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Efficiency Performance Analysis in the Nigerian Banking Industry: Post 2004 Reforms

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Abstract: This study examined the Nigerian bank efficiency performance post consolidation. The efficiency concept is used to characterise the utilization of resources to produce outputs. Important as it is from both the academic and practical viewpoints, the concept of efficiency has remained loosely defined in the literature. In evaluating the efficiency performance of banks a number of criteria such as profit, liquidity asset quality and attitude toward risk management strategies are usually considered. Data Envelopment Analysis (DEA) is a tool for evaluating the efficiency performance of manufacturing and service operations. The DEA was used in this study. The findings reveal that the entire banks during the years under study did not yield up to 50% total efficiency in any particular year. Even with the consolidation and reforms carried out in the industry during the period none of the years recorded up to ten banks having full efficiency. As a recommendation, it is essential for the monetary authorities and the managers of the banks to formulate and implement monetary policies that are effective in improving the banking operations that will bring about improved efficiency in resource allocation and utilization.

Key words: Efficiency, performance, banks, data and data envelopment analysis, recommendation, monetary policies

INTRODUCTION

Most often the performance of banks is measured using financial ratios. According by Yeh (1996), the leading fault of this approach is its reliance on standard proportions or benchmark ratios. These standard proportions could be discretional and misleading. In addition, Sherman and Gold (1985) noted that financial ratios does not interpret the long-term performance and it aggregate many aspects of performance such as operations, marketing and financing, thereby concealing, so, many characteristics and uniqueness that need to be manifest. In recent years, there is a tendency towards measuring bank efficiency using one of the frontier analysis techniques. In frontier analysis, the organisations that do better relative to a particular standard are separated from those that perform poorly. Such separation is done either by utilising a non parametric or parametric frontier analysis to firms within the financial services industry. The non-parametric approach is the Data Envelopment Analysis (DEA) and the free disposal hull while the parametric approach includes stochastic analysis, tick frontier and the Distribution Free Approach (DFA). Molyneux *et al.* (1996). Both of these sophisticated techniques attempt to benchmark the comparative performance of production units but the techniques differ from each other mainly due to their underlying premise. Unlike the parametric approach, the non parametric approach puts relatively little structure on the specification of the banking technology (frontier) and thus it is relatively immune from the specification errors.

In the view by Sowlati (2001) performance evaluation and efficiency measurement is of great significance to managers, since, the inherent inefficiencies can be identified and eliminated. Measuring the bank's efficiency and performance has been widely based on a number of Key efficiency and Performance Indicators (KPIs) like, liquidity, profitability asset quality and capital adequacy. However, each of these indicators gives an incomplete picture of the bank's efficiency and performance. But to have a meaningful overall measure of the bank's efficiency, a more sophisticated method than the traditional efficiency and performance measurement technique is needed, therefore, the Data Envelopment Analysis (DEA) approach is employed in this study.

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The Data Envelopment Analysis (DEA) is a non parametric methodology formulated by Charnes and Cooper at the University of Texas at Austin in 1978. The DEA measures efficiency by using an approximate empirical production function which correspond to the highest values of output benefits that could be generated by input resources as granted by a range of observed input/output measures and the relative efficiency of a group of similar units and identifies the best practice frontier. It also indicates targets for inefficient units to improve.

Statement of the research problem: Examining how efficient are Nigerian banks has become more compelling bearing in mind that the 2004 banking reform is a not-too-distant-event in Nigeria. This reform has since made the minimum capital base of banks in Nigeria to be #25b.This clearly demand that the comparative efficiency of Nigerian banks be calculated. The banking reform is still on-going especially to make the banks more risk sensitive. While the present reforms relate to prudential matters, the stability and growth of the financial system, they may also be at variance with the competitive viability of the firms. In fact, a banking system with better resource allocation affects positively the economy, leading to more amount of funds intermediated, safe and sound banking system, greater benefits for customers in terms of price and service quality and profitability.

