PERFORMANCE AND PRODUCTIVITY CHANGES OF MICROFINANCE BANKS IN SOUTH-WEST, NIGERIA.

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ABSTRACT

The Nigerian Microfinance sub-sector is yet to attain the desired level of global best practice. This paper thus investigates the performance and productivity changes of MFBs in South-West Nigeria, from 2006 to 2010, having had the Microfinance Policy launched in 2005. The study revealed that only 16.28% of the sampled MFBs met the recommended maximum PAR value of 5% in 2006 and that was the highest throughout the sample period. It was also revealed that 31.14% of the sampled MFBs reported a debt/equity ratio of above the recommended value of 2 in 2006, while 32.56% had gearing of over 2 in 2010. The MFBs experienced fluctuating performances in their productivity changes, with pure technical efficiency improvements in 2007 and 2009. However, the MFBs suffered technological decline throughout the study period. Overall, the MFBs experienced Total Factor Productivity improvement in 2007, while there were productivity deteriorations in 2008, 2009 and 2010.

Keywords: Microfinance banks, performance, productivity changes.

INTRODUCTION

The extent to which microfinance, entrepreneurship and sustainability are interrelated is dependent on the extent to which microfinance addresses the economic development process. Yunus (1994) posited that "if we are looking for one single action which will enable the poor to overcome their poverty, I would go for credit. Money is power". Credit invested in an income generating enterprise as working capital or for productive assets leads to the establishment of a new enterprise or growth of an existing one. The extent to which microfinance, entrepreneurship and sustainability are dependent is becoming increasingly recognized by experts in their respective fields of works. Microfinance though not a sufficient condition for economic development remains a necessary pre-requisite for meaningful growth and development.

Microfinance institutions (MFIs) in sub-Saharan Africa include a broad range of diverse and geographically dispersed institutions that offer financial services to low-income clients: non-governmental organizations (NGOs), non-bank financial institutions, cooperatives, rural banks, savings and postal financial institutions, microfinance banks (MFBs) and an increasing number of deposit money banks (DMBs). MFIs provide a range of financial services (loans, savings, micro-insurance, micro-leasing, funds transfer, pension services etc) to poor households. Their worldwide growth in numbers has had a positive impact by providing the poor with microfinance services and has helped create an encouraging socio-economic environment for many

households of these developing countries. The nature of these institutions is quite different from traditional financial institutions (Deposit Money Banks) as they are smaller in size, limited in their services towards the poor households and often provide small collateral-free group loans.

The basic operational objectives of MFIs revolve around two approaches or paradigms namely the "institutionist" and the "welfarist paradigms". The "institutionist paradigm", which affirms that MFIs should generate enough revenue to meet their operating and financing costs and the "welfarist paradigm", which includes a focus on poverty alleviation and depth of outreach along with achieving financial sustainability. Brau and Woller (2004) posited that an efficient MFI management should promote these two objectives. Vetrivel and Kumarmangalam (2010) submitted that the fundamental problem is not so much of unaffordable terms of loans as the lack of access to credit itself. The lack of access to credit for the poor is attributable to practical difficulties arising from the discrepancy between the mode of operation followed by financial institutions and the economic characteristics and financing needs of low-income households. They concluded that Microfinance Institutions (MFIs) worldwide have shown that micro enterprises loans can be profitable for borrowers and lenders alike, making microfinance one of the most effective poverty reducing strategies.

Lafourcade *et al* (2005) reported that MFIs in Africa are dynamic and growing. In their study, they confirmed that African MFIs are among the most productive globally, as measured by the number of borrowers and savers by staff member among other positive indices. They also noted that African MFIs face many challenges. Technological innovations, product refinements, and ongoing efforts to strengthen the capacity of African MFIs are needed to reduce costs, increase outreach, and boost overall profitability. These further underscore the need to increase the service delivery capacity of these MFIs amidst the enormous potential in the market.

