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Determinants of the Efficiency of Microfinance Banks in Southwest Nigeria: Capitalization or Organic Growth as an Antidote for Bank Failure?

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ABSTRACT: The study evaluates the level of efficiency of MFBs and investigates elements that determine efficiency of microfinance banks in Southwestern Nigeria with special emphasis on the effect of capitalization and organic growth in the micro finance banks efficiency process. Using a sample of unit microfinance bank balance panel data of 18 microfinance banks from South-West Nigeria for the period 2010-2017, To determine the productivity level of microfinance institutions in Southwest Nigeria, we used stochastic frontier approach. We also use system-GMM method to look at what influences MFB productivity in southwest Nigeria. Empirical results show that capitalization has no significant impact upon efficiency, nonetheless the importance of organic growth supported by managerial ownership in the microfinance banks efficiency process is verified and reported by the results as one of the main determinants of MFB efficiency in Nigeria.

KEY WORDS: Efficiency, capitalization, organic growth, Microfinance bank

INTRODUCTION

Limited or Inability to obtain credit is prominent among the important barriers towards economic development in almost all developing and emerging market economies like Nigeria. In Nigeria, a significant percentage of small business owners and household could not meet the stringent condition requiring the provision of adequate and acceptable collateral for them to access loan from conventional banks. Hence, they rely on personal savings, private lenders, Esusu and cooperative societies to finance their business. Microfinance Banks (MFBs) provides a way out of the limited or non-availability and excessive cost of borrowing from the informal institutions and conventional banks by making a less tedious and relatively cheaper fund available to small-scale businesses. This microfinance bank loan positively impacted the operations of small business owners (Obi, 2015).

Microfinance is the effective and inexpensive provision of a wide range of financial and non-financial services to low-income organisations, people, and enterprises that lack access to capital in any financial system (Consultative Group Against the Poor, 2009). Microcredit, savings, payment systems, insurance, pensions, and other non-financial services such as business advice, entrepreneur development, and market linkage are all available. Microfinance banks differ from conventional financial institutions in that they have smaller loan sizes, simpler processes, and accept alternative collateral when giving credit (Ebo 2008; Acha, 2012). The notion of microfinance can be traced back to an incidental experiment in Bangladesh about 50 years ago. It was launched by Muhammed Yunus as an effort to address the incidence of poverty among poor and low-income earners through access to less tedious credit thereby improving their productivity and enhancing their standard of living.

Globally, microfinance bank operates under different categories and adopt different structures, size, regulations, and focus. Our focus in this study is microfinance banks licensed by the Central Bank of Nigeria (CBN), insured by the National Deposit Insurance Corporation and falling into the two sub-categories of rural and urban unit MFB respectively having N50milliom and N200million as the minimum capital requirement. In terms of ownership, private corporate entities, community development associations, individual groups, and foreign investors may set up a microfinance bank. The main goal is profit-maximization arising from efficient management of the MFB. Technical and cost efficiency is therefore been anticipated on every financing activity relating to pricing policy, turnover, asset management, human capital development and capital expenditure (Ekpo and Mbobo, 2016).

The efficiency of MFBs have remained the focus of great concern to practitioners and decision-makers as an efficient MFB will ensure and assure viable and sustainable financial system while inefficient MFBs weaken the financial system stability, affect their

solvency and ultimately lead to loss of investment to the investors (Eboh, 2008). Extant studies have been carried out in different environment to investigate the determinants of sustainability of MFBs in the course of evaluating the contributions of the subsector towards attaining sustainable development goal as it relates to the poor (Tosin and Otone, 2019). In Nigeria, it must be mentioned that MFB operates in a hostile and dynamic macroeconomic environment thereby weakens their capacity to efficiently service the poor and small business owners. The contending issues facing MFBs include competition from peers and Deposit Money Banks, Product development, Market outreach, Credit risk among others. These factors negatively impacted on their efficiency. Additionally, the smallness of their operations affects their turnover adversely due to associated high operational cost**.**

Organic growth happens when a firm expand its operation through internally generated income rather than from external capital injection, merger and acquisition. It allows the business to build on its existing strength to increase output, customer-based expansion, product development, market penetration, market development and other corporate strategies and thus allowing the business to grow at a more sensible rate in the long-run. While scholars have carried out empirical investigation on organic growth, as it relates to other industries, none to the best of our knowledge is undertaken in relation to Microfinance Banks efficiency. Investigating the role of organic growth on Microfinance Banks efficiency is important because profitability indices are subject to income manipulation, financial engineering and tax adjustment by management particularly when the annual financial reports of microfinance banks are not subject to public scrutiny.

The study on efficiency of microfinance banks is also of particular relevance when as a channel of financial inclusion is considered in the perspective of broader economic inclusion with the goal of raising the financial standing and living standards of the underprivileged and vulnerable segments of society. Additionally, having access to basic financial services would encourage rural households to engage in more economic and employment-generating activities (Ikechuku and Elizabeth, 2019). This has a multiplier impact on the economy through a framework for financial inclusion that is successful because it increases disposable income, especially for people in rural areas. More savings and a strong deposit base for banks and other financial institutions result from this.

In a related development, capitalization also refers to a situation where the shareholders fund of an existing MFB has been eroded by losses and additional capital injection will be required to make up the capital adequacy as stipulated by CBN. The erosion of shareholder fund is principally caused by losses arising from delinquent loans and could be remedied through efficient debt recovery strategy. Capital adequacy ratio of a minimum of 10% is usually required and measured as shareholder fund unaffected by losses to a proportion of the bank's risk-weighted assets. It gauges the bank's capacity to create credit as well as its resilience to possible losses.

Presently, the capital requirement for the two sub-categories of unit MFBS namely rural and urban MFBs stand at N50million and N200million respectively as it was increased from previous level of N20million upon its sub-categorization into rural and urban. In Nigeria, not much thought has been given to the overall determinants of MBFs efficiency and survival. Most studies dwell principally on independent variables and their effect on profitability which is a shot run phenomenon as opposed to efficiency which is a dynamic variable. Determining the primary factors that influence MFB efficiency in Nigeria is thus the main goal of this research. Our specific goals are to pinpoint the key institutional and macroeconomic factors that influence MFB efficiency in Nigeria and investigate how these factors affect MFB efficiency.

The rest of this paper is divided into 5 broad parts. Section 2 provides a literature review while section three deals with issues relating to methodology. Section 4 presents results and discussions while section 5 concludes the paper with some notes on policy implication of our findings in relation to Microfinance subsector for the Nigerian economy.

2.0 LITERATURE REVIEW

2.1 Definition of concepts.

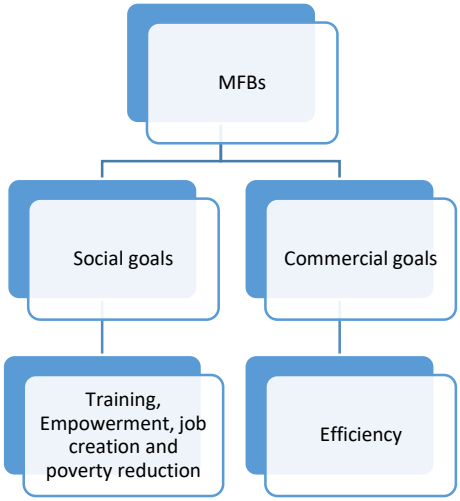
Microfinance banks are financial institutions licenced by CBN and have their deposits insured by NDIC in Nigeria. They provide non-financial and financial services ranging from credit, savings account, insurance, pension scheme, fund transfer among others to the poor to lift them out of poverty. The non-financial services include business advisory services, market linkage and entrepreneurial development services. These institutions target the low-income earners, the vulnerable, small business owners and artisans like hairdressers, farmers, drivers and tailors who are operators in the informal sector of the economy (olufolahan et al., 2023). The inadequate degree of financial involvement and pervasive poverty makes the existence and functioning of these institutions very necessary**.**

2.1.1 Dual Mission of Microfinance

Microfinance banks unlike the conventional financial institutions battle with two roles that seem conflicting. These roles are social and commercial mission. Under the social mission, MFBs are seen as an effective tool for poverty alleviation and minimizing vulnerabilities. So, in addition to promoting financial services they are also charged with the responsibility of discharging non-financial services. The other role is the commercial role where a typical MFB is expected to make profit sufficient enough for its

sustainability. Hence, the expectation is that the two goals that appears conflicting but actually complimentary must be reconciled and balanced by the microfinance banks.

Figure 1 Dual Mission of MFBs



Source: authors 2024

2.1.2 MFBs and Efficiency

The basic principle underlying this study is Joseph Schumpeter theory of efficiency through innovation. The theory argues that financial institution is a necessary and sufficient conditions for economic development when such institutions are efficiently managed through innovative corporate strategies which may include organic growth effort and managerial ownership among others. Efficiency relates to input cost and output price. Microfinance activities are often more labour intensive and as such the associated operational and transactional cost are relatively higher than that of the deposit money banks. Operating expenses ratio (OER), cost per borrower (CPB) and personnel productivity (PP) are often used to practically measure efficiency of a typical MFB (Microrate, 2020)

OER= Operating Expense
Average gross portfolio
CPB= Operating Expense
Average No. of active
borrowers
PP= Number of active borrowers
Total staff

2.2 Theoretical Review

2.2.1 Efficiency Theory.

According to efficiency theory, increased concentration is a direct effect of better management and scale efficiency and by extension higher returns. Moreover, the theory assumes that a positive relationship between concentration and profitability will result from operating at lowest possible cost which is usually attained through production efficiency practice and improved managerial efforts (Birham, 2012 as cited in Demsetz, 1973). The theory further submits that most favourable output growth would emanate from economies of scale. Hence, efficiency notion argues that effective cost-cutting measures and improved organisational management techniques will lead to profitability and high concentration (Akinyele, 2020).

Once a company's size of operations is ideal, scale efficiency results; any change to that size might make the company less effective. One gets the scale efficiency by dividing the technical efficiency by the total efficiency. The scale-efficiency method gauges if a company is running at the best economies of scale at the lowest long-term average cost curve (Fare et al.,1985). The firm must ensure that it operates at the most productive scale. Otherwise, a modification in its size is necessary for more efficiency. Maximum short-term operating efficiency is reached at a level of output when all potential economies of scale are being used effectively, claim Odunga et al. (2013). Higher profit margins, according to Mirzaei (2012), result from efficiency, which enables banks to achieve both strong financial results and market shares.