The dismal performance of banking firms in the 1990's is particularly instructive. In 1994, about five banks were declared insolvent and consequently liquidated. Between 1994 and 1998 a total of thirty-one banks were liquidated in Nigeria. Doguwa as cited by Ayadi *et al*. (1998) noted that, banking institutions in Nigeria encounter serious turbulence in the early 1990's. The bank efficiency performance during this period was not well monitored. According by Ayadi *et al*. (1998) bank efficiency performance monitoring in Nigeria is weak. The 1990's witnessed a considerable increase in the number of problem banks. According to them, the Central Bank of Nigeria (CBN) and the National Deposit Insurance Corporation (NDIC) in a joint study in 1995 attributed the reasons for the distress to an increase in the level of risk assumed by banks, the policy induced shocks, poor quality of loans and advances, mismanagement, prevailing economic recession and fraud amongst others. These reasons for the increase in the number of problem banks still existed in the period under study 2005-2009 as more banks otherwise thought to be healthy are in fact distressed and can no longer meet their financial obligations. According to Fadiran *et al.* (2010), the rate of failure of the banks has been on the increase and the problem has reached unprecedented levels with the number of banks in liquidation from 1994-2004 standing at 36.

Objectives of the study: The broad objective of the study is bank efficiency performance analysis in the Nigerian Banking Industry in the post consolidation year 2004 reforms.

Literature review: Banks in developing economies have been growing in terms of their assets, deposit and capital base, especially, since, the Basel 2 capital accord which has led some countries like Nigeria to restructure their financial sector. With this growth it is expected that their efficiency will improve and these bank's will impact positively on their countrie's economies, since there is evidence from Levine and Renelt (1992), King and Levine (1993) that financial sector development impact positively on economic growth. Most often, financial sector regulators use financial ratios to evaluate bank's performance as part of the Capital, Asset quality, Management, Earnings, Liquidity, Sensitivity to market risk (CAMELS) system. In evaluating the efficiency performance of banks a number of criteria such as profit, liquidity asset quality and attitude toward risk management strategies are usually considered. According to Barr and Siems as cited by Ayadi *et al*. (1998) ratios do not directly measure management's ability to convert a set of inputs into outputs.

The need to measure the efficiency of economic system is important both to the academic and the policy maker. The academic argument and debates on the relative efficiency of industries and firms must be based on a well defined measurement of the concept of efficiency.

The conceptual framework on efficiency: The efficiency concept is used to characterise the utilization of resources to produce outputs. According by Forsound and Hjalmarsson, efficiency is a statement about the performance of processes transforming a set of inputs into a set of outputs. The researcher pointed out that efficiency is a relative concept where the performance of an economic unit must be compared with a standard unit. The identification of a standard should involve value judgement about the objective of the economic activities. Important as it is from both the academic and practical viewpoints, the concept of efficiency has remained loosely defined in the literature (Farrel, 1957). The concept means different things to different people in different circumstances. For example, the cost accountant uses the ratio of standard cost to actual cost percent to measure production efficiency (Horngren, 1972) while an engineer

describes the efficiency of his machine by the relation of output to theoretical capacity or output/theoretical capacity percent (Amey, 1970). However, the economist breakdown the economic efficiency of a firm or industry into two separate parts, price efficiency and technical efficiency. The former measures a firm's success in choosing an optimal set of inputs, the latter its success in producing maximum output from a given set of input (Farrel, 1957). Furthermore, Farrell states that once the adjective 'economic' is dropped efficiency becomes a rather nebulous concept meaning only success in achieving planned objectives whatever they maybe.

Efficiency measurement according to farrell: The efficiency measurement discussion began with (Farrell, 1957) who based on the research by Debreu (1951) and Koopmans (1951) defined a simple measure of firm efficiency that could account for multiple inputs. Farrell (1957) proposed that the efficiency of a firm consists of two constituents namely, technical and price efficiency (or allocation efficiency). The first constituent reflects the ability of a firm to obtain maximal output from a given set of inputs while the second reflects the ability of a firm to use the input in optimal propositions, given their respective prices and production technology. The combination of these two measures provides a measure of total economic efficiency (or overall efficiency) (Koulenti, 2006).