In recognition of the important roles of Microfinance in the overall development of the Nigerian economy, the Federal Government of Nigeria launched a Microfinance Policy for Nigeria in the year 2005. The Microfinance Policy, Regulatory and Supervisory Framework for Nigeria was one of the key innovations adopted to diversify the supply axis of the financial market with a major policy thrust of significantly enhancing the latent capacity of the poor for entrepreneurship through the provision of microfinance services to enable them engage in economic activities and be more self-reliant, increase employment opportunities, enhance household income and create wealth (CBN, 2005).

MFBs are expected to empower the economic active poor in the grassroots especially those that do not have access to the conventional banks. The major economic activity of these targeted clients is agriculture or agro-allied as they are mostly involved in various nodes of the agricultural value chain. Hence, a meaningful effort to improve their economic prowess could help jump-start the agricultural revolution.

This paper will seek to determine the performance and productivity changes of Microfinance Banks in South-West Nigeria over the period of 2006 to 2010.

RESEARCH METHODOLOGY:

Performance measurement is defined as the process of developing indicators to assess progress towards certain predefined goals and reviewing performance against these measures. It is also the use of statistical evidence to determine progress toward specifically defined organizational objectives. Natural measures of performance often involves productivity ratios of output(s) to input(s) with larger values of this ratio associated with better performance. Performance measurement is often done in comparison to either the previous performances or to the performance of similar units or certain benchmarks in the industry. Performance measurement using ratio analysis is the most widely used technique in financial analysis. An accounting ratio is a proportion or fraction or percentage, expressing a relationship between one item in a set of financial statements and another item in the same financial statements**.** Ratio analysis is the most important device for interpreting the performance of organizations from their financial statements.

The essence of any interpretation of financial statements is comparison (comparison of current with past figures of the same firm and with its budget or forecast, and comparison with the performance of similar firms in the industry). In order to facilitate this comparison, it is customary to express figures in ratios or percentages, so that a disparity in size between two firms does not prevent comparison of their results.

Production is the transformation of inputs into outputs or it could be defined as any activity that creates present or future utility. It may also be equivalently described as a process that transforms inputs into outputs (Frank, 2008). Using data envelopment analysis (DEA), there are three alternatives for measuring the productivity changes. These alternatives include: Fisher Index, Tornqvist Index and The Malmquist Index. Lovell (1996) remarked that given a set of panel data, one may use DEA-like linear programs and a Malmquist Total Factor Productivity (TFP) index to measure productivity change. The Malmquist approach does not require the assumption of efficient production, but instead identifies the 'best-practice' firms in every period, which gives an efficient production frontier, and measures each Decision Making Unit's (DMU's) output relative to the frontier.

According to Grifell-Tatjé and Lovell (1996), the Malmquist index has some advantages relative to other productivity indices. For example, it does not require input prices or output prices, which makes it particularly useful in situations where prices are misrepresented or non-existent.

The Malmquist index does not require the profit maximization or cost minimization assumption and hence makes it useful in situations where the objectives of producers differ, are unknown or not achieved. Färe *et al* (1994) showed that the Malmquist productivity index can be decomposed into two components – technical efficiency change and technical change. The value of this decomposition is that it provides insight into the sources of productivity change. The main disadvantage of the Malmquist index is the necessity to compute distance functions. There are many different methods that could be used to measure the distance function, which makes up the Malmquist productivity index. One of the more popular methods has been the DEA-like linear programming method suggested by Färe *et al* (1994).

The Malmquist productivity index can be used to identify productivity differences between two firms or one firm over two-time periods by calculating the ratio of the distances of each data point relative to a common technology. Given period *t+1* technology as the reference technology, the Malmquist (output-orientated) TFP change index between period *t* (base period) and period *t+1* can be written as:

$$M\,(x_{t+1}, y_{t+1}, x_t, y_t) = \{D_t\,(x_{t+1}, y_{t+1})\; D_{t+1}\,(x_{t+1}, y_{t+1}) / D_t\,(x_t, y_t)\; D_{t+1}\,(x_t, y_t)\}^{1/2} \qquad (1)$$

where the notation D represents the distance function, *x* and *y* are inputs and outputs respectively, and the value of *M* is the Malmquist productivity index. A value of *M* greater than one (*i.e. M* >1) denotes productivity growth, while a value less than one (*M*<1) indicates productivity decline, and *M*=1 indicates no productivity change. This represents the productivity of the production point (x_{t+1}, y_{t+1}) relative to the production point (x_t, y_t).