2.2.2 Portfolio Theory

According to the theory, managerial efforts and, most significantly, the effectiveness of such activities affect bank performance. The bank thereby achieving the highest level of efficiency feasible. Some variables affect this, like the rate of return on all assets kept in the portfolio and the risks connected to them with respect to the size of the portfolio.

2.2.3 profitability theory.

Organic growth has its root in profitability theory. Neoclassical framework for firms makes the assumption that the long-term profit maximisation of the company is its primary objective provided the firm does not operate below short-run shut down point in the short-run. Hence, profitability is regarded as the level of surplus being generated by a firm having covered its average variable cost. The theory of profit function indicates the maximized profit for a competitive business unit as a function of prices of output, variable factors inputs and quantities of fixed factor of production. In the theory of profit, Schumpeter highlighted the important role played by innovation as positively related to efficiency.

2.2.4 Market Power Theory

The Market Power Theories Hypothesis argues that a bank's performance is influenced by the competitive structure of the sector. Market power theory takes two different tacks: the Relative Market Power Hypothesis (RMP) and the Structure-Conduct-Performance (SCP). The concentration level in the business would give rise to possible market dominance by banks, which may boost their efficiency, according to the Structure-Conduct-Performance model. Nevertheless, banks that rank among the biggest in terms of assets and deposits in more consolidated markets are more prone to generate abnormal profits because of their capacity to charge higher loan rates and lower deposit rates through collusive or monopolistic power than companies operating in less consolidated markets, irrespective of their efficiency. When the profit of a bank rises with concentration, it implies that companies in the sectors are working together to benefit from oligopoly profits. Conversely, the Relative-Market-Power (RMP) Hypothesis contends that because of their capacity to demonstrate more efficiency, which typically results in greater market concentration, efficient companies grow in size and market share. As such, the link between market structure and business performance is explained by firm efficiency. (Waweru & Wanyoike, 2016).

2.3 Review of Empirical literature.

Numerous investigations have been carried out across the world by various researchers on the performance of Microfinance institutions. The existing studies dwell principally on relevant independent variables and their impact on performance without devoting attention to the role of efficiency in the quest for sustainability. Results from several studies report mixed findings concerning determinants of financial sustainability of MFIs while some of the findings agree with theoretical expectations, some hold divergent opinions.

In the theoretical literature, Schumpeter (1934) underscored the significance of efficiency in borrowing and repayment for achieving organic growth. Additionally, he argued that an efficient financial sector can contribute to output expansion by providing credit and other non-financial services toward the growth of the economy. This, in turn, leads to increased income levels by investing in profitable enterprises and, inadvertent, fosters economic growth.

In their study, Rambaud, Pascual, and Santandreu (2023) conducted an analysis of the characteristics of microcredit recipients and their businesses in the United States, examining both their socioeconomic and financial aspects. The study examined the repayment rates of microloans, taking into account the clients' profiles and their punctuality or default in repaying their loans. This analysis was conducted using the multinomial logit regression methodology. The regression analysis yielded findings indicating that solely two factors demonstrate statistical significance at the 5% level of significance. Specifically, the borrower's age was shown to have a positive impact on repayment punctuality, while the loan length was seen to have a negative impact.

The study conducted by Santandreu, Pascual, and Rambau (2020) examined the potential benefits of modifying or adjusting microcredit policies for women inside microfinance institutions operating in the United States market, with the aim of enhancing operational effectiveness. The study additionally examined the potential correlation between the payment behavior of individuals of different genders and other variables, includes age, race, level of education, marital status, and the features of the microcredits, such their amounts, purposes, and terms of payment. The findings indicate that in the United States, women do not exhibit significantly stronger incentives, motivations, or external pressures compared to males when it comes to repaying micro loans, similar to patterns observed in other nations.

McHugh, Baker, and Donaldson (2019) investigated the use of microcredit as a means of fostering enterprise within the United Kingdom, while conceptualizing it as a 'alternative' economic domain. The authors posited that the primary social obstacle in the UK lies in the realm of financial exclusion, specifically pertaining to the provision of microcredit for entrepreneurial purposes. In the United Kingdom, the delivery of this financial support is commonly facilitated through Community Development Finance Institutions (CDFIs), which can be perceived as unconventional economic entities. This study delves into the intricacies of microcredit for enterprise lending in the United Kingdom, utilizing in-depth interviews with key stakeholders involved in the provision of microcredit services. The data are subsequently examined via the lens of alterity, serving as an analytical framework.

The findings indicate that these lenders continue to diverge from the prevailing norms due to their focus on addressing the financial requirements of those with low incomes, which is an integral part of their operational framework.

The social impact of microcredit has been characterized as a public health tool that operates at an upstream level to address the root causes of poor health. This notion is now being investigated through empirical research conducted by McHugh et al. (2017) and FinWell (2018). It is important to acknowledge that microcredit is considered a crucial financial resource for migrants, immigrants, and vulnerable populations in Europe who face challenges in accessing welfare and other formal financial services (Cozarenco, 2015). Additionally, it has been recognized as a means for governments to regulate the behavior of marginalized individuals through the banking system (Barinaga, 2014). Furthermore, when considering the effectiveness of micro-financing in the United Kingdom, there is a lack of clarity regarding the most appropriate classification for the "alternative" institutions that encompass UK lenders providing microcredit for company loans. Microcredit lenders can be perceived as both opposing and replacement institutions. However, as a result of the intricacies involved in functioning within a more advanced economic system, these lenders may now be perceived as a viable alternative to traditional financial institutions, according to McHugh et al. (2019).

Khachatryan et al. (2017) assert that the size of microfinance institutions (MFIs) does not contribute to their ability to attract financial resources. However, it is discovered that the major microfinance institutions (MFIs) in Latin America exhibit higher levels of leverage. Larger organizations exhibit a higher propensity for leveraging owing to their diminished likelihood of insolvency. The current empirical research on the impact of risk on the financial composition of microfinance institutions (MFIs) enterprises yields inconclusive results. Frank and Goyal (2003) found that risk does not have a consistent impact on the decision of the capital structure. The results of the second study show a robust and inverse relationship between leverage and risk. Within the regulated banking business, it is expected that organisations with greater levels of risk will own a bigger degree of ownership.

Gropp and Köhler (2010) see a significant reduction in leverage in European markets as a result of risk factors. Moreover, the potential for a financial institution to experience default is substantial when the quality of its credit portfolio is low or heavily tainted. A substantial portion of these companies' total assets is comprised of outstanding loans. Therefore, it is expected that a portfolio with high levels of pollution will increase the risk of failure for the institution. Institutions characterized by a substandard portfolio frequently employ risk mitigation strategies to alleviate the possibility of financial failure, which may involve augmenting certain factors.

In their study, Remer and Kattilakoski (2021) investigated the operational self-sufficiency of microfinance institutions in sub-Saharan Africa. The researchers acknowledged the significance of implementing market-based interest rates on loans as a means to cover administrative and operational costs, thereby ensuring financial sustainability in the context of many developing nations. According to Henock (2019), achieving financial sustainability is contingent upon the interest paid on loans surpassing the expenses associated with augmenting the principle. The microfinance institution (MFI) can be considered financially sustainable if the interest rates charged on loans are higher than the operational costs. The proficient allocation and retrieval of loans are vital in fostering financial stability. The economic aspect of loan disbursement is contingent upon the loan amount. Nevertheless, it is imperative that the process of loan recovery is both cost-effective and contributes to the financial sustainability of a Microfinance Institution (MFI), as this signifies efficiency and enhanced outcomes within the business (Henock, 2019).

In a different research, Kar and Deb (2017) examined the effectiveness of Indian microfinance institutions (MFIs) and looked at how sustainability can affect MFI productivity. The performance of Indian Microfinance Institutions (MFIs) is evaluated through the use of non-parametric Data Envelopment Analysis (DEA). For improved analysis, two Data Envelopment Analysis (DEA) models are used: the Undesirable Measure Model, which is output orientated, and the BCC Model, which is input focused. A Tobit regression model was used for the years 2009 to 2015 to evaluate the several factors that impact the effectiveness of Microfinance Institutions (MFIs), with an emphasis on identifying the possible impact of sustainability. The results show that the microfinance institutions' (MFIs') mean technical efficiency is determined to be 79 percent using the BCC model and 98 percent using the Undesirable Measure Model. If Indian microfinance institutions (MFIs) cut their subpar output by about 14 percent, as indicated by the Portfolio at Risk 30, they may reach the production frontier. The research offers factual data to bolster the idea that efficiency benefits from sustainability.

Olufolahan et al. (2023) conducted an analysis in Nigeria to evaluate the effectiveness of microfinance institutions and the performance of micro, small, and medium-sized enterprises in the country's southwest. The research was limited to the first six years after the regulatory amendments went into effect, which is from 2012 to 2017. A Granger causality test and panel vector autoregressive (PVAR) approach were used in the study. The results show that the performance of micro, small, and medium-sized companies (MSMEs) is not statistically affected by the efficiency level currently displayed by microfinance institutions. This suggests that microfinance banks have a very small impact on how MSMEs operate. According to the study, there is no proof that the performance of Micro, Small, and Medium-Sized Enterprises (MSMEs) and the effectiveness of microfinance institutions are causally related.

Similarly, Dabi et al. (2023) looked at the effect of capital structure on the sustainability and financial performance of microfinance institutions in Ghana. The utilisation of multiple regression methods has been employed to examine the association between the

observed performance indicators and a collection of explanatory factors. The empirical analysis encompasses a sample of 51 Ghanaian microfinance institutions (MFIs) who have provided data to the MIX market. The study provides robust empirical evidence supporting the proposition that there exists a large and positive relationship between the size of assets and several outcomes, including asset returns, self-sufficiency, and financial sustainability.

In order to investigate the possible effects of loan officer gender on loan repayment performance inside Cameroonian microfinance institutions, Tchuigoua (2022) performed a research. The study used a pooled probit model to assess a unique dataset at the loan level after taking demand-side parameters including borrower profiles, lending technique, loan contract terms, year, and industry fixed effects into consideration. This dataset included more than 7000 loans that two Cameroonian commercial microfinance institutions (MFIs) granted between 2007 and 2012. The results of the study showed that loans overseen and managed by male loan officers perform better than loans managed by female officers.