Theoretical framework on efficiency measurement: The theoretical foundations of efficiency study were laid by Debreu (1951), Koopmans (1951) and Farrell (1957) and were extended in particular by Fare *et al.* (1985, 1994). The theoretical literature on productive efficiency measurement is broadly divided into the non parametric mathematical programming technique and the parametric (which is subdivided into deterministic and stochastic models) based on econometric regression theory and uses a stochastic production cost or profit function to estimate efficiency.

The most commonly used non parametric techniques are Data Envelopment Analysis (DEA) and Free Disposable Hull (FDH). While the commonly used parametric efficiency estimation techniques are the Stochastic Frontier Analysis (SFA), the Thick Frontiers Approach (TFA) and the distribution free approach (DFA).

Data envelopment analysis: Data Envelopment Analysis (DEA) is a tool for measuring the efficiency performance of manufacturing and service operations. According to Debasish (2006). DEA has been widely used to measure efficiency performance of different financial institutions like banks, insurance and mutual funds. Particularly in the banking sector, it has been applied to benchmark the efficiency performance of different banks or to study the efficiency estimates of different branches of a particular bank. Sherman and Gold (1985) were the first to apply DEA to banking. In this study, DEA will be used to measure the efficiency of different banks in Nigeria.

One of the earliest studies on DEA was conducted by Farell (1957) who attempted to measure the efficiency of production in the single input and output case. Charnes *et al.* (1978) proposed a model that generalizes the single input and single-output measure of a Decision-Making Unit (DMU) to a multiple-input, multiple-output setting. A DMU is an entity that uses input to produce outputs. This definition of DEA was further emphasized by Talluri (2000) when he defined DEA as a multi-factor productivity analysis model for measuring the relative efficiencies of a homogenous set of Decision Making Units (DMUs). DEA calculates the relative efficiency scores of various Decision-Making Units (DMUs) in the particular sample. The DMUs could be banks or branches of banks. The DEA measure compares each of the banks/branches in that sample with the best practice in the sample. It tells the user which of the DMUs in the sample are efficient and which are not. The ability of the DEA to identify possible peers or role models as well as simple efficiency scores gives it an edge over other methods. The efficiency score in the presence of multiple input and output factors is defined as:

$$\text{Efficiency} = \frac{\text{Weighted sum of outputs}}{\text{Weighted sum of inputs}} \quad (1)$$

Assuming that there are n DMUs each with a inputs and outputs, the relative efficiency score of a test DMU p is obtained by solving the following model proposed by Charnes *et al.* (1978):

$$\begin{aligned} \max &= \frac{\sum_{k=1}^{s} v_k y_{kp}}{\sum_{j=1}^{m} u_j x_{jp}} \\ \text{s.t} &= \frac{\sum_{k=1}^{s} v_k y_{ki}}{\sum_{j=1}^{m} u_j x_{ji}} \leq 1 \\ & V_k, u_j \geq 0 \text{vk, j} \end{aligned} \quad (2)$$

Where:

k = 1-s
j = 1-m
I = 1-n
y_{ki} = Amount of output k produced by DMU i
x_{ji} = Amount of input j utilized by DMU i
v_k = Weight given to output k
u_j = Weight given to input j

The fraction program shown as Eq. 2 can be converted to a linear program as shown in Eq. 3:

$$\begin{aligned} &\text{Max } \textstyle\sum_{k=1}^{s} v_k y_{kp} \\ &\text{s.t } \quad \textstyle\sum_{j=1}^{m} u_j x_{jp} = 1 \\ &\qquad \textstyle\sum_{k=1}^{s} v_k y_{ki} - \sum_{j=1}^{m} u_j x_{ji} \le 0 \\ &\qquad v_k, u_j \ge 0 \text{ vk, j} \end{aligned} \tag{3}$$

The above problem is run in n times in identifying the relative efficiency scores of all the DMUs. Each DMU selects inputs and output weights that maximize its efficiency score. In general, a DMU is considered to be efficient if it obtains a score of 1 and a score of <1 implies that it is inefficient.

Choosing dea model: According to Sowlati (2001), Charnes *et al.* (1978) in their original DEA Model choose a ratio account of efficiency. It infers the single-output to single-input classical engineering ratio definition to multiple inputs and outputs without requiring pre assigned weights.