Calculation of the Malmquist index for adjacent periods includes four different distance functions – $Dt(yt, xt)$, $Dt(yt+1, xt+1)$, $Dt+1(yt, xt)$ and $Dt+1(yt+1, xt+1)$.

The function in equation (1) can further be broken down into its components:

Efficiency Change = $D_{t+1}\,(x_{t+1}, y_{t+1}) / D_t\,(x_{t+1}, y_{t+1})$ (2), and

Technical Change = $[(D_t\,(x_{t+1}, y_{t+1}) / D_{t+1}\,(x_{t+1}, y_{t+1})\; (D_t\,(x_t, y_t) / D_{t+1}\,(x_t, y_t)]^{1/2}$ (3)

The efficiency change in equation (2) represents the change of technical efficiency (EFFCH) between time *t* and *t+1*, which is the change in the relative distance of the observed production from the maximum potential production. The technical change (TECHCH) is the geometric mean of the two productivity indexes, representing shift in production technologies between time *t* and *t+1*.

In addition, the technical efficiency change can be further broken down into:

Pure Technical Efficiency = $D_{t+1}\,(x_{t+1}, y_{t+1}) / D_t\,(x_t, y_t)$ (4)

Scale Efficiency Change =

$$\left[\frac{D_{t+1(v)}(x_{t+1},y_{t+1})/D_{t+1(c)}(x_{t+1},y_{t+1})}{D_{t(v)}(x_{t+1},y_{t+1})/D_{t(c)}(x_{t+1},y_{t+1})} * \frac{D_{t+1(v)}(x_t,y_t)/D_{t+1(c)}(x_t,y_t)}{D_{t(v)}(x_t,y_t)/D_{t(c)}(x_t,y_t)}\right] \quad (5)$$

The scale efficiency change component in equation (5) is actually the geometric mean of two scale efficiencies. The first is relative to the period *t+1* technology and the second is relative to period *t* technology. The extra subscripts of *v* and *c*, relate to the VRS and CRS technologies, respectively.

Study data and Sources

This study took a census of all the 86 Microfinance Banks in Ogun, Oyo and Ondo States and observed their operation activities from 2006 to 2010. MFBs for this study were limited to Unit MFBs (MFBs with minimum capital requirement of ₦20 million) to create a fair platform to assess the operations of firms on a similar operational level.

Performance measurement using accounting ratios:

The performance indicators of the MFBs were measured around key operational indices like portfolio quality, financial management, efficiency and productivity and also profitability and sustainability. There are many ratios used in banking and microfinance but this study will adopt ratios based on the toolkit referred to as "SEEP ratios". SEEP (Small Enterprise Education and Promotion Network) has published a framework that advocates industry standard ratios for the monitoring of microfinance institutions in credit operations. The framework builds on a consensus of practitioners, donors (including CGAP {Consultative Group to Assist the Poor}), evaluators and others in the microfinance industry (including The MIX {Microfinance Information Exchange.

Malmquist Productivity Index (MPI):

There are many different methods that could be used to measure the distance function, which makes up the Malmquist productivity index. In the empirical part of this study, following similar input and output choices by Martinez-Gonzalez (2008) in the estimation of the efficiency scores of MFIs, DEAP computer program was used to construct Malmquist indices using DEA-like methods (Coelli, Rao and Battase, 2005). The Malmquist (output-orientated) TFP change index between period *t* (base period) and period *t+1* can be written as:

$$M(x_{t+1},y_{t+1},x_t,y_t) = \{D_t(x_{t+1},y_{t+1})\, D_{t+1}(x_{t+1},y_{t+1}) / D_t(x_t,y_t)\, D_{t+1}(x_t,y_t)\}^{1/2} \quad (6)$$

where, M = Malmquist Productivity Index, and D = Distance function

x and *y* = inputs and outputs respectively across time period *t* to *t+1*.

where x_1 = MFB's operating expenses (₦); x_2 = MFB's salaries and wages (₦);

y_1 = MFB's gross loan portfolio (₦); y_2 = MFB's total savings.