The effect of microfinance institutions on entrepreneurship and poverty reduction in Nigeria was investigated in a study done by Tagamet (2019).

In order to collect data for the study, a survey research approach was used. A significant number of respondents from the micro, small, and medium businesses sub-sector in Edo State, Nigeria's Ikpoba Okha Local Government Area were given questionnaires. According to the data, there is a positive and statistically significant relationship between microfinance institutions and the decline in poverty in Nigeria. However, there was a positive but statistically insignificant association found between entrepreneurship and poverty reduction.

Ordinary Least Squares (OLS) regression technique was utilised by Ugochukwu and Onochie (2017) to analyse data spanning from 1999 to 2008 in their study on the effect of micro-credit on poverty reduction in Nigeria. According to their research, microfinance lending and the reduction of poverty in Nigeria are negatively correlated. Similarly, Okafor, Ezeaku, and Ugwuegbe (2016) investigated the impact of microcredit on poverty reduction in Nigeria from 1999 to 2014 using the Error Correction Model (ECM). The study's results, which made use of the ECM technique, show a statistically negligible and inverse relationship between microcredit and the reduction of poverty in Nigeria. On the other hand, it is observed that the interest rate has a significant negative influence on Nigeria's efforts to reduce poverty.

Robust research have examined the effectiveness of banks in both rich and developing nations, as the review demonstrates. These studies, however, have mostly ignored microfinance institutions in favour of focusing on the commercial banking sector. By reporting on the effectiveness of banks from the microfinance sector, the current study adds to the body of literature. In a similar vein, data envelope analysis (DEA) has been used extensively in empirical research to examine the effectiveness of banks. Nevertheless, the approach fails to consider the significance of error terms in efficiency modelling. The current work uses stochastic frontier analysis (SFA), which takes the error term and bank efficiency level into separate factors, to address this problem.

3.0 METHODOLOGY AND DATA

3.1 Techniques of Analysis

3.1.1 Dynamic Panel Estimation

The research has long supported the idea that company efficiency endures across time (Ahamed, 2017). Lagged efficiency is therefore one of the independent factors in this study. The classical panel ordinary least square estimator is broken down by adding delayed efficiency among other independent variables. This work uses dynamic system generalised methods of moments (SYS GMM) to estimate the connection in order to solve this issue. Since previous studies on the topic have always used the static panel approach that is most common in the research, the current study is the first to propose a dynamic method to the issue in the literature (Kar 2012, Adhikary and Papachristou 2017). This technique addresses endogeneity, simultaneity bias, and unobserved heterogeneity that are inherent in modelling the drivers of efficiency (Schultz, Tan, & Walsh, 2010). It was first described by Arellano & Bover (1995); Blundell & Bond (1998).

3.2 Determinants of Microfinance Banks' Efficiency

3.2.1 Firm Size MFB gross loan portfolio is used to proxy MBF size

Although the theory contradicts its effect on efficiency and profitability, bank size is highly regarded as a significant determinant of efficiency (Athanasoglou et al., 2006; Ahmad & Matemilola, 2010; Bolt (2012); Sufian (2012); Chowdhury (2015); Dietrich &Wanzenried, 2011; Garcia &Guerreiro, 2015). On the one hand, size may have a beneficial effect by increasing efficiency due to economies of scale. However, because of bureaucracy and large organisational structures, rigidities, and inertia, it may also result in unfavourable relationships (Petria et al., 2015; Athanasoglou et al., 2006; Rumble, 2006). The gross loan portfolio's natural logarithm is used to illustrate this.

3.1.3 Credit Risk

This is the ratio of loan loss provision to total loans in the banking system, and it pertains to non-performing loans. larger ratios indicate a larger risk of banking credit, which might be related to worse efficiency and expose the bank to the danger of its capital base being depleted. In theory, this variable ought to have a detrimental effect on the efficiency of banks. Non-performing loans are

referred to as Portfolio At Risk (PAR) in technical terms. This is the total amount owed on all loans and advances for which at least one installment is past due and has been overdue for a minimum of one day. Included in the sum is the principle that has not yet been paid; accumulated interest is not included. If a loan's payment is past due and has not been made, it is deemed past due under Portfolio at Risk (PAR).

Repayment of the loan will be applied to any outstanding principle installment (starting with the earliest installment) and then to any interest that is due. The earliest loan installment that hasn't been paid in full is used to determine how many days a borrower is late. For every microfinance bank, the maximum PAR cannot above the 5 percent level at any one time. This is consistent with global best practices that industrialised nations have passed down, giving lenders legal protection in a low-risk setting. The following lists the provisions for performing and non-performing risk assets as well as other assets; Table 3.1a. Provision for performing and non-performing risk assets.

Days at Risk (No. of days missed payment)	Description	Provisioning requirement or Allowance for Probable Loss(%)
0	Performing	1
1-30days	Pass and Watch	5
31-60 days	Substandard	20
61-90 days	Doubtful	50
91 or more days and for restructured loans	Lost	100

Source: Authors

At least once every thirty days, microfinance banks must assess their loans, advances, and other assets and make the necessary adjustments.

Furthermore, just as the size of a risk asset depends on the state of the economy, so does the size of the Portfolio at Risk (PAR) on the basis of risks related to the broad category of credit, market, liquidity, operational, legal and regulatory, strategic, and insurance framework existing in any economy.

3.2.2 Capitalization

Numerous research have looked at the impact of capital ratio (Garcia & Guerreiro, 2015). A microfinance bank's capital adequacy ratio is determined as a proportion of its shareholders' funds that have not been negatively impacted by losses on its risk-weighted assets. For microfinance banks, the minimum Capital Adequacy Ratio (Capital/Risk Weighted Asset Ratio) is ten percent. It gauges the bank's capability to take on risk as well as its ability to create credit. Moreover, each MFB must keep its shareholders' money unaffected by losses to its net credits at a ratio of no more than 1:10. A microfinance bank must always maintain the minimal capital adequacy ratio, as may occasionally be required by the Central Bank of Nigeria.

3.3 Empirical Models

3.3.1 Stochastic Frontier Analysis (SFA)

The study uses Stochastic Frontier Analysis (SFA), which was first presented in empirical literature by Aigner et al. (1977) and Meeusen & Van den Broek (1977), to determine our efficiency ratings. The SFA methodology seeks to estimate the underlying inherent and unobservable inefficiency in the firm's production technology of cost, revenue, profit, production, and distance function while simultaneously accounting for random shocks, which goes against the fundamental tenet of the neoclassical production theory of full efficiency of firms (Kumbhakar, Wang, and Homecastle, 2015). The SFA methodology, in contrast to the non-parametric methodologies of Data Envelope Analysis (DEA) and Free Disposal Hall, is stated in a functional form and separates technical inefficiency from error term. The following describes the empirical model:

$y_i = x_i^i\beta + v_i - v_i = x_i^1\beta + \zeta_i$

for i=1,…, n_ _ _ _ _ _ _ _ _ _(1)

where is a vector of covariates measuring k by 1, is a vector of parameters measuring k by 1, is noise, and denotes technological inefficiency. Assumptions about vi~i.i.d. N (0) and its independent and identical distribution as half-normal (Aigner et al., 1977), exponential (Meeusen & Van den Broeck, 1977), truncated normal (Stevenson, 1980), or gamma (Greene, 1990) are commonplace in the empirical literature. When expressed linearly, equation (2) can be written as:

$\ln y_i = \alpha o + \beta \ln x_i + v_i - u_i$ (2)

$yi = (\alpha o + \beta \ln xi + vi - ui)$ (3)

Equation (3) can be rewritten as:

$yi = (\alpha o + \beta \ln xi) \times \exp(vi) \exp(ui)$ (4)

Where (α0 + β lin xí) is the deterministic component and the composite error term, i is decomposed into noise effect (υí) and inefficiency parameter (uí). Alternatively, technical efficiency is expressed as the ratio of observed output to the corresponding stochastic frontier output:

$$TE_i = \frac{y_i}{exp(x_i'\beta + v_i)} = \frac{\exp(x_i'\beta + v_i - u_i)}{\exp(x_i'\beta + v_i)} = \exp(-u_i) \quad (5)$$

Technical efficiency (TE) ratings fall between 0 and 1. This, thus, quantifies bank i-thin's cost efficiency in respect to the lowest cost that, with the identical input vector, a fully-cost efficient bank in the industry might incur (Coelli, Prasada Rao, O'Donnell & Battese, 2005). The efficiency of a microfinance bank is therefore tested in relation to the most cost-efficient bank in the Nigerian banking sector, so the efficiency scores of the banks generated are relative. This paper mainly uses the truncated normal random time-varying specification of a stochastic frontier production function for the imbalanced panel by Battese and Coelli (1992). Specified for the model are:

$$Y_{it} = X_{it}'\beta + (V_{it} - U_{it}), \quad for\ i = 1, \ldots, N, t = 1, \ldots T \quad (6)$$

where Xít is a k×1 vector of (transformations of the) input quantities (staff cost over staff strength, fixed asset over depreciation, and deposit liability over their average respective cost) of the i-th firm in the t-th time period; β is a vector of unknown parameters; Vít is noise; and uít represents technical inefficiency. where Yít is the logarithm of total loans and advances of the i-th bank in the t-th time period of a scalar output. The shortened time-varying specification was deemed to be appropriate after the likelihood ratio (LR) test was performed to determine which specification should be chosen; for this reason, it was used. The banking literature also suggests two methods for determining inputs and output. The bank receives deposits and uses labour and capital to transform them into loans; this is acknowledged by the intermediation technique. The bank is acknowledged as a production unit by the method to production, which uses labour and capital to create deposits and loans. This paper uses the intermediation technique since it focuses on bank lending to the real sector. Using the obtained efficiency score, highly performing banks are ranked from lowest to highest performing banks in stochastic frontier analysis (SFA). However, banks operating in the microfinance subsector can get this structure by applying parametric or non-parametric frontier analysis. According to Molineux, Altunbaş, Gardener, and Moore (2001), the non-parametric technique is Data Envelopment Analysis (DEA) and the Free Disposal Hull, whereas the parametric approach consists of Stochastic Frontier Analysis, Tick Frontier, and the Distribution Free technique (DFA).

