

CAPITAL ADEQUACY AND BANK'S OPERATING EFFICIENCY IN THE NIGERIAN BANKING INDUSTRY

¹Tajudeen Tewogbola Lawal, ²Professor Willy Muturi, ³Oluoch Oluoch

¹Department of Economics, Accounting and Finance, College of Human Resource & Development (COHRED),
Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya.

²Department of Economics, Accounting and Finance, College of Human Resource & Development (COHRED),
Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya.

³PhD., Department of Business Administration, College of Human Resource & Development (COHRED),
Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya.

Abstract: Banking system all over the world remains the pivot upon which the economic engine of any nation revolves hence the quest for it to be adequately capitalized for its smooth operational efficiency. The issue of bank capitalization has attracted many empirical studies due to its indispensable role in banking operations throughout the world. The general objective of the paper is to examine the effect of capital adequacy on the operational efficiency of Nigerian banks. Relevant theoretical foundations have been drawn from the Stakeholders' and Capital Adequacy theories. The study population is made up of 15 DMBs where secondary data were collected from the annual reports and financial statements of the banks for 10 years from 2007-2016. Quantitative research design was employed by the study hence data collected were analyzed using both descriptive and inferential statistics. Ordinary least square method employed and relevant diagnostic tests conducted to ensure the goodness of fit of the model. Findings revealed that capitalization of banks should be a continuum having been found to be statistically significant to operational efficiency of banks ($p\text{-value} = 0.000 < 0.05$). Banks should meet the minimum capital base all the time to be able to perform its statutory role of financial intermediation and remain financially stable to withstand both internal and external shocks within the financial system. Regulatory compliance with the capital adequacy for banks as stated by Basel Accord must be taken seriously by all the banks and regulatory agencies so as to engender sound financial system stability.

Keywords: Capital adequacy, Banking system, Financial intermediation, Banking operations.

1. INTRODUCTION

Banks generally, play the pivotal role of channeling financial resources from units in surplus to the deficit units for productive ventures within an economy through the intermediation process (Akhtar *et.al*, 2010). Emerging from this therefore, capital adequacy or capitalization of banks remains an important factor for measuring the financial soundness of any banking system be it developed or underdeveloped. The Basel Accord on capital adequacy standard 1999 & 2001 remains a reference point for all nations in the world in terms of a framework for capital adequacy for banking operation. It therefore suffices that majority of nations adopts the minimum capital base for banks worldwide as prudential guidelines and weighted risk assets standard. Ayanwaokoro (2008) reported that risk asset weighting provisions against the international standard should include risk free and minimum risk assets, normal risk assets, substandard and doubtful, lost and specialized and other assets must be rationed in the appropriate minimum guidelines. Bank capital fund is considered adequate if it is enough to cover the bank's operational expenses and satisfy customers' dual needs of safety and withdrawal (Onoh, 2002).

According to Ejoh *et.al.* (2014), capital rating is a valuable tool for assessing capital adequacy which should capture the general safety, soundness and stability of the banks to withstand any external imbalance and shocks. The Central Bank of Nigeria has consistently been adopting the Basel Accord Agreement by adopting the standard prudential guidelines to suit the local needs in Nigeria. For instance, in 2005, Nigeria recapitalized all its banks up to #25 billion minimum capital base as a policy thrust for it to meet global financial competitiveness. It is evident in 2008-2009 that CBN bailed out some delinquent banks due to poor corporate governance, government mechanism resulting into huge toxic assets and non-performing loans and non-performing loans (NPLs) for the banks (Lamido, 2009).

Furthermore, in 2008-2009, the Central Bank equally observed that some delinquent banks needs to be bailed out for optimal performance and efficient financial system hence they were adequately and technically assisted (Lamido, 2009). Ezike and Oke (2013) reported that capital adequacy standards adoption by Nigerian banks is important as it exerts more influence on banks performance. From the foregoing, capital adequacy is equivalent to the ability of the bank to perform its statutory roles of safety and stability, meet the withdrawal needs of its customers, covering up with its operational expenses and ensuring that its credit risk, exposure is in tandem with the CBN's guidelines tailored towards financial system stability in Nigeria.