RESULTS AND DISCUSSION:

In general, the sampled MFBs total savings mobilized grew from ₦3.672 billion in 2006 to ₦4.720 billion in 2010, while women savings represented 63.19% and 57.14% of the total savings in 2006 and 2010 respectively. The quantum of loans sought by the MFBs' clients was ₦3.877 billion in 2006, it grew to ₦5.275 billion in 2008 and reached ₦7.298 billion in 2010. Credit gap of between 16.70% and 20.28% was observed over the study period. The MFBs outstanding loans as a percentage of loans disbursed was 20.93% in 2006, 21.76% in 2007, 20.89% in 2008, 20.51% in 2009 and 19.41% in 2010. The total annual loans

disbursed to agricultural related activities grew marginally by 0.93% in 2007, but made significant leaps by recording growth figures of 19.95%, 21.39% and 5.0% in 2008, 2009 and 2010 respectively. The combined total assets of the sampled MFBs grew by 12.78% in 2007, 11.60% in 2008, 7.81% in 2009, and 7.45% in 2010. The combined total liabilities of the sampled MFBs rose by 10.81% in 2007, 11.70% in 2008, 7.65% in 2009 and 7.16% in 2010.

Performance Indicators for MFBs:

The study attempted to compare the ratios of the sampled MFBs with the global average for MFIs reported by the CBN (see figure 1 in appendix). However, it should be noted that the reported global average was aggregated for all countries irrespective of the degree of development of their microfinance sub-sector and hence it might show huge variance with the ratios obtained from the Nigerian Microfinance Sub-sector that is still at the infancy stage.

Portfolio at Risk (PAR):

This is the outstanding principal amount of all loans that have at least one installment past due for one or more days. The amount includes the unpaid principal but excludes the accrued interest. It measures the potential for future losses based on the current performance of the portfolio. However, the average annual PAR of the sampled MFBs was 17.47%, 17.65%, 17.01%, 18.06% and 17.33% for 2006 to 2010 respectively. Only 16.28% of the sampled MFBs met the recommended maximum PAR value of 5% in 2006. The value dropped to 13.95% in 2007, further declined to 8.14% in 2008, slumped to 5.81% in 2009 and increased marginally to 6.98% in 2010. The high PAR value recorded by the MFBs might be due to inadequate loan tracking mechanism, weak loan recovery practices and the lack of institutional support to enforce loan repayment.

Portfolio to Assets:

This ratio measures how much of the asset base of the MFBs that are invested in high performing loan portfolio. The average annual portfolio to asset ratio of the sampled MFBs were 57.40%, 55.21%, 58.14%, 65.96% and 69.03% for 2006, 2007, 2008, 2009 and 2010 respectively. The study also revealed that 33.72% of the sampled MFBs had a portfolio to asset ratio of below 40% in 2006, the percentage of MFBs rose to 37.21% in 2007, slumped to 23.26% in 2008, rose marginally to 25.58% in 2009 and crashed to 22.09% in 2010. The Nigeria Microfinance Sub-sector is still assumed to be at its infancy stage and following the learning curve principle of perfection through repeated trials, more MFBs are expected to have higher portfolio to asset ratio with time.

Debt to Equity Ratio (Leverage):

Leverage reflects the MFBs capital strength at a point in time. It depicts the portion of equity and debt that the MFB uses to finance its assets. Increased debt becomes meaningful only if the resultant increase in earnings outweighs the cost of financing the debt. The study revealed that the annual average debt/equity ratios of the sampled MFBs were 2.65 in 2006, 2.21 in 2007, 2.20 in 2008, 2.15 in 2009 and 2.15 in 2010. The study also showed that only 31.14% of the sampled MFBs reported a debt/equity ratio of above 2 in 2006. The percentage of MFBs declined to 25.58% in 2007, rose to 29.07 in 2008, 30.23% in 2009 and 32.56% in 2010.The increasing trend from 2008 showed a better efficient matching of debts and equity by the MFBs and hence depicted a more efficient financial management system.