Descriptive Statistic of Data

The descriptive statistics of the variables are presented to understand the characteristics of the examined series in the model. The characteristics of the variables in the production frontier were presented in the Table, the distribution shows the result of microfinance bank performances in terms of risk assets created from the utilization of labor, capital and deposit liabilities from 2010 to 2017 in the study area. As indicated in the distribution, the mean of OUTPUT, LAB, CAP and BOR of MFBs were 19.7m, 6.1m, 3.7m and 57.6m respectively. This is an indication that average MFBs located within the study area granted a loan totaling about #58m, with maximum and minimum output of about 200m and 80m within the period covered in this study. This shows that while the output of the maximum value, LAB, CAP and BOR of the studied beneficiaries were estimated at 200.7m, 39.6m, 33.1m and 128.4m respectively, the minimum values of output, LAB, CAP and BOR of the studied MFBs was found to be 17.6m, 6.6m, 0.69m and 10m respectively. The results clearly show that the average microfinance bank in southwestern Nigeria paid about #8million as yearly salary and wages to its permanent or contracted workers over the period covered in the study. As indicated in Table, a large proportion of banks falls among the average as indicated by the positive skewness.

The statistics reveal that all variables in the production frontier are positively skewed. This implies that the distribution of data is stable, appropriate and that majority of banks attain above the average in all the variables. The kurtosis of microfinance loan, labor, capital and borrowed find variables exceed 3 which means that the series is peaked (leptokurtic) compare to normal (mesokurtic) distribution. The Jarque-Bera statistic was stable for the series and it was found that the probability values for all the frontier series are significant at 5% level. The study also carried out rescaling of some variable by transforming our data through the log. Furthermore, Table present a descriptive of the data series used before the study proceed to the estimation of other empirical models adopted.

Table 3.1b. Descriptive Statistics of Variables used for Efficiency Model

	OUTPUT(N'000)	LAB (N'000)	CAP (N'000)	BOR (N'000)
Mean	44800	8150	4970	56630
Median	19750	6066	3717	57564
Maximum	200698	39560	33134	128358
Minimum	17550	6570	692	9987

Std. Dev.	6998	9480	5917	29402
Skewness	2.227	7.338	1.297	5.427
Kurtosis	7.156	58.94	4.134	36.66
Jarque-Bera	222.7	2007	48.08	7502
Probability value	0.000	0.000	0.000	0.000
Observation	144	144	144	144

3.3.2 The empirical model of the determinants of microfinance bank efficiency in southwest Nigeria is specified within system GMM to a balanced panel data as follows:

$$\mathbf{EFF_{it} = \alpha + \varphi EFF_{it-1} + \gamma_1 MANAG_{it} + \gamma_2 CRISK_{it} + \gamma_3 SIZE_{it} + \gamma_4 CAPR_{it} + \gamma_5 ORGANIC_{it} + \gamma_6 OPCOSTit + \gamma_7 LIQUIDit + \gamma_8 INFLit + \eta_i + \varepsilon_{it} \quad for \quad t = 2010 - 2017} \qquad (1)$$

EFF_{it} is the efficiency of bank i in time t with i=1,…N, t=1…,T, and α is the constant term,. Similarly, ϵ_{it} is the disturbance term with $\boldsymbol{\delta}$ as yearly-specific effect and $u_{it}$is the idiosyncratic error term with the assumption of one-way error component regression modelling with $v_i \sim (IIN\ (0, \delta_V^2)$ and independent of $u_{it} \sim (IIN\ (0, \delta_u^2)$.

3.4 Data, Measurement and Sources

This paper employs the data of 18 microfinance banks operating in South West Nigeria between 2010 and 2017. The variables are defined in Table 3.1c.

Table 3.1c: Data, Data Sources and Measurements

Variables	**Measurements**	**A priori Expectation**	**Source**
Efficiency level (EFF)	This is derived from Efficiency model.		Author's calculation from SFA
	Independent variables		
Lag of Efficiency Size (SIZE)	This refers to previous level of efficiency Logarithm of gross loan portfolio	A positive relationship between lagged efficiency and current efficiency β1 > 0 A positive relationship between gross loan and Efficiency β2 > 0	Annual Reports
Organic Growth (ORGAR)	This is the addition of reserves	A positive relationship between accumulated reserves and efficiency β3 > 0	Annual Reports
Managerial Ownership (MANGO)	This is the proportion owned by directors of the banks to the total shares	A positive relationship	Annual Reports

		between Managerial Ownership and efficiency β4 > 0	
Capitalization (CAPR)	This is the minimum capital requirement approved by Central Bank of Nigeria for a relevant category of microfinance bank.	A positive relationship between capitalization and efficiency β5 > 0	Annual Reports
Portfolio At Risk (CRISK) Operation Ex Cost(OPCOST) Liquidity(LIQUID) Headline Inflation(INFL)	+This is defined as the ratio of non-performing loan to total loan assets. This refers to operating expenses. This is measured as log of Operating Expenses This is defined as the liquid asset consisting of vault, till, bank balances, treasury bill and quoted stock This refers to Year-on-Year change of the composite consumer price index	A negative relationship between credit risk and efficiency β6 > 0 A negative relationship between operating expenses and efficiency β7 < 0 A positive relationship between liquidity and efficiency β8>0 A negative relationship between Inflation and efficiency β9<0	Annual Reports

Source: Researchers, 2023.

3.5 Hypothesis Testing

The model is expected to test the following hypothesis:

a. The efficiency of MFBs is not explained by both institutional and macroeconomic variables.

Hi……β9=0

b. The efficiency of MFBs is explained by both institutional and macroeconomic variables.

H_i……$\beta_9 \neq 0$

3.3.3 Unit Root Test

The panel unit root test was used to determine the stationary property of the balancing unit MFBs panel data (where the number of cross sections (MFBs) is smaller than the number of observations). The variables listed in Table (3.2) below display the unit root attributes for each variable in the model. It can be observed that all of the variables are on the edge of the level and first differences

(orders of integration I(0) or I(1)), but all variables are stationary in the first differences. Using the LLC, IPS, ADF, and PP tests, the null hypothesis of the existence of a unit root was rejected for the majority of the data series at a 5% significance level.

Table 3.2. Unit root test

Variables	LLC	R	IPS	R	ADF	R	PP	R
CRISK	-2.460***	I(0)	-53.71***	I(0)	99.92***	I(0)	67.42***	I(0)
LEFF	-89.917***	I(0)	-11.350***	I(0)	2767.74***	I(0)	3400.98***	I(0)
EFF	-7.698***	I(0)	-1.466*	I(0)	54.51**	I(0)	57.86**	I(0)
CAP	-2.999***	I(0)	-1.3E+e15***	I(0)	47.49*	I(0)	68.49***	I(0)
LIQD	-3.289***	I(0)	-1.428*	I(0)	69.68***	I(0)	54.20**	I(0)
ORG	-1.248***	I(0)	-1.1E+e14***	I(0)	83.51***	I(0)	69.60***	I(0)
SIZE	-9176***	I(0)	-1.625***	I(0)	86.73***	I(0)	47.97*	I(0)
OPCOST	-87.843***	I(0)	-13.210***	I(0)	2799.03***	I(0)	3446.39***	I(0)
MANGO	-6150.88***	I(0)	-111.857***	I(0)	1938.79***	I(0)	2238.18***	I(0)
INF	-73.547***	I(0)	-10.902***	I(0)	2581.44***	I(0)	3136.12***	I(0)

Source: Authors' Computation

3.6 Data

The study analysed bank-institution data from the yearly returns of unit MFBs submitted to and certified by the CBN in order to assess the effectiveness of MFBs in Nigeria. Additionally, a macroeconomic variable was chosen. While the data on macroeconomic factors came from the National Bureau of Statistics (NBS) and the CBN statistical bulletin, the data on bank-specific variables were gathered directly from the chosen institutions. For the study, one macroeconomic variable and eight bank-specific variables were employed. A balanced panel data set of 18-unit MFBs and spanning from 2010 to 2017 makes up the sample, yielding 144 observations. A larger sample size and greater degree of freedom are provided by panel data (Hsiao et al., 1995).

4.0 ESTIMATION PROCEDURE AND ANALYSIS OF RESULTS

4.1 Estimation Procedure

Equation 2 is estimated system GMM using a dynamic panel regression analysis. This methodology presents several advantages over the use of cross-sectional or time series methodology alone as it has the ability to control for individual heterogeneity, in addition to the capacity to identify and measure effects, which are undetectable in a pure cross-sectional or time series analysis. This approach also allows for the construction and testing of complex models and helps to address the challenge of bias.

4.1.1 Estimation and Discussions

3.7 Study Area

The Southwestern Zone of Nigeria was the study area for the research work. The Zone represents the geographical location between Latitude 60 2/N and 80 37N and Longitude 20.3E and 6000E. The Zone is majorly Yoruba speaking area although there exist different dialects within the states (Ondo, Oyo, Osun, Lagos, Ekiti, and Ogun) that makes up the zone. Southwestern Nigeria has a land size of 79,665 square Kilometres with a total population of about 45 million as of 2017 (NPC, 2018). This population is broken down into eighteen senatorial districts and further subdivided into 137 local governments. It is the major economic zone in Nigeria. The zone had as of 2017 a GDP of above 180 billion dollars which is estimated as 40% of the country's overall GDP. The zone also accounted for over 95% of the country foreign trade flow and 70% of its manufacturing activities. According to SMEDAN 2018, there are over 37 million MSMEs in Nigeria as of 2017 and the zone accounted for over 40 percent

5.0 EMPIRICAL RESULTS AND DISCUSSIONS

5.1 Preliminary Checks

Before investigating the determinants of microfinance bank efficiency, it is important to discuss the descriptive statistics. This gives the characteristics of the variables in the study. The results of the descriptive statistics are presented in Table 4.1. The mean of efficiency is 0.47 with the standard deviation of 0.30627. This shows that microfinance banks in Southwest Nigeria are less efficient since the average efficiency is less than 50%. Similarly, an average microfinance bank in the region has average of 1.70% with the maximum of 19.40% under managerial ownership indicating low level of stake by the mangers. This best explains why most managers are not committed towards ensuring efficient performance of the bank. Hence, the negative effect on efficiency. In addition, organic growth of microfinance banks, measured in terms of cumulative reserves has a mean of ₦6,068,114 with the

standard deviation of ₦4,794,497. This is showing that there is a divergence among microfinance banks in terms of organic growth in Southwestern states. Conversely, the mean of capitalization of microfinance bank in Southwest Nigeria is 2.76E+10 while the minimum and maximum values are 20,000,000 and 5.44E+10 respectively. This shows that all the sampled microfinance bank are adequately capitalized in line with Central Bank of Nigeria directive on minimum capital requirement for unit microfinance bank.