To this end, this study examines the extent of capital base required as well as its adequacy for the banking system in Nigeria in consonance with the Basel Accord requirements. Nigeria has continuously being increasing her bank capital base since 1969 (Banking acts 1969, Recapitalization policy, 2005). Capital base and its adequacy remains a puzzle within the dynamic daily financial requirements for banks as well as the ability of the regulatory organs to fix what is assumed or adjudged adequate or appropriate. This paper is set to examine the capital adequacy requirement and its level of adequacy for operational capabilities of the Nigerian financial system. The main objective of the paper is to examine the effect of capital adequacy on the operational efficiency of deposit money banks in Nigeria. In other to address the above research objective, the following hypothesis has been formulated for testing. The statistical hypothesis formulated for this study is:

Hoi: Capital adequacy has no significant effect on the operational efficiency of deposit money banks in Nigeria.

The study covers a period of 2007-2016 so as to show the effect of the policy thrust of the CBN for increasing the minimum capital base of banks from #2b to #25b in meeting international competitiveness (Soludo, 2004). The study will increase the body of knowledge of the practitioners and the regulators on the need to continually review bank capital fund for them to meet macroeconomic demands of the country especially as regards the pivotal role of financial intermediation for the financial system that will engender economic growth and development of such country.

2. LITERATURE REVIEW

Theoretical background:

The study adopts Asset Liabilities Management structure theory as well as the Efficiency Structure Hypothesis to form its theoretical foundation.

Asset liabilities management structure theory:

This theory engages the firms' attention on how to adopt policies and strategies to identify, control and manage the risks daily and the core financial soundness indicators of the bank for optimal efficiency in operation. Asset Liabilities Management (ALM) theory is a systematic approach that attempt to provide a degree of protection to risk regarding asset/liability mismatch and consist of a framework to define, measure, monitor, modify and manage risks of liquidity and interest rate usually faced by banks and other financial institutions. Asset Liability Modelling which is a neoclassical model of banking firm was developed by Klein (1971) and Monti (1972) as branch of microeconomics of banking. Its management involves matching various assets and liabilities according to the maturity pattern or matching the duration, by hedging and by securitization.

According to Sudanarao (2017), ALM is a risk management technique designed to earn an adequate return while maintaining a comfortable surplus of assets beyond liabilities e.g. loans exceeding deposits of the bank. It takes into account interest rates, earnings power and degree of willingness to take on debt and otherwise called Surplus-management. Its financial management process involves, risk identification (parameters), risk measurement, risk management and framing of risk policies and its tolerance levels for any bank. ALM is concerned with an attempt to match assets and liabilities as regards the maturity and interest rate sensitivity so as to minimize interest rate and liquidity risks that usually accompany assets (Anjichi, 2014).

Through dynamic balance sheet management, ALM involves the process of decision-making to control risks of existence, stability and growth in a system by controlling risks brought by changes in interest rates, exchange rates, credit risk, contingency risk, and the liquidity position of the bank. There are 3 processes in ALM, all of which are information based: Firstly, is the ALM information system. Secondly, is the Management Information System and lastly, is the information availability, accuracy, adequacy and expediency (Sudanarao, 2017). This is the pillar of ALM since information must flow across the large network of branches of the bank and maintain adequate system to collect information regarding the daily operations from the branches as regards liquidity requirement/provision which is germane to banking business operations. It can therefore be said that information asymmetry must not occur between the head office and the branches for ALM to succeed so that its influence on the operational efficiency of the bank generally can be felt. According to Lind *et.al.* (2014) in a properly integrated and sound organizational banking function, the ALM desk will have a system to cover all aspects of a bank's operations hence it is considered a strategic discipline but not a tactical one.

Operationally, an ALM risk is the risk of having a negative impact on a bank's future earnings and on the market value of its equity due to changes in interest rates. Some of the various types of risk associated with ALM are liquidity, foreign exchange/ currency, political, interest rate risks among others (Sudanarao, 2017). They are risks associated with either insufficient liquid asset, loss in foreign exchange assets and liabilities, foreign exchange fluctuations/volatility, among others. ALM structure must be carefully managed and preventive steps taken to mitigate the problems associated with it so as not to cause serious damage to the bank as regards its liquidity, profitability and solvency, all that anchors on the operational efficiency of banks. According to Saksonova (2011), it is the task of every commercial banks to determine the optimal asset portfolio depending on the profitability of various asset classes and chosen constraints such as liquidity, mandatory reserve requirements, capital adequacy, common sense constraints etc.