Cost per Client:

This ratio measures the quantum of the MFBs operating expenses (excluding the cost of funds or provisions for bad loans) that is required to serve a client. It connotes the expensive nature of the operations of the

MFBs.The study showed that the sampled MFBs incurred an average of ₦4,214.17 per client in 2006, ₦4,350.00 in 2007, ₦4,863.95 in 2008, ₦4,560.07 in 2009 and ₦4,283.84 in 2010. This average cost per client is considered quite high as a significant number of the clients falls within the borrowers' range of ₦5,000.00 to ₦50,000.00. This high cost per client ratio could adversely affect the MFBs efficiency and productivity.

Borrowers per Loan Officer:

It depicts the productivity of loan officers in serving the client caseload. The ratio is not expected to be too high as it might lead to client overload for each loan officer, resulting in poor customer satisfaction, ineffective loan monitoring and high default rate. The study showed an annual borrowers/loan officer ratio of 232 in 2006, and it continually rose to 266 in 2007, 269 in 2008, 289 in 2009 and 313 in 2010.

Return on Assets (ROA):

ROA depicts the management of the MFBs assets to maximize profit. It indicates the profitability of the MFBs before leverage. It measures the amount of profit the MFBs make per naira of its assets. The study revealed an average ROA value of 7.81% in 2006 (i.e the MFBs made an average of 7.81 kobo for each naira worth of asset. The average ROA value was 7.31%, 6.84%, 7.77% and 8.61% for 2007 to 2010 respectively. The high rate of returns on assets could be adduced to the high interest rates charged by the MFBs. Due to the short duration of the credit facilities provided by the MFBs, most MFBs charge between 2% to 5% monthly on their credit facilities.

Return on Equity (ROE):

It measures the rate of return on the shareholders' equity of the MFBs. It shows the MFBs' efficiency at generating profits from every unit of shareholders' fund. The study reported annual average ROE value of 26.09% in 2006, 21.33% in 2007, 19.49% in 2008, 20.52% in 2009 and 23.63% in 2010. The study further revealed that 60.47% of the sampled MFBs had ROE ratio of above 15% in 2006, the valued declined to 56.98% in 2007, 55.81% in 2008 and 2009 and rose to 62.79% in 2010.

Overall, the various ratios depicted an evolving sub-sector with enormous amount of potentials. The revelations from the sampled MFBs might not deviate much from the industry's average and hence the Regulatory authorities must keep a tab on the activities of the MFBs through the formulation of policies that will create conducive environment for their growth.

Malmquist Productivity Index:

As earlier stated, an attractive feature of the Malmquist index is that it decomposes into pure technical efficiency change and technological change. Table 2 (see appendix) summarized the decomposed mean annual MPI or Total Factor Productivity (TFP) over the study period. The MPI is decomposed into technical efficiency change and technological change of period $t+1$ relative to period t. The efficiency change is further divided into pure technical efficiency change and scale efficiency change (changes due to input-output combination efficiencies).

The MFBs experienced fluctuating performances in their productivity changes. Table 2 revealed improvements in the MFBs pure technical efficiency of 1.006 and 1.01 in periods 2 and 4 while they suffered deterioration in their pure technical efficiency with values of 0.91 and 0.834 in periods 3 and 5 respectively. However, there were improvements in their scale efficiency in periods 2, 4 and 5, while they only suffered scale efficiency deterioration in period 3 with a value of 0.967. The MFBs suffered technological decline

throughout the periods with values of 0.96, 0.985, 0.658 and 0.46 in periods 2 to 5 respectively. This trend is quite disturbing as the sharp declines in periods 4 and 5 shows the MFBs are not leveraging on available technology to improve on their efficiency. Overall, the MFBs experienced Total Factor Productivity improvements only in period 2, while there deteriorations in periods 3, 4 and 5.

