	0.082272	4.129906	0.8138

Trace test indicates 5 cointegratingeqn(s) at the 0.05 level

*Denotes rejection of the hypothesis at the 0.05 level

**Mackinnon-Haug-Michelis (1999) p-values

In the result above, five out of the seven values of the trace statistic are greater than the corresponding 5% critical value which is also higher than the probability values indicating five cointegrating equations at 5% benchmark. This indicates the existence of long run relationship between ROA and the CAMELS variables. This means that the interaction among the CAMELS variable will affect future trends of Banks' performance. The next step is to proceed with the estimation of the parameters using the Error Correction Model (ECM)

Result for Error Correction Model (ECM)

Dependent Variable: D(ROA)

Method: Least Squares

Date: 08/28/23 Time: 01:44

Sample (adjusted): 1990 2018

Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
DROA(-1)	-1.596352	0.333632	-4.784765	0.0087
DROA(-2)	-1.385585	0.571434	-2.424750	0.0724
DA	4.664603	1.334041	3.503280	0.0248
DA(-1)	8.170226	1.872090	4.367378	0.0120
DA(-2)	2.051911	1.410066	1.457368	0.2187
DC(-1)	3.030412	7.719421	0.392665	0.0146

DC(-2)		-1.239065	6.851919	-1.793233	0.0474
	DE	4.355016	2.396815	1.816619	0.1388
	DL	-0.001487	3.711336	-3.997800	0.0162
DL(-1)		5.485580	2.803115	4.001473	0.0204
	D L(-2)	-3.220194	3.048121	-1.138364	0.4625
DM(-1)		3.471331	4.011153	0.811750	0.0413
	DM(-2)	4.600834	1.469925	2.775018	0.0233
	DS	-5.144019	3.344428	-1.199241	0.0128
ECT(-1)		-0.724059	0.265921	-6.933177	0.0022
C		-0.037364	0.009191	-4.065247	0.0153

R-squared	0.974514	Mean dependent var	-0.000279
Adjusted R-squared	0.870943	S.D. dependent var	0.023512
S.E. of regression	0.008181	Akaike info criterion	-6.783518
Sum squared resid	0.000268	Schwarz criterion	-5.967112
Log likelihood	83.83518	Hannan-Quinn criter.	-6.628016
F-statistic	10.19675	Durbin-Watson stat	2.170896
Prob(F-statistic)	0.018533		

According to Bikker and Hu (2002), the relevance of the variables in the model is determined by considering their individual coefficients and signs.

The result above generally shows the short run relationship between ROA and CAMELS variables having ROA reinforce itself at two lags.

Asset quality (A) positively and significantly impacted on banks' performance (ROA) at both the current and two lagged periods except at lag 2 where it exerted an insignificant impact on ROA. This means that asset quality is directly proportional to ROA at different significant levels

Capital adequacy (C) has coefficient of 3.030412 and probability of 0.0146 at lag1 while at lat lag 2 it recorded a negative coefficient of -1.239065 and probability of 0.0474. This represents a significant impact on ROA at both lagged periods but differed positively and inversely in relating with ROA at lag 1 and lag 2 respectively. This means that for every unit increase in capital adequacy, ROA increases by 3.030412 and decreases by 1.239065 units all things being equal.

Earnings (E) increase by 4.355016 units as ROA increases representing a positive relationship between the two variables. However, it does not have any significant impact on ROA given its probability of 0.1388 which is above the 0.05 critical value.

Conversely, liquidity (L) has negative coefficients of -0.001487 and -3.220194 at current year and lag 2 respectively which shows that an inverse relationship exists between the variable and ROA meaning that for every unit increase in Liquidity, ROA decreased by 0.001487 at the current year and by 3.220194 at lag 2 with all factors remaining constant. It was also revealed by the result that liquidity significantly impacted on ROA at the current and lag 1 period with probability of 0.0162 and 0.0204 respectively but with the probability of 0.4625 above 5%, it made an insignificant impact on ROA in the 2nd lagged period.

Management efficiency which is denoted by ‘’M ‘’ in this result exerted a positive and significant impact on ROA at both first and second lags by recording positive coefficients of 3.471331 and 4.600834 as well as the probability values of 0.0413 and 0.0233 respectively.

The result also revealed that the negative effect of Sensitivity to interest rate (S) on ROA was found to be positive and significant at the only current year with the probability value of 0.0128 which is below the 5% critical value.

The error correction coefficient of -0.724059 is rightly signed with a significant probability of 0.0022. This is the speed of adjustment from the short run equilibrium to the long run equilibrium. It means that the model corrects its previous periods disequilibrium/deviations at the speed of 72% estimated annually. This further implies that at an annual rate of 72%, the explanatory variables would have returned ROA to equilibrium after about a year and half all things being equal.