Again, the financial crisis of 2008 had underscored prior asset and risk management models, inadequate for proper investigation of the two most important factors relating to cost of resources and risks associated with assets, as reported by Saksonova, (2011). It was also argued that the risk taking behavior of bank managers often leads to poor loan quality resulting in ALM mismatch which may automatically affect operational efficiency (Sudanarao, 2017).

Therefore, the relevance of the theory to the study is based on the fact that for banks to achieve operational efficiency, they must strive to carefully manage their asset and liability structure well so as to avoid mismatch. As a strategic option plan, the entire branches of the bank must be involved especially as it relates to liquidity and interest rate risks management information of the bank through the Asset Liability Management Committee. It therefore beholds on the banks to perform these key functions efficiently, prudently and profitably as economic agents that promotes growth and ensuring financial system stability. According to Sudanarao (2017), problems associated with ALM are the issue of slow pace of computerization especially by Nigerian banks and absence of total deregulation policies for banks on interest rates for term deposits, credit portfolio (floating rate) which affects pricing these assets, based on prime lending rate. Again, it is limited in practice to develop easily an optimal asset-liability model for the bank since no one model capture the daily risk and liquidity requirements of banking operations.

Efficiency Structure (ES) Hypothesis:

The hypothesis was formulated by Domsetz (1973) as an alternative to the market power theory. It is anchored on the efficiency of the firm that arises from the relationship between market structure in the industry and the firm's performance. It postulates that firms or banks with superior resource management or production technologies have lower costs hence they enjoy higher profitability. According to Athanasoglou *et.al.* (2006), two distinct approaches are captured in the ES hypothesis: the X-efficiency and Scale-efficiency approaches. The X-efficiency approach states that more efficient firms are more profitable because of the lower costs to be incurred by them operationally. Anchiji (2014) confirmed that X-efficient firms tend to gain larger market shares, which may promote higher market levels and concentration but without any causal relationship of concentration to profitability.

The Scale efficiency approach on the other hand, emphasizes economies of scale as against differences in resource planning and allocation and production technology. It postulates that larger firms can obtain lower unit cost and higher profits that can enable them acquire market shares through economies of scale (Athanasoglou, 2006). This may again manifest in higher market concentration resulting into superior profitability and efficiency. Njoroge (2016) state that Efficiency theory presupposes better management and scale efficiency results with higher concentration in terms of business units (assets) leading to greater and higher profits. Odunga *et.al.* (2013), however indicate that operational efficiency in the short run is achieved at a level of output where all economies of scale available are being employed in an

efficient manner. Obamuyi (2013), opine that efficiency theory assumes that the internal efficiencies of a firm influence its profitability level while Odunga (2013) basically believe that the theory is based on the premise that firms/banks attain higher profitability if they operate efficiently than their competitors in the industry with lower operating costs both strategically, tactically and operationally.

Olweny *et.al.* (2011) summarize its findings of the theoretical relevance of ES hypothesis that the hypothesis maintains that banks earn high profits when they are more efficient in their operational activities than others in the industry. The ES generally assumes that profitability is influenced by the efficiencies achieved through internal factors present in the firm. The hypothesis is limited by the quantity and quality of the resources available in the firm (asset, capital, strategic options) as well the strategic focus and policies of the firm in terms of its management. The relevance of this theory to the work rests on the postulation of the theory that efficiency structure brings better competition and economies of scale leading to higher profitability and stability of firms that practice it in the industry.

3. EMPIRICAL LITERATURE REVIEW

Capital Adequacy and Banks' Operational Efficiency:

Capital adequacy for banks is of major concern for bank regulators worldwide (Ezike & Oke, 2013). Bank for International Settlements (BIS) established a framework for measuring capital adequacy for banks in the group of ten (G10) industrialized nations otherwise referred to as Basle Capital Accord on Capital Adequacy Standard (Basel Committee, 1999 & 2001). It is widely accepted by bank regulators worldwide and Nigeria's case is no exception. The Central Bank of Nigeria in December 2005 adopted the Basle Capital Accord as part of her financial reforms tagged Recapitalization policy for banks and increase the minimum capital base of banks from N2b to N25b (Soludo, 2004). According to Ayanwaokoro (2008), the issue of prudential guidelines and calculation of weighted risk assets in line with international standards equally affects bank capital. For instance, provisions against the capital should be done in the following categories: risk free asset and minimum risk assets (0%), normal risk assets (2%), substandard (10%), doubtful (50%), lost (100%) and specialized/ fixed assets and other assets (50 & 100%). Onoh (2002) argue that a bank capital fund is considered adequate if it is enough to cover the banks operational expenses and satisfy customer dual needs of safety and withdrawal.