Figure 1(see appendix) showed trend in mean annual technical and technological changes of the sampled MFBs and corroborated the earlier assertion that the MFBs had better technical efficiency changes than their technological efficiency changes. It further underscores the relevance of technology in the modern business environment and MFBs should be encouraged to leverage on available technology to ease their operations and enhance their accounting and loan tracking proficiencies.

SUMMARY AND CONCLUSION

In assessing the performance and productivity changes of MFBs in South-West Nigeria as an indicator to the happenings in the Nigerian Microfinance sub-sector, the study noticed a steady growth in the oprations of the MFBs but also revealed a lot of opportunities for improvements.

The performance indicators of the MFBs using relevant ratios indicated gross inconsistencies in the MFBs performance as benchmarked against global standards. Though the Nigerian Microfinance Sub-sector is still emerging, huge deviations from global standards indicated the enormous effort required to mainstream MFBs towards best-practices. The study revealed an annual average PAR < 30 days of between 17.01% and 18.06% as compared to global PAR < 30 days value of 4.6%. PAR is crucial to the MFBs' survival as it measures the potential for future losses based on the current performance of the loan portfolio. MFBs should be encouraged to tighten their loan tracking and recovery mechanisms. Regulatory authorities could also assist the MFBs to establish an enforce-able loan recovery system. The annual average portfolio to assets ratio of the MFBs ranged from 55.21% to 69.03%. The MFBs reported an average leverage of 2.32, which though lower than the reported global average of 2.9 but very close to the 2.4 average reported for Africa. The average cost per client ratio of the MFBs was ₦4,454.41, a value perceived as being too high considering the fact that significant number of the clients still borrow between the ₦5,000 to ₦50,000 range. The return on assets (ROA) and return on equity (ROE) of the MFBs were quite impressive as compared with reported global averages but this could be highly connected to the high interest rates currently being charged for the services of the MFBs.

The Malmquist productivity index showed inconsistencies in the technical and technological changes as the MFBs had more pronounced changes in their technical productivity changes than their technological productivity changes. It was revealed that the MFBs had no technological productivity improvements as the MFBs experienced technological productivity decline throughout the study period. MFBs should be encouraged to leverage on available technology and improve their service delivery for better efficiency and profitability. Overall, the MFBs had alternating advancements and deteriorations across all forms of the constituents of their Total Factor Productivity Changes but had the best trend in their scale efficiency changes over the period. MFBs are advised to pay attention to each constituent of their Total Factor Productivity as advancements in some areas and deterioration in other areas will continue to hamper advancements in their overall TFP.

RECOMMENDATION:

The study depicted the Nigerian Microfinance sub-sector as an emerging one with huge potentials to achieve its desired goals and objectives as an engine for sustainable economic growth and development. Based on the findings of this study, the following recommendations were made:

1. The high mean PAR ratio of 17.504% found in the study for the sampled MFBs portends great danger for the sub-sector. The CBN should establish a credit bureau for MFBs. This will aid MFBs effort in loan tracking and handling of default cases towards reducing their high Portfolio at Risk (PAR). Regulatory authorities should also institute an enforce-able loan recovery system to mitigate against cases of deliberate default.
2. The Malmquist Productivity Index showed technological decline among the sampled MFBs over the study period. MFBs should invest in technology by leveraging on available business solution applications and also invest on research and development.

APPENDIX.

Table 1: Average Performance of Sampled MFBs (2006 to 2010) using Ratio Analysis.

YEAR	2006	2007	2008	2009	2010	***MEAN***	***GLOBAL***
PORTFOLIO AT RISK >30	17.47	17.65	17.01	18.06	17.33	***17.504***	***4.6***
PORTFOLIO/ASSET	57.4	55.21	58.14	65.96	69.03	***61.148***	***NA***
DEBT/EQUITY	2.65	2.21	2.2	2.15	2.15	***2.272***	***2.9***
COST PER CLIENT (₦)	4,214.17	4,350.00	4,863.95	4,560.07	4,283.84	***4,454.406***	***NA***
BORROWERS PER LOAN	232	266	269	289	313	***273.8***	***238***
RETURNS TO ASSET (%)	7.81	7.31	6.84	7.77	8.61	***7.668***	***1.5***
RETURNS TO EQUITY (%)	26.09	21.33	19.49	20.52	23.63	***22.212***	***7.1***

Source: Field survey (2013). NA = Not available.