Goodness of Fit Test

The adjusted R^2 of the model shows coefficient value of 0.870943 indicating that about 87% of the variations in ROA is being accounted for or explained by CAMELS which is a very good fit while the remaining 13% is taken care of by other factors included in the error term.

Autocorrelation Test Result

Breusch-Godfrey Serial Correlation LM Test:

F- statistic	0.063835	Prob. F(1,3)	0.8169
Obs* R-squared	0.416700	Prob. Chi-square (1)	0.5186

The Durbin Watson value of 2.170896 tends towards 2 than 0 which is an indication that there is no autocorrelation among the variables. The absence of autocorrelation is further confirmed using the Breusch-Godfrey Serial Correlation LM Test as presented above.

Multiciollinearity Test:

Collinearity Statistics

Variance Inflation Factors

Date: 08/28/23 Time: 06:45

Sample: 1 148

Included observations: 148

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
CA	0.001446	3.175441	1.097035
	0.851824	85186.50	50963.60
M	2.75E-06	224.4437	1.585898
E	0.000291	15.48304	1.161754
L	0.852029	85202.93	50970.42
S	0.006131	18.50178	1.485656
C	0.001892	285.1113	NA

Multicolinearity is checked using the variance inflation factor (VIF). From the result above, four out of the six variance inflation factor (VIF) values are less than 10 which is the rule of thumb as such indicated the absence of severe/significant multicollinearity.

4.8 Breusch-Pagan-Godfrey Heteroscedasticity Test

Table 6:

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.416778	Prob. F(15,4)	0.9038
Obs*R-squared	12.19639	Prob. Chi-Square(4)	0.6641
Scaled explained SS	0.631875	Prob. Chi-Square(4)	0.1000

The test for heteroscedasticity indicates that the probability value of the F- statistic is 0.9038 which is greater than 0.05. On the other hand, the F statistic, observed R squared and scaled explained SS respectively have probabilities that are above 5%. All these imply that there is no hetroscadestity in the model hence the model is homoscedastic. This is supported by the observed R squared of 12.19639 being higher than its equivalent chi-square of 0.6641.

Discussion of Findings

This study investigated CAMEL indices as determinants of bank's performance in Nigeria from 1990 to 2018 and the following findings were recorded;

Asset quality (A) has a positive relationship with banks' performance (ROA) at the current year, lag 1 and lag 2 respectively. It also impacted significantly with ROA in the current year and lag 1 but exerted an insignificant impact on ROA in lag 2.This result finds support in the fact that continued buildup of non-performing loans seriously affects the ability of banks to generate adequate income on their loan portfolio. Actually the quality of assets in the portfolio of a bank matters a lot regarding its performance but the ratio of performance loans and advance to total Loans and Advances being high or low will go a long way in determining how significant or not it could be on banks' performance.

In addition, this finding is in line with the findings of Akpan and Ahmed (2012) in their study on the relationship between banks' specifics and profitability in Nigeria were they used PAT and ROA as proxies for banks' performance in the two separate models that they adopted in their study. From their result they concluded that all the bank specific factors related positively with the performance indices in the two models but there were variations in the level of significant at the different periods in the result.

Capital adequacy (C) presented a significant impact on ROA at both lag 1 and 2 but differed positively and inversely in its relationship with ROA at lag 1 and lag 2 respectively. This implies that for every unit increase in capital adequacy, ROA increases at lag 1 and decreases at lag 2 having all things at constant.

Capital as the life wire of every organization is a crucial and significant factor in determining the performance of deposit money banks hence its significant impact on ROA in this study is a good report and also coincided with the position of Ejoh and Iwara (2014) who suggested that deposit money banks achieve increased level of safety through increased capitalization which has the net benefit of enhancing the income and profit generation ability of banks. This is also authenticated by the findings in the study of Davydenko (2011) on the determinants of banks in Ukraine between 1985-2001 which revealed a positive and significant effect of capital on bank performance, reflecting in the sound financial condition of Greek banks.

From the result, Earnings have a positive relationship with ROA. However, it does not have any significant impact on ROA. The fact that earnings have proved to be a major source of financing banks operations and generating returns for the shareholders is enough for it to be positively and significantly related to ROA. This is consistent with the view of Robert (2013) that the adequacy and sustainability of earnings over a long period is critical to the performance and survival of banks.