Table 4.1. Descriptive Statistics

	MANGO	TOTALLOAN	ORGANIC	EFFC	CAPR	RISK
Mean	1.701525	6.56E+10	60168114	0.474017	2.76E+10	0.298799
Median	0.670000	3.52E+10	63031433	0.522849	3.00E+10	0.207045
Maximum	19.40000	3.18E+11	1.98E+08	0.920322	5.44E+10	3.050761
Minimum	0.200000	4817600.	-170207.0	0.020203	20000000	0.002213
Std. Dev.	3.378562	8.54E+10	47944979	0.306270	1.90E+10	0.440930
Skewness	3.998492	1.573293	0.507596	-0.025630	-0.309657	4.489222
Kurtosis	19.96294	4.849409	2.995295	1.494505	1.841206	27.03420
Jarque-Bera	893.8865	33.85834	2.619538	5.767408	4.387814	1673.065

Source: Authors, 2024**.**

Since the major objective of this study is to investigate the roles of capitalization and organic growth on microfinance banks' efficiency, the study further breaks down the organic growth of microfinance banks into high organic growth and low organic growth. It adopts banks that its total reserves are greater than 50% of the capitalization as high organic growth while those with 50% and below as low organic growth. The same is repeated for capitalization. It refers to microfinance banks with more than 30,000,000 as high capitalization while those with 30000000 and below as low capitalization for the sake of the analysis. The relationship between these different levels of capitalization and organic growth with the efficiency are presented graphically below. Figure 1 shows the relationship between efficiency and high organic growth banks while Fig. 2 displays the relationship between efficiency and low organic growth. As shown in the two graphs, banks with high organic growth achieve higher level of efficiency than banks with lower organic growth. This further confirms the fact that organic growth contributes significantly to efficiency level among microfinance banks in Southwest Nigeria.

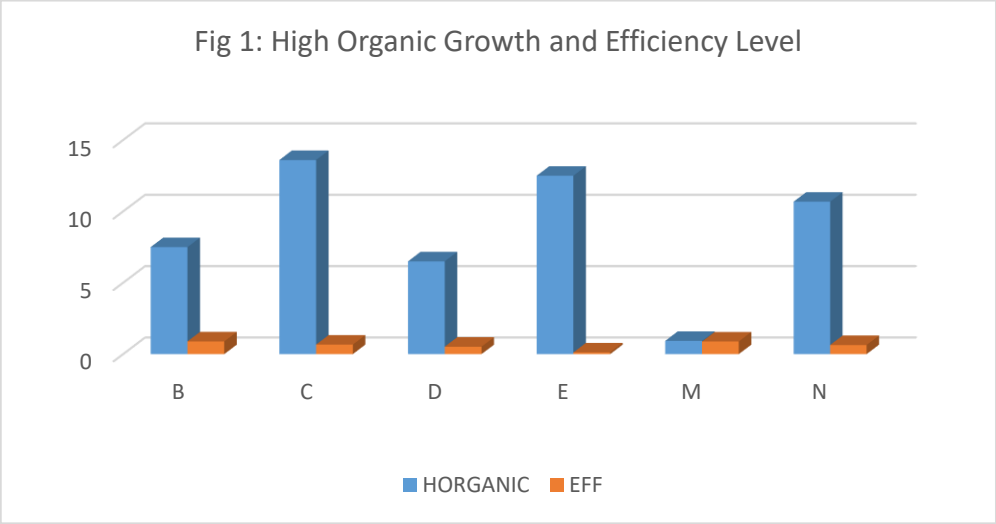


Figure 1. The relationship between efficiency and high organic growth of banks
Source: Authors

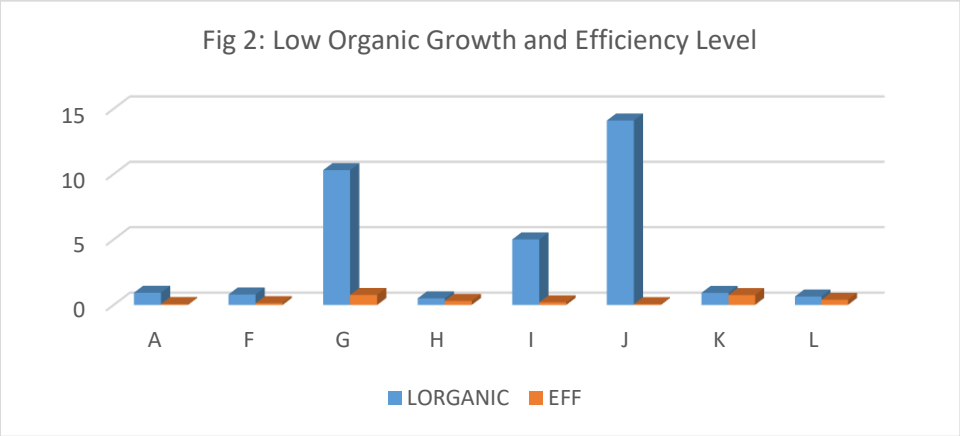


Figure 2. The relationship between efficiency and low organic growth
Source: Authors

However, it appears that capitalization and efficiency level are inversely correlated. Figure 3 illustrates the correlation between high capitalization and efficiency level, whereas Figure 4 illustrates the correlation between low capitalization and efficiency level. Furthermore, the study conducts correlation analysis between efficiency and capitalization and efficiency and organic growth. The results show that high capitalization and efficiency has a correlation of -0.347215 while low capitalization and efficiency records the value of 0.92558. Similarly, high organic growth and efficiency has the value of 0.5700 while the low organic growth and efficiency has the value of 0.013692. the results indicate that low capitalization and efficiency have a high correlation index while the correlation relationship between high capitalization and efficiency is very low indicating that banks that are highly capitalized are less efficient that those with lower capitalization. On the other hand, high organic growth is related to high efficiency level as shown in the empirical results. However, to establish this argument, there is need for econometric model. This is the object of next section.

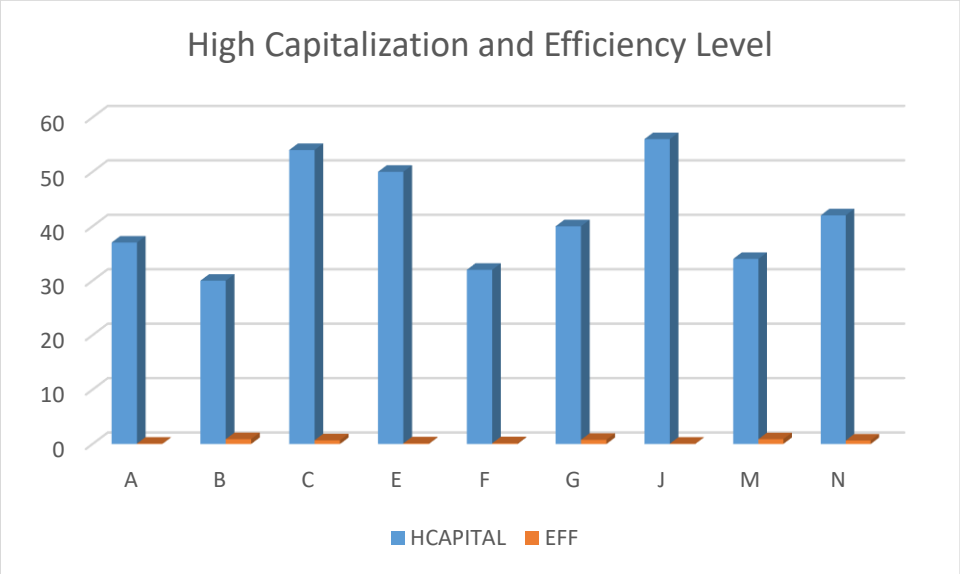


Figure 3. The relationship between efficiency level and high capitalization
Source: Authors

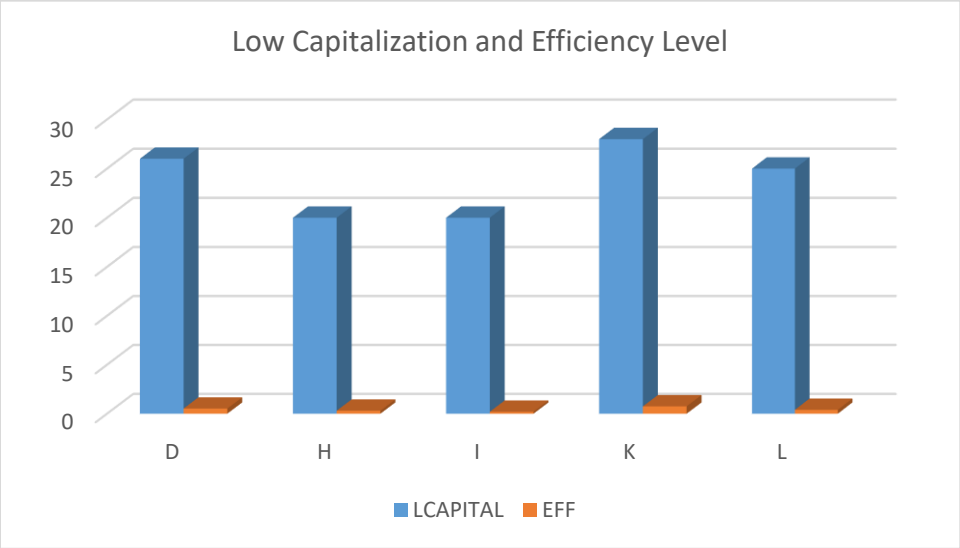


Figure 4. The relationship between efficiency level and low capitalization
Source: Authors

The results of the pairwise correlation analysis for all variables are presented in Table 4.2. This shows that the highest correlated variables are size and capitalization with the value of 0.48. Since none of the correlation indices recorded a value greater than 50 per cent, hence, the problem of multicollinearity is not expected to arise in the model.