In the CCR Model, it is suggested that the efficiency of any DMU can be got as the maximum ratio of weighted outputs to weighted inputs subject to the condition that similar ratios for every DMU are ≤1. Using fractional programming, the ratio optimization problem is transformed into an ordinary linear programming problem. To obtain the efficiency of all DMUs, it is necessary to solve a series of linear programs, one for each DMU as the objective function.

DEA identifies the most efficient units and indicates the inefficient units in which real efficiency improvement is possible. The amount of resources saving or service improvement that can be achieved by each inefficient unit to make them efficient is identified and can be used as indications for management action.

Banker *et al.* (1984), introduced the BCC Model in which the envelopment surface is a variable return to scale. The range of efficiency of BCC Model to maximize the output is a certain value to 1 (Hossain *et al.* 2013). The CCR Model is used to calculate the overall technical and scale efficiency of a DMU.

Empirical evidence on efficiency measurement in banking: A major empirical research on efficiency in the banking industry can be traced by Berg *et al.* as cited by Angelidis and Lyroudi (2006). Using the Norwegian banking system during the deregulation period of 1980-1989, they introduced the Malmquist index as a measurement of the productivity change in the banking industry. Their results showed that the deregulation led to more competition and increased productivity.

Favero and Papi (1995) used the non-parametric data envelopment analysis on a cross section of 174 Italian banks in 1991 to measure the technical and the scale efficiencies of the Italian banking industry based on intermediation and asset approach. They used regression analysis to investigate determinants of bank's efficiency. According to the empirical results, efficiency was best explained by productivity specialization by bank size and to a lesser extent by location (North-Italian banks were more efficient than South-Italian banks).

MATERIALS AND METHODS

In this study, Data Envelopment Analysis (DEA) will be used to obtain evaluation of the decision making units. According by Hollingsworth and Street (2006) efficiency analysis mostly utilize historical data.

The model: One of the first basic decisions in using data envelopment analysis model is whether to use the CCR (Charnes *et al.*, 1976) Model or the BCC (Banker *et al.*, 1984). This study employs the CRR Model (after Charnes *et al.*, 1984) where DMUs are deemed to produce the highest possible amount of output like loans with a given amount of inputs like deposits. In banking, loans are advanced from the deposits mobilized by the banks. According to Rajput and Handa (2011) the ratio is of the form:

$$\begin{aligned} &\text{u1 y1+u2 y2 +..., unyn} \\ &\text{v1x1+v2x2 +..., vnxn} \end{aligned}$$

where, u and v are weights for output and inputs, respectively. Assume that for each of the n firms there is a data on K inputs and M outputs and represented by column vectors and respectively for the ith firm. This may be expressed as 'u/v' where u is MX_1 vector of output weights and v is KX_1 vector of input weights. To arrive at the optimal weights, they define the linear programming model as:

$$\begin{aligned} &\text{Max u, v } (u'/v') \\ &\text{Subject to, } u'/v' = 1, j = 1, 2, 3, ..., n \\ &u, v = 0 \end{aligned} \tag{4}$$

Solving Eq. 2, values for u and v may be obtained such that the efficiency measure for each firm is maximised. The constraint with this model formation according to them is that it can have infinite number of solutions. Thus an additional constraint is added, $v'x_i = 1$, so, the problem can be removed. The new model, known as the transformation model thus, becomes:

$$\begin{aligned} &\text{Max u, v (u')} \\ &\text{Subject to v' = 1} \\ &\text{u' - v' = 0, j = 1, 2, 3, ..., n} \\ &\text{u,v = 0} \end{aligned} \quad (5)$$

This form in Eq. 3 is known as the multiplier form of the DEA linear programming problem. Using duality in linear programming, an equivalent envelopment form of this problem may be obtained:

$$\begin{aligned} &\text{Max } \Theta, \lambda\ (\Theta) \\ &\text{Subject to, } -+Y\lambda \geq 0\Theta\text{-}X\lambda \geq 0, \\ &j = 1,\ 2,\ 3,\ \ldots\ n\lambda \geq 0 \end{aligned} \quad (6)$$

where, Θ is scalar and λ is a NX_1 vector of constraints. The efficiency for the jth DMU is reflected by the value of Θ. For each DMU taken in the study a separate linear programming model would be solved. The technically efficient DMU will have a $\Theta = 1$ and all other DMU will have a $\Theta<1$, implying that the efficiency scores of all other DMU's will be measured relative to the technically efficient units that have a score of $\Theta = 1$. In general, a DMU is considered to be efficient if it obtains a score of 1 and a score of <1 implies that it is inefficient.