Ezike and Oke (2013) examine the effect of capital adequacy standards, Basle accord on bank performance using a survey method for the 6 selected banks of study in Nigeria. The study investigates the impact of the adoption of Capital Adequacy Standards on the performance of Nigerian banks using OLS estimation techniques. The study therefore, advocate for the adoption of capital standards for the Nigerian banks. It was evident in the years of 2008-2009 when the CBN bailed out some delinquent banks due to poor corporate governance mechanism resulting into huge toxic assets and due to high non-performing loans resulting in low income for the banks (Lamido, 2009; Umar, 2015). Ifionu *et. al.* (2016) found a negative significant effect for capital adequacy ratio to return on asset which can influence operational efficiency. Anyanwaokoro (2008) state that capital adequacy of banks cannot be overemphasized but it is difficult to determine precisely when a bank is considered adequately capitalized or how much capital is adequate owing to many reasons. This view was reinforced by Olarewaju *et.al.* (2016) stating that capital adequacy is important as it directly influence the amount of funds available for loans disbursement which invariably affects the risks appetite, efficiency and the overall stability of the bank. Ejoh *et. al.* (2014) confirmed that capital ratio is a valuable tool for assessing capital adequacy and should capture the general safety and soundness of banks hence its significance in banking efficiency cannot be underestimated.

4. METHODOLOGY

Quantitative research design method employed based on an interpretive philosophical paradigm. The population of the study comprise 15 deposit money banks operating in Nigeria as at 31st December, 2016. Panel data sets were collected for the study through secondary source while panel regression was employed to analyze the data sets. Additionally, census method used starting from the year recapitalization policy (2005) was operationally implemented and when the policy effect would have shown on the economy. The 10 year period was purposively chosen to show the post consolidation effect of the policy and as a result of limited data available. Data processing and analysis involved the use of both descriptive and inferential statistics. The study also employed Stata statistical package (V. 13) to process the data while model diagnostic tests were employed to ensure that the data was BLUE. (Best Linear Unbiased Estimation). The descriptive test involve mean, median and standard deviation while least square regression analysis was performed on the data to show how statistically significant the results obtained are.

Model Specification:

Olarewaju (2016) specified model for capital adequacy was adapted for this study. Capital adequacy is indicated as having a causal relationship with operational efficiency using panel data involving cross sectional and time series survey. The model is presented below:

$$OER_{it} = \beta_0 + \beta_1 CA_{it} \dots \dots \dots \text{eq.1}$$

Where β_0 = Constant, β_1 = coefficients capital adequacy and OER=Operational Efficiency Ratio, (i=15 and t=10).

5. RESULTS AND DISCUSSION

Effect of Capital Adequacy on Operational Efficiency of DMBs in Nigeria:

The specific objective of the study provided for the formulation of its hypothesis which is presented and analyzed below:

Hypothesis Testing:

H₀: Capital Adequacy has no significant effect on operational efficiency of DMBs.

A bold academic attempt was made to unravel the possible effect of capital adequacy on the efficiency level of banking operation as stated above. The hypothesis was therefore subjected to further inferential statistics to ensure that the explanatory power of the variable is significant statistically.

Table 4.1b: Inferential Statistics of OER of Capital Adequacy

Variables	Coefficient	Std. Error	P-value
Intercept	1.985	0.394	0.000
Capital Adequacy	-1483.2	158.17	0.000
R ²	0.846		
Durbin-Watson	0.867		

Capital adequacy has statistically significant effect on operational efficiency of DMBs in Nigeria since p-value is less than 0.05 (0.000). This is an indication that the total capital fund of the sampled banks remains fairly adequate to the level of banking activities engaged during the period of study. Adequacy of capital as adopted by Basle accord is critical for banks survival especially the minimum capital base in the area of risk weighted assets and to align with the prudential guidelines from the CBN. The negative correlation of 0.3525 indicates that the adequacy level of the capital is low. This statement has been consistently corroborated by various prior studies: (Ayanwaokoro 2008; Ezike *et.al.* 2013; Kamau 2009; Anjichi 2014). For instance, Njoroge (2016) report the statistical significance of capital adequacy standards for operating banks especially in developing economies like Nigeria, thus emphasizing that banks with enough capital fund are more profitable and efficient in operation. For consistency and agreement of findings, Ani *et.al.* (2012) revealed that capital adequacy show significant positive correlation on bank profitability as a measure of efficiency.