Table 4.2: Correlation Matrix

	CAPITAL	EFFC	MANGO	RISK	TOT	ORGANIC
LCAPITAL	1.000000					
EFFC	0.243876	1.000000				
MANGO	-0.168362	-0.306268	1.000000			
RISK	0.007879	0.162373	0.019861	1.000000		
TOT	0.4804807	0.425731	-0.198721	-0.027740	1.000000	
ORGANIC	0.428363	0.265292	-0.316694	-0.030910	0.797149	1.000000

Source: Authors, 2024.

Efficiency of Microfinance Banks in South-West Nigeria

Figure 5 presents the summary of efficiency scores for Nigerian Microfinance banks between 2010 and 2017 using SFA method. The results show that average efficiency of Nigerian banks varies between 0.91(B) and 0.12(A). While the first bank records the efficiency score of over 90% showing that only 10% of the resources were not efficiently utilized, the least efficient bank records only about 12% efficiency score during the period of analysis. This shows a great divergence in efficiency among microfinance banks in South-West Nigeria. This could be attributable to poor quality of man power running those banks with low efficiency parameter. Our empirical results also establish the existence of economies of scale in the Nigerian banking industry. A further study of the individual bank efficiency scores shows that only nine out of the eighteen banks score over 50% efficient score. Thus, the remaining nine banks achieve efficiency scores less than 50%.

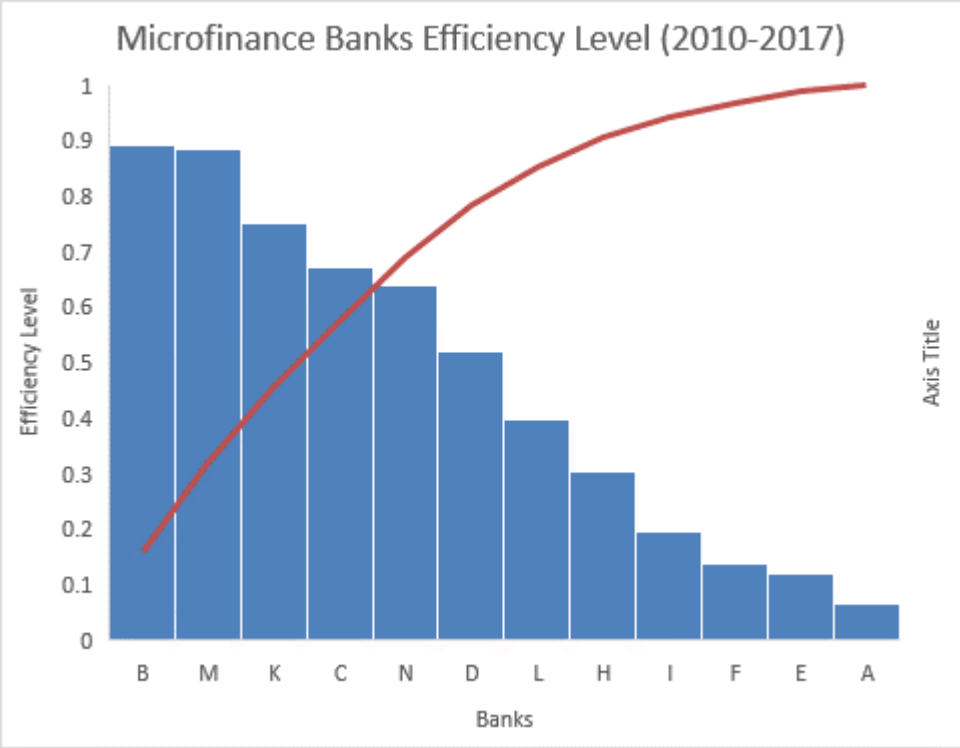


Figure 5. Efficiency scores for Nigerian Microfinance banks

5.2 Econometric Results and Discussions

Determinants of Microfinance Bank Efficiency

This section gives the empirical findings. Table 4.3 displays the factors influencing growth without organic growth, whereas Table 4.4 incorporates organic growth into the model using the Generalised Method of Moments technique. The findings indicate that the initial level of efficiency strongly influences the level of efficiency in the microfinance bank. The coefficient on the lagged dependent term falls within the range of 0.104 to 0.046 and is statistically significant in all regression analyses. This supports the perspective that the degree of efficiency in a business remains consistent over time and has been well-established in the literature (Ahmed, 2017). Therefore, this analysis incorporates the delayed efficiency as one of the independent factors. The incorporation of delayed efficiency, along with other independent variables, disrupts the conventional panel ordinary least square estimator.

Also, the sensitivity and interrelated banking industry and microeconomic environment may reduce the result of the estimation. Hence problems of simultaneity and endogeneity were addressed in establishing the relationship among firms. The suitable method for dealing with this issue in line with literature is the dynamic panel generalized method of moments.

The generalised technique of moment's diagnostic test was also included in the Tables, demonstrating the presence of autocorrelation in the model and the reliability of the instruments used. The validity of instruments is explained by Hassen statistics. Since the null hypothesis (p-value > 0.05), which supports the selection of the instruments at a 5% level of significance, cannot be rejected, the instruments' overall validity is upheld. To test the null hypothesis that the error term is auto-correlated, the auto-correlation of the error term was also conducted. The probability value of the AR (2) for all models demonstrated that, rather than supporting the original error term's uncorrelation at the 5% significant level, the moment requirements are appropriately stated and the null hypothesis of no second-order serial correlation cannot be rejected at the 5% level. The coefficients of the empirical results are stable. The models exhibit a high goodness of fit, as demonstrated by the Wald-test and related F-statistics. At the 1% level, the two models are statistically significant. Likewise, all estimated models pass the Sargan test of over-identifying restriction. The instrumental variables included in the models are not connected with the error term because both models' findings are significant at the 5% level. As a result, they make sense and the coefficients are trustworthy and strong. The Arellano-Bond autocorrelation test is also used in the study to look at autocorrelation problems in the models. The data demonstrates that every model has first-order autocorrelation. This does not, however, imply that the modelling is inconsistent. Only if the models deviate from second-order autocorrelation further would this suggest (Arellano & Bovet, 1995).

The baseline model, devoid of ORGGROWTH, is given and explained in the table below. The empirical findings about the correlation between CRISK and EFF, which was first expected to be negative. Because a rise in the CRISK of microfinance banks in South-West Nigeria is associated with a decrease in the institutions' efficiency level. Therefore, a rise in the amount of non-performing loans in a bank's portfolio lowers the efficiency of microfinance institutions. This suggests that a high credit risk limits

the bank's capacity to extend loans. Stated simply, the percentage of non-performing loans will decrease if microfinance institutions are able to effectively assess, manage, and collect debt.

Additionally, the empirical outcome confirms the priori anticipation by demonstrating a positive link between microfinance efficiency and size. This suggests that microfinance banks in the Southwest benefit from industry-wide economies of scale, implying that costs decrease with bank growth. The availability of loans and advances will likely increase as microfinance institutions' performance improves. This suggests that the size of the bank is seen as a key factor in determining its efficiency (Garcia & Guerreiro, 2015). Additionally, size may have a beneficial effect by increasing efficiency due to economies of scale. A high degree of microfinance bank efficiency is anticipated to have a favourable correlation with a substantially capitalised bank. The outcome, however, demonstrates that even with increased capitalization, efficiency levels might drop if resources are not used effectively. This might point to a nonlinear link between capitalization and the effectiveness of microfinance institutions. Therefore, it is anticipated that the regulatory body would exercise caution when determining the minimum capital needed by a microfinance bank. In line with our focus, the baseline model in Table 4.4 with ORGGROWTH is discussed and presented. The empirical result on the relationship between ORGGROWTH and EFF is positive but not significant indicating that it has little impact. This could be attributable to the fact that most microfinance banks suffer weak corporation governance such that the proportion of profitability that is required to be ploughed back into reserves are often not complied with in line with regulatory guidelines. Also, a lot of the investors do not have a long-term plan owing to the perceived high-risk environment within which MFBs operate. Investors do not believe in the continuity plan because of both the corporate and macroeconomic environment of microfinance banks. Furthermore, a highly liquid bank will be positively associated with a high level of microfinance bank efficiency. This is an indication that organic growth when not adequately provided for only offers the amount of some comfort as a source of liquidity being set aside by most microfinance banks contrary to the intention of regulatory authority. Hence there is a reinforcing influence of growth on liquidity. This plausible reason for the relationship between LIQD and EFF aligned with some findings in the existing studies (Ibe, 2013; Eljelly, 2004). Liquidity plays a key role in the efficiency of microfinance. This is because loans and advances can only be created from liquidity. Moreover, competent management is required to ensure that there is no mismatch between short-term liabilities and long-term risk assets. Channeling short-term liability into long-term risk assets is a reflection of poor management skills and a ground for technical insolvency.

Also, the dummy variable in the analysis reflects the microfinance bank performance across the years. Thus, microfinance bank efficiency in the year 2017 is on average and ceteris paribus, about 14% higher than the year 2010. This indicates that the performance of microfinance banks over the years especially between 2010 & 2017 has been on the increase though the rise in the efficiency is not significant among microfinance banks in Southwestern Nigeria. This calls for a review of major elements in the reform to ensure that the variables of interest witness a deeper impact so that a rise in the efficiency of microfinance efficiency banks can be achieved. Hence, the notion that size has a substantial impact on efficiency, as stated in existing research that only considers firm-level factors, may be deceptive due to the inadequate methodology employed by the majority of these studies (Okafor, 2017). The findings suggest that microfinance banks in Southwest Nigeria have economies of scale, since larger size positively impacts their efficiency.