Sample size determination: The entire 24 existing banks in Nigeria were intended to be used for this study but only 23 banks were finally used as the last bank, Equatorial Trust Bank (ETB) a private limited bank's data could not be got. There is a general agreement among statisticians that the closer a sample size is to a population the more the sample statistics will be a valid estimate of the population. The 23 banks used are therefore ideal.

Sources and choice of data: Due to the nature of the study only secondary data were used. The data of the entire 23 were used for this study as the last bank Equatorial Trust Bank (ETB) a private limited bank's data could not be accessed. The data used were got from the banks financial statements for the period 2005-2009. There is a debate in the literature on what constitute a bank's input and output. According to Angelidis and Lyroudi (2006) the definition of a bank's inputs and outputs is an issue that has to do with its function description. As a result, a variety of definitions about variables exists in the literature. They quoted Nathan and Neave who in examining the efficiency of Canadian banks, addressed the difficulty of determining whether deposits of banks were inputs which were converted into loans and other assets or if they were outputs of the banking services. They followed the intermediation approach, regarding deposits as inputs.

Furthermore, they cited Stanton as having stated that there was collinear relation between deposits and loans so he has to eliminate either deposits or loans in the input vector. He finally chose deposits as an input variable. This study will follow the intermediation approach and regard deposits as an input. The input data that will be used for this study will be-Total deposits, fixed assets, operating expenses. While the outputs will be total loans extended, net profits and total investment.

This choice of data is supported by the research by Fernandez *et al.* (2002) who studied the economic efficiency of 142 financial intermediaries from 18 countries over the period 1989-1998. The authors applied DEA to estimate the relative efficiency of commercial banks of different geographical areas (North America, Japan and Europe). Their three preferred outputs were total investments total loans and non-interest income plus other operating income. In parallel, the four inputs values were salaries, properties other operating expenses and total deposits. Further support to this present study choice of data is the research by Pasiouras (2008) who in estimating the technical and scale efficiency of Greek commercial banks adopted the intermediation approach and his inputs were customer deposits, fixed assets and no of employee's while the outputs he used were earning assets and loans.

Method of data analysis: The Data Envelopment Analysis (DEA) is used to get the efficiency scores of the banks (DMUs).

Method of data analysis using DEA: In this study, the Data Envelopment Analysis (DEA) technique is employed to calculate the efficiency level of the banks. A value of the index greater than unity implies a positive growth of total productivity. An index equal to unity underlines no change in productivity level and a value <1 indicates decline in productivity. According by Rajput and Handa (2011) the wide acceptance of DEA as a measurement tool for measuring efficiency of the financial institution can be attributed to certain strengths of this approach. The main advantages and limitations of using DEA according to them are as follows. The data may not necessarily assume any functional form. DEA leads to a comparison of one decision making unit against peer or combinations of peer. The units of input and output may vary as they do not affect the value of efficiency measure. This model can handle multiple inputs and outputs. While its limitations are there is no assumption of statistical noise thus, the noise element gets reflected in the measured inefficiency of the DMU. Further, DEA does not give absolute efficiency measures. DEA results are

sample-specific. Also, it makes hypothesis testing difficult, hence, other statistical tool of analysis have to be used for hypothesis testing.

Data presentation and analysis: The Data Envelopment Analysis (DEA) was used to identify the efficient and inefficient banks and the magnitude of the inefficiency. The choice of DEA technique is its advantage of having a production frontier that is not determined by a specific functional form. It is generated from the actual data of the Decision Making Units (DMUs) under review while the required assumptions are minimal (Koulenti, 2006).