Additionally, the findings of Kamau (2009) corroborate the present result that capital adequacy have a significant effect on profitability in Kenyan banking sector and that it plays a crucial role in reducing the number of bank failures and losses to depositors when bank eventually fails. Ifionu *et.al.* (2016) report contrarily that a negative significant effect was observed for capital adequacy ratio (CAR) to return on assets (ROA). Empirical evidence from Amer *et.al.* (2011) equally affirm that operational efficiency has positive significant effect with these predictor variables of capital adequacy, asset quality credit ratio and bank liquidity in lowly and highly competitive banks in Egypt. However, in Ghana, banks were found to have relatively low average efficiency scores suggesting that they are operating below efficiency frontier with a negative capitalization for the banks (Adjei-Frimpong, 2014).

Ejoh *et.al.* (2014) however reinstates the importance of capital adequacy with a large proportion of equity fund since such banks are perceived safe and stable which can be translated to higher profitability for the bank. According to Roman *et.al.* (2013), capital adequacy ratio aim at protecting banks' fund depositors in order to promote efficiency and stability of the financial system generally. Again, descriptive statistics supports this with a mean value of 0.0003 with minimum and maximum values of 0.0003 and 0.0006. This result suggests that means that the owners' stake/ contribution was low in these banks. The degree of the variability range for this variable and its dispersion in the regression model showed that the

operational efficiency of the banks may be affected by the low capital funding of these sampled banks for higher economic performance in the Nigerian economy. Summarily, it means that the equity capital should be improved so that the owners' stake can be increased evidently in their total assets that can be transformed into higher revenue (investment) for the banks and by extension to the general economy.

6. SUMMARY, CONCLUSION AND RECOMMENDATION

The adequacy of the capital base of banks generally is sine qua non to the strength and the soundness of the banking system hence the need to continually engage in monitoring banks' capital in relation to the risk management policies of banks. The Basle Accord agreement had however provided the minimum capital requirements for banks as well as the risk weighting criteria as a guide to all nations. Nigeria no doubt has adopted the guidelines with modifications to suit her local environmental dictates of the economy. Ezike *et.al.* (2013) found that capital adequacy standards adopted by Nigerian banks exerts more influence on their performance hence the need to be proactive in fashioning out adequate capital and constant review of same. Suffice it to say that, capital base remains an important variable to measure the financial strength of the banking system. The use of capital ratio in assessing capital adequacy remains a valuable tool that should capture the general safety and soundness of the banks. (Ejoh *et. al.*, 2014).

However, in the research of Ifionu *et.al.* (2016), a negative significant effect for capital adequacy ratio (CAR) to return on asset (ROA) was found. Capital ratio remain a good assessment tool for measuring capital adequacy but must not be used in isolation of other useful criteria before adjudging a bank safe and sound. Emerging from the findings of the study, it is recommended that the regulatory organs especially the CBN must have her hands on deck in terms of supervision, monitoring and ensuring compliance with operational standards put in place for commercial banks. Equally, the CBN should engage in ensuring the competitive edge of the banks in meeting international standards as regard capital adequacy so as ensure international competitiveness for the Nigerian financial/banking system.

Regulatory authorities and the banks should collaborate in terms of risk management practices and the calculation of risk weighting assets. The government should provide enabling environment for business practice to reduce high non-performing loans/ assets of that usually erode into capital funding of banks which usually affects their operational effectiveness especially during huge customers' withdrawals. Banks should equally improve on credit intelligence rating to reduce delinquency of asset and ensure that credit officers perform creditably well in customers' loan appraisal. These and other related factors will enhance the safety of the banks' capital from loans impairment. Undoubtedly, profit maximization remains a goal to pursue by business organs, however it should be pursued by playing according to the rules of best international practices and in line with the domestic requirements of the economy.

The current study is limited to the issues surrounding capital requirements, measurement (ratio), and its efficacy for safe and sound banking system but definitely other causal factors exist on operational efficiency alongside this key variable not considered by this study. Therefore, it will be academically and empirically necessary to conduct further research into the areas.

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