Table 4.3. Determinants of Microfinance Bank Efficiency without Organic Growth

Dependent Variable: Efficiency of Microfinance Bank				
Variables	Coefficient	Std. Error	t-stat	p-Value
LEFF	0.104*	0.053	1.98	0.064
LIQD	0.034	0.028	1.21	0.243
SIZE	0.0002***	0.00006	3.15	0.006
CAPSIZE	-0.0006*	0.0003	-1.89	0.076
CRISK	-0.013*	0.007	-1.79	0.091
YEAR	0.002	0.003	0.49	0.631
CONSTANT	-2.536	6.289	-0.40	0.692
Y_1	0.043	0.034	1.27	0.222
Y_2	0.063	0.048	1.31	0.208
Y_3	0.040	0.048	0.84	0.411
Y_4	0.013	0.041	0.31	0.760
Y_5	0.00032	0.023	0.01	0.989
Y_6	0.006	0.024	0.29	0.779
No of OBS	144			
No of Group	18			

No of instrument	17			
F-Stat	8.36			
Prob. Value	0.000			
AR(2)/AR(1) [p-value]	0.052/0.199			
Hansen (Sargan) test	0.974(0.138)			

Determinants of Microfinance Bank Efficiency with organic Growth

Table 4.4: Determinants of microfinance banks efficiency with organic Growth

Dependent Variable: Efficiency of Microfinance Bank				
Variables	**Coefficient**	**Std. Error**	**t-stat**	**p-value**
LEFF	0.046*	0.0261	1.750	0.094
LIQD	0.135**	0.062	2.18	0.044
ORGGROWTH	0.008**	0.008	2.95	0.047
SIZE	0.004**	0.002	2.43	0.26
CAPSIZE	-0.009	0.007	-1.18	0.252
OPCOST	-0.020***	0.006	2.070	0.001
INFL	-0.001***	0.003	2.18	0.001
MANGO	0.0004	0,008	1.28	0,002
CRISK	-0.007	0.011	-0.64	0.533
YEAR	0.00009	0.0001	0.84	0.413
Y_0	0.092	0.152	0.60	0.554
Y_1	0.084	0.106	0.79	0.442
Y_2	0.087	0.124	0.70	0.494
Y_3	0.116	0.146	0.80	0.437
Y_4	0.054	0.077	0.71	0.490
Y_6	0.048	0.048	0.99	0.338
Y_7	0.129	0.094	1.37	0.188
No of OBS	144			
No of Group	18			
No of Instrument	17			
F-Stat	301.15			
Prob. Value	0.000			
AR(2)/AR(1)	0.287/0.612			
Hansen (Sargan) test	0.311(0,605)			

As shown in Table 4.4, all the variables agreed with a priori expectation with the exception of capitalization (CAPSIZE). Specifically, previous level of efficiency showed a positive and statistically significant relationship with present level of efficiency of units MFBs in Southwestern Nigeria. This implies that improving level of efficiency by one unit across time would enhance units MFBs efficiency by 0.05 percent. Conversely, CRISK demonstrated a negative and statistically insignificant relationship with efficiency of units MFBs. This means that increasing portfolio at Risk by one percent across time would hinder efficiency growth level of MFBs by 0.07 percent, however at a statistically insignificant level. In the same vein, OPCOST exhibited a negative and statistically significant effect on efficiency of MFBs. This implies that with a one percent rise in operation cost across time, efficiency is expected to nosedive by approximately 0.02 per cent. The hostile macroeconomic environment and huge infrastructural gap in Nigeria economy may be responsible for this. Inflation showed a negative relationship with efficiency of units MFBs in southwestern Nigeria. This implies that a one percent increase in inflation would incapacitate efficiency growth of MFBs by 0.001 percent. Similarly, units MFBs loan stock representing SIZE showed a positive and statistically significant relationship with efficiency level of units MFBs. This is indicating that a unit increase in unit MFBs loan portfolio across time will increase efficiency by 0.04 percent at 5 percent significant level. However, at statistically insignificant level, an increase in capital by one unit across time for units NFBs leads to a decrease in efficiency by 0.009 percent. In line with a priori expectation, liquidity (LIQID) showed a positive and statistically significant relationship with efficiency of unit MFBs at 5 percent significant level. Organic growth showed a positive and statistically significant relationship with efficiency level of units MFBs in Southwestern Nigeria. This means that a

unit increase in organic growth will lead to 0.008 percent improvement in efficiency of units MFBs. Managerial ownership however has positive but statistically insignificant relationship with efficiency of units MFBS in southwestern Nigeria.

6.0. CONCLUSION AND POLICY RECOMMENDATIONS

Finally, because of the perceived importance of microfinance banks in Nigeria's economy, this study examines the effects of capitalization and organic development on microfinance banks in Southwest Nigeria. The results of our study indicate that the level of capitalization does not have a substantial influence on the efficiency of microfinance institutions. However, we found that organic expansion has a considerable impact on their efficiency.

Based on the findings, the following policy recommendations are offered in order to diminish vulnerabilities and enhance possibilities for microfinance banks, considering their crucial role in any developing economy:

The study discovered that the efficiency level of MFBs, while increasing over time, is insufficient to have a major influence on the achievement of Microfinance goals. Therefore, due to the unique characteristics of microfinance services and the specific expertise needed to oversee a microfinance bank, it is necessary for the top management to hold the necessary certification in microfinance management from the Chartered Institute of Bankers of Nigeria (CIBN) in partnership with the Central Bank of Nigeria. Therefore, it is recommended that Microfinance administration should be entrusted to capable and dedicated individuals. This will function as a tactical instrument to achieve comprehensive economic development, generate employment opportunities, and reduce poverty. If these supplementary actions are followed, the rate of bank failure in the subsector will be significantly diminished.

REFERENCES

1. Aboagye, A. Q., Akoena, S., Antwi-Asare, T., &Gockel, A. (2008),"Explaining the Market Power of Ghanaian banks" *South African Journal of Economics*, 76, 569-585.
2. Adjei-Frimpong, K (2013), "Bank Efficiency and Bank Competition: Empirical Evidence from Ghana's Banking Industry" A Ph.D. Thesis submitted to Lincoln University, UK.
3. Ajisafe, R.A &Akinlo, A.E (2014), "Competition and Efficiency of Commercial Banks: An Empirical Evidence from Nigeria"*American Journal of Economics* 2014, 4(1): 18-22 DOI: 10.5923/j.economics.20140401.02
4. Allen, F & Gale., D. (2004), "Competition and Financial Stability"Journal of Money, Credit, and Banking, Vol. 36 (3)
5. Arellano, M., and Bover, O. (1995),"Another look at the instrumental variable estimation of error-components models"*Journal of Econometrics*, 68(1), 29-51.
6. Atkins, B., Li, L., Ng, J. & Rusticus, T.O (2016),"Bank Competition and Financial Stability: Evidence from the Financial Crisis, Financial Crisis"*Journal of Financial and Quantitative Analysis*. 51, (1), 1-28.Research Collection School of Accountancy. Available at: http://ink.library.smu.edu.sg/soa_research/1271
7. Avkiran, N. K. (1999), "The evidence on efficiency gains: The role of mergers and the benefits to the public" *Journal of Banking & Finance*, 23(7), 991-1013.
8. Ayadi, F. O., Adebayo, A. O., &Omolehinwa, E. (1998),"Bank performance measurementin a developing economy: An application of data envelopment analysis"*Managerial Finance*, 24(7), 5-5-16.
9. Aydinli, I. (1996),"Market Structure of the Turkish Banking System: 1991-1994 (inTurkish)" Capital Markets Board Publication, No. 40, Ankara.
10. Baltagi, B. H. (2008), "Econometric Analysis of Panel Data" 4th edition, Chi Chester: John
11. Wiley & Sons Ltd.
12. Beck. T., Demirgüç-Kunt, A. &Levin, R. (2005), "Bank Concentration and Fragility: Impact and Mechanics"National Bureau of Economic Research Working Paper No:11500
13. Berger, A. N. (2007),"International Comparisons of Banking Efficiency" Financial Market Institutional Instruments, 16, 119–144.
14. Berger, A. and Hannan, T. 1998. The Efficiency Cost of Market Power in the Banking Industry: A Test Of The "Quiet Life" And Related Hypotheses, *The Review of Economics and Statistics*, 80(3): 454-465.
15. Bikker, J. A., &Groeneveld, J. M. (2000),"Competition and concentration in the EU Banking Industry" Kredit und Kapital, 33, 62-98.
16. Bikker, J. A., &Haaf, K. (2002),"Competition, concentration and their relationship: An empirical analysis of the banking industry" *Journal of Banking & Finance*, 26(11), 2191-2214.
17. Bikker, J. A., &Spierdijk, L. (2008), "How banking competition changed over time"Tjalling C. Koopmans Research Institute Discussion Paper Series, No. 08–04.
18. Blundell, R., & Bond, S. (1998),"Initial Conditions and Moment Restrictions in Dynamic Panel Data Models"Journal of Econometrics, 87(1), 115-143