Model solution procedures and results: To get the efficiency scores for each bank in the sample, it is required that the model specified in chapter three be formulated and solved for each bank. Based on this we utilize a computer package to conduct the data envelopment analysis. The DEA add-in software for microsoft excel is used to run the DEA Model. Table 1 gives the result of the banks efficiency ratio.

Table 1: Efficiency scores for the banks in each year

Name of Bank	2009	2008	2007	2006	2005
First bank	1.000	0.955	0.770	0.770	0.616
Zenith bank	0.710	0.528	0.478	0.643	0.630
PHB	0.370	0.780	0.440	0.630	0.930
Union bank	0.490	0.580	0.450	0.490	0.440
UBA bank	0.620	0.480	0.470	0.220	0.610
GTB	0.999	1.000	0.921	0.990	0.753
FID	0.587	1.000	0.950	0.633	0.797
DIA	0.722	0.691	0.506	0.712	0.795
ECO	0.779	0.582	0.633	0.690	0.668
ST.IBTC	0.592	0.910	1.000	0.561	0.891
INT	0.239	0.796	0.871	1.000	0.856
WEMA	0.243	0.341	0.551	0.662	0.906
Unity	0.450	0.241	0.256	0.422	0.694
Citi	0.896	1.000	0.805	0.858	0.868
AFRI	0.638	0.746	0.636	0.551	0.642
Spring	0.925	0.308	0.380	1.000	1.000
SKYE	0.859	0.807	0.633	0.785	0.643
FCMB	0.951	0.842	0.507	0.325	0.483
Oceanic	1.000	1.000	1.000	0.421	0.805
Access	1.000	1.000	0.735	1.000	0.595
Sterling	0.832	0.683	0.560	0.589	0.265
St.chart	0.635	0.749	0.903	1.000	1.000
Fin bank	0.402	0.288	0.233	0.396	0.782
Mean	0.693	0.708	0.638	0.519	0.582

Author's computation from data obtained from the bank's annual report

The bank's efficiency analysis 2005: In 2005 two banks (spring bank and standard chartered bank) out of the twenty three sampled bank were 100% efficient when compared with the others as their efficiency ratio calculated is 1.000. Two of the banks that is WEMA and PHB were 90% and above efficient as their efficiency ratio is less than one but lies between 0.906 and 0.999. Four of the banks-stanbic. IBTC, Intercontinental, citi and oceanic bank was 80% and above efficient, having their efficiency ratio between 0.800 and 0.899. Also, four of the banks, Etb, Fidelity Bank, Diamond Bank and Fin Bank was 70% efficient having their efficiency ratio lying between 0.700 and 0.799. Seven of the bank, first bank, Zenith, Uba, Eco Bank, Unity Bank and Afri Bank and Skye Banks were 60% efficient, having efficiency ratio between 0.600-0.699. Only Access bank was 50% efficiency having efficiency ratio of 0.595. While Union bank and FCMB have efficiency ratio of 40% as their efficiency ratio lies between 0.400 and 0.499. Sterling bank have the least efficiency ratio of 20% as its ratio is just 0.265. The mean ratio for the year was 0.582 and nineteen (20) of the sampled banks performed above average and three of the banks efficiency ratio fell below average. The banks are Union bank, FCMB and Sterling Bank 2006.

In the year 2006 four of the banks were (100%) efficient. These banks are Intercontinental, Spring, Access and Standard Chartered Bank. Their calculated efficiency ratio is 1.00. Only one bank (GTB) was 90% and above efficient as its efficiency ratio is 0.99. Also, only one bank that is Citibank has efficiency ratio above 80% its ratio is 0.858. Only three banks (First, Diamond and Skye banks) have efficiency ratio above 70%. Five of the sample banks have efficiency ratio above 60% as their ratio lies between 0.60-0.699. These banks are Zenith, PHB, Fidelity, ECO and WEMA bank. Three banks, Stanbic IBTC, Afribank and Sterling banks were 50% efficient as their efficiency ratio lies between 0.50 and 0.599. Also, three banks Union, Unity and Oceanic were 40% efficient their efficiency ratio lies between 0.40-0.49. In the year two banks FCMB and Finbank were 30% efficient as their efficiency ratio lies between 0.30-0.39. UBA was the least efficient in the year 2006 with efficiency ratio of 0.22. The mean ratio for the year 2006 was 0.52. Only seventeen of the banks performed above average and these banks are First, Zenith, PHB, GTB, Fidelity, Diamond, Eco, Stanbic IBTC, Intercontinental, Wema, Citi Afribank Spring, Skye, Access, Sterling and Standard Chartered bank. The rest (6 banks) Union, UBA, unity, FCMB, Oceanic and Finbank performed below average 2007.