Liquidity (L) has negative/inverse relationship with ROA meaning that for every unit increase in Liquidity, ROA decreased all things being equal. The result also showed that liquidity significantly impacted on ROA at the current and lag 1 periods but it made an insignificant impact in the 2nd lagged period. This result could be attributed to the conflict between liquidity and profitability which is seen to persist in this case owing to the fact that as a bank strives to ensure adequate liquidity, it may not be interested in investing much or may even go ahead to disinvest thereby being retarded in profit making hence its performance may be marred. This is consistent with Nwankwo (2013) in his observation that If a bank takes liquidity as a priority, its profit will be low because it may not be engaging in profitable business ventures at its disposal just for the purpose of fear of illiquidity and if it ignores liquidity and aims at earning more profit, it will be disastrous for it.

In this study result, management efficiency exerted a positive and significant impact on ROA at both first and second lags. This result implies that the higher the efficiency of the banks' management, the better it performs rolling out high profitability. This is aligns with the prior expectation and it is important to note that it takes a good management to prudently and efficiently coordinate the operations of a bank with the available resources and at the same time maximize the shareholders' wealth while satisfying every stakeholder of the institution. The words of Alajezera (2017) supports this finding that the major role of management is to optimally use the available resources to achieve best returns appropriate for the owners and other stakeholders of a firm, as well as to attract additional capital to support future business expansions. Sivaperumaan

(2013) also gives credence to this finding as he posits that when the management of a bank is efficient, it will actually show in the bank's profitability and overall performance.

Akpan and Ahmed (2012) added more credence to this findings as they concluded in their study on the analysis of firm-specific and industry-specific determinants of financial institutions performance in Nigeria that management efficiency is a factor not to toil with in every expectation of high firms' profitability.

Sensitivity to interest rate (S) and ROA have negative relationship which was also found to be significant at the only current year. The essence is that when a bank complies with interest rate rules, it is likely to be in the good books of the regulatory bodies and to have a good public judgement (good will) hence confidence is also reposed in their operations. It may not be involved in volatile operations but will remain in fair liquidity, no deposit run and steady profit level

The study found a short run relationship between bank performance proxied with ROA and CAMELS variables with the speed of adjustment of 72% estimated annually. This implies that at an annual rate of 72%, the explanatory variables would have returned ROA to equilibrium after about a year and half all things being equal. This is consistent with the findings of Sivaperumaan (2013) that studied the determinants of private banks in Sri Lanka concluded that profitability is an objective that can reliably be predicted at a short run.

The findings from the various tests results are summarized below;

1. All the variables were stationary at first difference
2. There was long run relationship among the variables given the five cointegrating equations indicated in the cointegration test result
3. Short run relationship was found among the variables from the ECM result.
4. Only management efficiency maintained positive and significant impact on banks' performance at all times while other variables varied in their impact on banks' performance at different periods.
5. There was no autocorrelation, no collinearity and no hetroscadestit**y** hence the model is plausible and can be used for analytical purposes.

Conclusion

This study generally revealed that CAMELS variables have significant impact in determining the performance of deposit money banks in Nigeria. It is important to recognize the fact that a major macroeconomic goal of nations is to have a sound and efficient banking sector which will in turn lead to a stable and sustainable economy hence it takes the adoption and compliance with the CAMELS indices to achieve such laudable economic goal. It is therefore concluded that capital adequacy, asset quality, management efficiency, earnings, liquidity and sensitivity to interest rates are good predictors of deposit money banks' performance in Nigeria.

Recommendations

Based on the findings of this study, the following recommendations are thus made;

1. The bank management should ensure that the capital adequacy level of the banks are not eroded, stop or minimize investment in toxic and highly volatile assets, maintain optimal liquidity, be prudent and minimize operational expenses so as to attain the desired profit-making goal.
2. To enhance performance and be profitable in banking business, the management should promote the culture of excellence, prudence, creativity, innovation, honesty, transparency, and accountability.
3. It is importance for banks to fully comply with the prudential guidelines and other policies of the bank regulatory bodies like the CBN and NDIC.
4. The government should continually and efficiently ensure the formation and implementation of monetary and fiscal policies that will go a long way in checkmating defiant banks towards attaining the level of financial intermediation and development exercises that will bring further soundness in the banking sector and much desired economic growth and sustenance in Nigeria
5. The government should keep eyes on the emerging trend of things in the sector as well as being more proactive, investigative and reformative through the monetary and fiscal policies
6. Owing to the ever-understood dilemma between liquidity and profitability as well as the problem of distress in deposit money banks which has often been traced to the increasing presence of non-performing credits in the liquid asset portfolios of these banks, the management of deposit money banks should always try to strike strategic balance between profit maximization and liquidity management objectives as this has remained a global concern to the industry stakeholders

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