19. Bond, S. R. (2002),"Dynamic panel data models: A Guide to Micro Data Methods and Practice"Institute for Fiscal Studies Working Paper, CWP09/02.
20. Boyd, J.H., Nicolò, G & Jalal, A.M.: (2006),"Bank Risk-Taking and Competition Revisited: New Theory and New Evidence"International Monetary Fund, IMF Working Paper No WP/06/297.
21. Buchs, T. D., & Mathisen, J. (2005),"Competition and efficiency in banking: Behavioral Evidence from Ghana"IMF Working Paper No. 05/17.
22. Carbó, S., Humphrey, D., Maudos, J., &Molyneux, P. (2009),"Cross-country comparisonsofcompetition and pricing power"*European Banking Journal of International Money and Finance* 28, 115–134.
23. Casu, B., &Girardone, C. (2006), "Bank competition, concentration and efficiency in the single European Market"The Manchester School, 74(4), 441-468
24. Casu, B.,& Claudia Girardone, C. (2010),"Does Competition Lead to Efficiency? The Case of EU Commercial Banks" *Journal of Banking*, 57(2), 510-532
25. Casu, B., and Molyneux, P. (2003)'"A comparative study of efficiency in European Banking" *Applied Economics*, 35(17), 1865-1876.
26. Castellanos, S.G & Garza-García, J.G (2013), "Competition and Efficiency in the Mexican Banking Sector"BBVA Working Paper No 13/29.
27. CBN, (2013), "Bank Intermediation in Nigeria: Growth, Competition, and Performance of the Banking Industry, 1990 – 2010"Central Bank of Nigeria Occasional Paper No. 48, November, 2013.
28. Chen, T., &Yeh, T. L. (1998),"A Study of efficiency evaluation in Taiwan's banks"*International Journal of Service Industry Management*, 9(5), 402-415.
29. Claessens, S. (2009), "Competition in the financial sector: Overview of competition Policies"IMF Working Paper No.09/45.
30. Claessens, S., &Laeven, L. (2004),"What drives bank competition? Some International Evidence"Journal of Money, Credit & Banking, 36(3), S563 (521).
31. Coccorese, P. (2004),"Banking competition and macroeconomic conditions: a disaggregate Analysis"*Journal of International Financial Markets, Institutions and Money*,14(3).
32. Das, A., and Ghosh, S. (2009), "Financial deregulation and profit efficiency: A nonparametric:
33. Analysis of Indian banks"*Journal of Economics and Business*, 61(6), 509-528.
34. De Bandt, O., & Davis, E. P. (2000),"Competition, contestability and market structure in
35. European banking sectors on the eve of EMU"*Journal of Banking & Finance*, 24(6),1045-1066.
36. Delis, M. D., and Pagoulatos, G. (2009), "Bank competition, institutional strength and financial reforms in Central and Eastern Europe and EU"MPRA Paper No. 16494.
37. Farrell, M. J. (1957),"The Measurement of Productive Efficiency"*Journal of the RoyalStatistical Society*, 120, 253–278.
38. Fernández de Guevara, J., Maudos, J., & Pérez, F. (2005),"Market power in European banking sectors"*Journal of Financial Services Research*, 27(2), 109-137.
39. Fernández, R.O & Garza-Garcíab, J.G (2012),"The Relationship between Bank Competition and Financial Stability: A Case Study of the Mexican Banking Industry"Centre for Global Finance, Working Paper Number: 03/12
40. Fu, X., & Heffernan, S. (2005),"Cost X-efficiency in China's banking sector"Cass Business School Working Papers WP-FF-14-2005
41. Fungácová, Z., Solanko, L., and Weill, L. (2010),"Market power in the Russian Banking Industry" BOFIT Discussion Papers, 3
42. Gilbert, R. A., & Wilson, P. W. (1998),"Effects of deregulation on the productivity of Korean Banks" Journal of Economics and Business, 50(2), 133-155.
43. Gremi, E. (2015),"Competition and Efficiency in Albanian Banking System" A Paper delivered at the 3rd Global Virtual Conference, April, 6-10. 2015, downloaded from www.gv-conference.com on 22nd February, 2015.
44. Giustiniani, A &Ross, K. (2008),"Bank Competition and Efficiency in the FYR Macedonia"South-Eastern Europe Journal of Economics 2 (2) 145-167.
45. Günalp, B., &Çelik, T. (2006),"Competition in the Turkish banking industry"Applied Economics, 38(11), 1335-1342.
46. Hao, J., Hunter, W. C., & Yang, W. K. (2001),"Deregulation and efficiency: the case of Private Korean banks" *Journal of Economics and Business*, 53(2-3), 237-254.
47. Hempell, H. (2002),"Testing for competition among German banks" Economic ResearchCentre, Deutsche Bundesbank, Discussion Paper 04/02.
48. Isik, I., & Hassan, M. K. (2003),"Efficiency, ownership and market structure, corporate, control and governance in the Turkish banking industry"*Journal of Business Finance & Accounting*, 30(9-10), 1363-1421.

49. Klaus Schaeck, K &Čihák, M (2008), "How does competition affect efficiency and Soundness in Banking?" New Empirical Evidence.
50. Koetter, M., Kolari, J. W., &Spierdijk, L. (2008), "Efficient competition? Testing the 'Quiet Life' of U.S. banks with Adjusted Lerner indices" A Paper presented at the 44th Bank market structure conference, Federal Reserve Bank of Chicago.
51. Kumbhakar, S. C., & Lozano-Vivas, A. (2004): "Does deregulation make markets more competitive? Evidence of mark-ups in Spanish savings banks"*Applied Financial Economics*, 14(7), 231-258
52. Javorcik, B. S. (2004),"Does foreign direct investment increase the productivity ofdomestic firms? In search of spillovers through backward linkages"*American Economic Review*, 94, 605-627.
53. Leightner, J. E., and Lovell, C. A. K. (1998),"The impact of financial liberalization on the Performance of Thai banks" *Journal of Economics and Business*, 50(2), 115-131.
54. Lerner, A. P. (1934),"The concept of monopoly and the measurement of monopoly power" *Review of Economic Studies* 1, 157–175.
55. Loukoianova, E. (2008),"Analysis of the efficiency and profitability of the Japanese Banking System"IMF Working Paper No. 08/63.
56. Lucotte, Y. (2015),"Is There a Competition-Stability Trade-Off in European Banking?"A Paper Presented at the Conference on Systemic Risk Analytics 23-25 September 2015
57. Matthews, K., Murinde, V., & Zhao, T. (2007),"Competitive conditions among the major British Banks"*Journal of Banking & Finance*, 31(7), 2025-2042.
58. Maudos, J., &Nagore, A. (2005), "Explaining market power differences in banking: A cross-country study"WP-EC, 2005-2010.
59. Maudos, J., Pastor, J. M., & Pérez, F. (2012),"Competition and Efficiency in the Spanish Banking Sector:The Importance of Specialization"*Applied Financial Economics*, 2002, 12, 505-516.
60. Maudos, J. and Perez, F. (2003),"Competencia vs. poder de mercado en la bancaespanola"Moneda y Credito 217: 139–166.
61. Maudos, J., Pastor, J. M., Pérez, F., & Quesada, J. (2012),"Cost and profit efficiency in European banks"*Journal of International Financial Markets, Institutions and Money*, 12 (1)
62. Maudos, J., &Solís, L. (2011),"Deregulation, liberalization and consolidation of the Mexican banking system: Effects on competition"*Journal of International Money and Finance* 30, 337–353.
63. McKinnon, R. I. (1973),"Money and Capital in Economic Development"The Brookings Institution, Washington, DC.
64. Mester, L. J. (1993),"Efficiency in the savings and loan industry"*Journal of Banking &Finance*, 17(2-3), 267-286.
65. Mester, L. J. (1996),"A study of bank efficiency taking into account risk-preferences"*Journal of Banking & Finance*, 20(6), 1025-1045.
66. Mukherjee, K., Ray, S. C., and Miller, S. M. (2001),"Productivity growth in large US commercial banks: The initial post-deregulation experience"*Journal of Bankingand Finance* 25, 913-939
67. Nabiyev, J., Musayev, K &Yusifzada, N. (2016),"Banking Competition and Financial Stability: Evidence from CIS"MPRA Paper No. 72167, Downloaded from Online at https://mpra.ub.uni-muenchen.de/72167/
68. Nathan, A., &Neave, E. H. (1989)," Competition and contestability in Canada's financial industry".
69. NDIC, (2007): NDIC Quarterly Report, Sept-Dec., 2007
70. Obembe, O.B., Olaniyi C.O. &Soetan, R.O. (2016), "Managerial Ownership and Performance of listed non-financial firms in Nigeri", International *Journal of Business and Emerging Markets*, Vol. 8(4), Inderscience Publications.
71. Omankhanlen, A.E (2013),"Nigerian Banks 'Efficiency Performance: A Post 2004 Banking Reforms Evaluation" a Ph.D. Thesis submitted to the Department of Finance, Covenant University, Nigeria.
72. Panzar, J. C., &Rosse, J. N. (1987),"Testing for monopoly equilibrium"*The Journal of Industrial Economics*, 35, 443-456.
73. Pasiouras, F. (2008),"Estimating the technical and scale efficiency of Greek commercial banks: the impact of credit risk, off- balance sheet activities, and international operations"Research in International Business Finance, 22(3), 301–318.
74. Popoola, N. (2016),"Insurance Firms to Fire 260 non-executive Directors" Downloaded from Punch Newspaper website on 22nd July, 2016.
75. Rangan, N., Grabowski, R., Aly, H. Y., &Pasurka, C. (1988),"The technical efficiency ofUS banks. *Economics Letters*, 28, 169–175.
76. Resti, A. (1997),"Evaluating the cost-efficiency of the Italian banking system: What can belearned from the joint application of parametric and non-parametric techniques"*Journal of Banking & Finance*, 21(2), 221-250.
77. Roodman, D. (2006),"How to do xtabond2: An introduction to difference and system GMM in Stata"Center for Global Development Working Paper No. 103.

78. Sathye, M. (2001),"X-efficiency in Australian banking: An empirical investigation"*Journal of Banking & Finance*, 25(3), 613-630.
79. Sathye, M. (2003), "Efficiency of banks in a developing economy: The case of India"*European Journal of Operational Research*, 148(3), 662-671.
80. Schaeck, K., &Cihák, M. (2008),"How does competition affect efficiency and Soundness in Banking? New Empirical Evidence"ECB Working Papers Series, No. 932
81. Sherman, D., & Gold, F. (1985),"Branch operating efficiency: Evaluation with data envelopment analysis"Journal of Banking & Finance, 9(1) 297-315.
82. Simpasa, A. (2010),"Characterizing market power and its determinants in the Zambian banking Industr". MPRA Paper, No. 27232.
83. Sufian, F., &Habibullah, M. S. (2009),"Asian financial crisis and the evolution of Korean banks efficiency: A DEA approach"*Global Economic Review*, 38(4), 335-369.
84. Sun, Y. (2011),"Recent developments in European bank competition"IMF Working PaperNo. 11/146.
85. Sun, L., & Chang, T. (2011),"A comprehensive analysis of the effects of risk measures on Bank efficiency: Evidence from emerging Asian countries" *Journal of Banking & Finance*, 35(7), 1727-1735.
86. Turk-Ariss, R. (2009),"Competitive behavior in Middle East and North Africa banking Systems"*Quarterly Review of Economics and Finance* 49, 693–710.
87. Vesala, J. (1995),"Retail banking in European financial integration"*Journal of Banking & Finance*, 20(8), 1436-1437.
88. Weill, L. (2004),"Measuring cost efficiency in European banking: A comparison of frontier Techniques". *Journal of Productivity Analysis*, 21, 133-152.
89. Yildirim, H. S., & Philippatos, G. C. (2007),"Efficiency of banks: Recent evidence fromthe transition economies of Europe, 1993–2000"*The European Journal of Finance*,13(2), 123-143.
90. Yue, P. (1992),"Data envelopment analysis and commercial bank performance: A primerwith applications to Missouri banks"Federal Reserve Bank of St. Louis Review, 74,31–45.
91. Yuan, Y. (2006),"The state of competition of the Chinese banking industry"*Journal of Asian Economics* 17, 519–534.
92. Zaim, O. (1995),"The effect of financial Liberalization on the efficiency of Turkish commercial banks" *Applied Financial Economics*, 5, 257-264.