In 2007 two of the 23 sampled banks Oceanic and Stanbic IBTC were 100% efficient having efficiency ratio of 1.00. Only three of the banks were 90 and 99% efficient having ratios between the banks are GTB, Fidelity and standard chartered bank. Foe efficiency ratio of between 80-89% only two banks that is Intercontinental and Citibank were having efficiency ratio of between 0.80-0.89. Also only two banks, first and access banks were between 0.70 and 79% efficient having efficiency ratio of between 0.70 and 0.79.

During the year only 3 banks Eco, Afribank and Skye have efficiency ratio of between 60 and 69%, having efficiency ratios of 0.60 and 0.69. For efficiency ratio

between 50 and 59%, only four banks, Diamond, WEMA, FCMB and sterling banks having ratios of 0.50 and 0.59 make the list. While only four banks-Zenith, PHB, UBA and Union banks have sufficiency ratio of between 0.40 and 0.49. Only spring bank has efficiency ratio of between 30 and 39% as its efficiency ratio is 0.380. Unity and Fin bank are the only two banks that have efficiency ratio 20 and 29% as their ratios lies between 0.20 and 0.29. The mean ratio for the year was 0.638. Only nine banks First bank, GTB, Fidelity, Stanbic IBTC, Intercontinental, Citi, Oceanic, Access and Standard Chartered Banks performed above the average efficiency ratio for the year. The rest 14 banks-Zenith, PHB, Union, UBA, Diamond, Eco, WEMA, Unity, Afri, Spring, Skye, FCMB, Sterling and Fin banks performed below average 2008.

In 2008, five of the sampled banks were 100% efficient having efficiency ratio of 1.000. The banks are GTB, Fidelity, Citi, Oceanic and access banks. While only two banks have efficiency ratio between 80 and 89%. Their efficiency ratio lies between 0.80 and 0.89 also, only four of the sampled banks have efficiency ratio between 70 and 79%. The banks are PHB, Intercontinental, Afri and standard chartered banks. In the year, under consideration, only two banks Diamond and Sterling banks have efficiency ratio of between 60 and 69%. While only Zenith, Union and Eco banks have efficiency ratio that is between 50 and 59%. Only one bank UBA has efficiency ratio that lies between 40 and 49%. Its efficiency ratio is 0.480. WEMA and Spring banks were the two banks whose efficiency ratio lies between 30-39%. Their actual ratio is 0.341 and 0.308, respectively. Unity and Fin bank were the least efficient of all the sampled banks for the year 2008. Their efficiency ratio lies between 20 and 29%. Their actual ratios were 0.241 and 0.289. The mean efficiency ratio for the year was 0.708. Only 13 banks have efficiency ratio above the average during the year. These banks are First, PHB, GTB, Fidelity, Stanbic IBTC, Intercontinental, Citi, Afri, Skye, FCMB, Oceanic, Access and Standard Chartered Bank. The remaining ten banks-Zenith, Union, UBA, Diamond, Eco, WEMA, Unity, Spring, Sterling and Fin bank performed below average 2009.

For the year 2009, only three banks-first bank, Oceanic and Access banks were 100% efficient as their efficiency ratio was 1.000, respectively. While only GTB, FCMB and Spring banks have efficiency ratio of between 90 and 99%. Also, only three banks-CITI, Skye and Sterling banks were having efficiency ratios between 80-89%. In addition, only three banks-UBA, Afribank and Standard Chartered have efficiency ratio of between 60 and 69% as their ratios lies between 0.60 and 0.69. Fidelity and Stanbic IBTC were the next efficient having ratios of between 50 and 59%. Their actual ratios were 0.587 and 0.592, respectively. Union, Unity and Fin banks have ratios that lie between 40 and 49%. PHB was the only bank with efficiency ratio between 30 and 39%. Its actual ratio was 0.370. Intercontinental and WEMA banks were the least efficient banks during the year 2009 with efficiency ratios that lie between 20 and 29%. Their actual ratios were 0.239 and 0.243, respectively. The mean efficiency for the year was 0.693. In the year 2009, only 12 banks have efficiency score above the mean score. These banks are First bank, Zenith, GTBank, Diamond, Ecobank, Citi, Spring, Skye, FCMB, Oceanic, Access and Sterling bank. Eleven of the banks-PHB, union, UBA, Fidelity, ST.chart., INT, WEMA ,Unity, Afri, Finbank and St. IBTC performed below average.

RESULTS AND DISCUSSION

Findings from the Data Envelopment Analysis (DEA) reveal the following. Out of the 23 banks used in the study, the analysis indicate that in the year 2005 only two banks namely, Spring and Standard Chartered banks were efficient. This represents 8.7% of the 23 banks. While, the remaining twenty-one banks representing 91.30% were inefficient. But there was an improvement in 2006 as four banks-Intercontinental, Spring, Access and Standard Chartered bank were efficient. This is 17.39% of the entire banks used in the study. While nineteen banks representing 82.61% were inefficient. In 2007, the number of efficient banks fell two banks (8.70%) (only Oceanic and Stanbic IBTC bank), while the remaining twenty-one (91.30%) banks were inefficient. In 2008. The number of efficient banks went up to five banks namely, GTB, Fidelity, Citi, Oceanic and Access. This is 21.74% of the 23 banks used in the study. A total of 18 banks (78.26%) were inefficient. In 2009, the number of efficient banks was three (13.04 %) while the remaining twenty banks (86.96%) were inefficient. From the above analysis, it can be seen that the entire banks during the years under study did not yield up to 50% total efficiency in any particular year. Even with the consolidation and reforms carried out in the industry during the period none of the years recorded up to ten banks having full efficiency. Generally, it was a mixed result for all the banks as they have full efficiency in some years and inefficiency in other years.

CONCLUSION

The study has provided empirically the efficiency levels of the banks during the period under study using the input and outputs used for the study. It is an established fact that there is inefficiency in the banks use

of resource inputs as showed by the study. The study have showed by how much the resource inputs could have been reduced to produce the same amount of outputs during the period. This means the resource inputs could have been better utilised to produce outputs.

The variability observed in the resource inputs and outputs suggest that the inputs are not used efficiently in producing the outputs. Also, management action and feedback from operation is needed to improve the efficiency level of the banks.

In all GTB have the best efficiency in its use of the resource inputs to produce the stated output, hence, its way of doing business could be copied by the other banks.

RECOMMENDATIONS

With the growing evidence of the effect of financial sector development on any country's economic growth it has become apparent that monetary authorities should now focus more attention on making the financial sector of the economy better managed especially in resource utilization. The banking sector which forms a major component of the economy is responsible for financial intermediation. Based on this it needs to be efficient in its resource allocation and utilization. Based on the need for the banking sector to be efficient with regard to the findings of this study the following recommendations are enunciated. It is essential for the monetary authorities and the managers of the banks to formulate and implement monetary policies that are effective in improving the banking operations that will bring about improved efficiency in resource allocation and utilization. Second, the effect of new technologies on banking operations should be examined from time to time in relation to their effect on productivity in utilization of resources to achieve efficiency and productivity. Also, a risk assessment and risk management should be taken seriously both by the banks and the regulatory authorities in the management and regulation of banking business in Nigeria. The evidence obtained from the profits/losses declared by the banks during the period under study, it is obvious that the reforms in the banking industry has brought out the true picture of the industry in terms of its financial performance. The inefficiency experienced in the banks needs managerial attention. This could be in resource input reallocation in the various banks.

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