Table 2: Summary of the Malmquist Productivity Index for the (2006 to 2010)

Concept	**2**	**3**	**4**	**5**
Efficiency Change	1.142	0.88	1.445	1.661
Technological Change	0.96	0.985	0.658	0.46
Pure Efficiency Change	1.066	0.91	1.01	0.834
Scale Efficiency Change	1.071	0.967	1.431	1.993
Total Factor Productivity Change	1.097	0.867	0.951	0.764

Source: Field survey (2013)

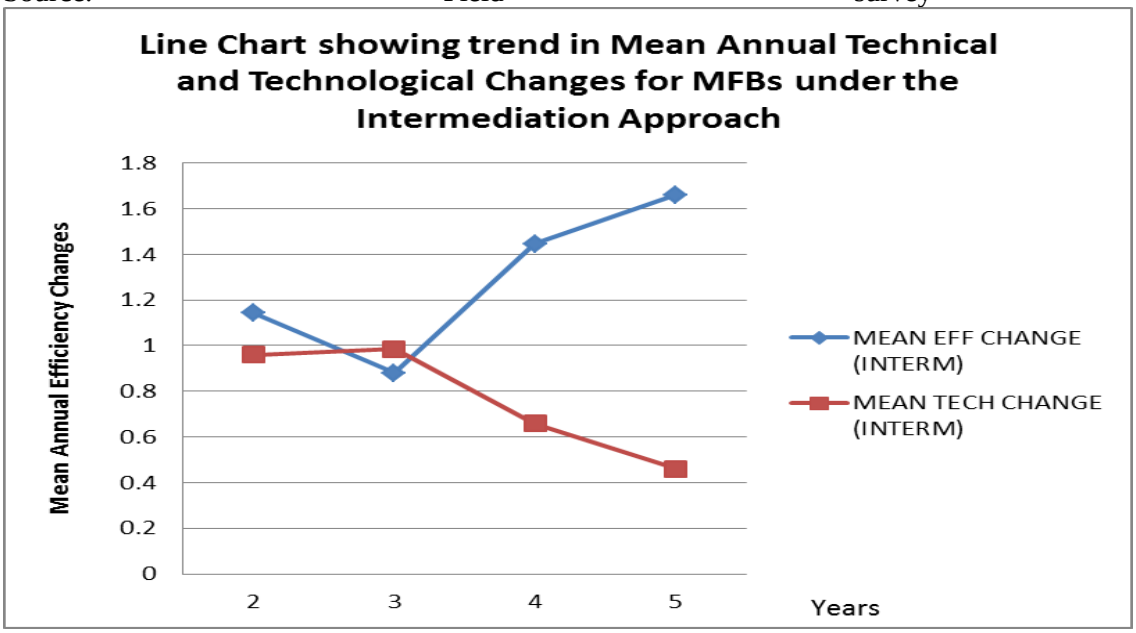

Figure 1: Trend in Mean Annual Technological (TECH) and Technical Changes (EFF) for MFBs (2006 – 2010)

REFERENCES.

Brau, J. C. & Woller, G. M. (2004): Microfinance: a comprehensive review of the existing literature. Journal of Entrepreneurial Finance and Business Ventures, 9, 1-26.

Central Bank of Nigeria (2005): Micro Finance Policy, Regulatory and Supervisory Framework for Nigeria.

Coelli, T.J., Prasada Rao, D.S., O'Donell, C.J., and Battese, G.E. (2005): An Introduction to Efficiency and Productivity Analysis. Second Edition. Springler Science + Business Media, LLC, 233 Spring Street, New York, NY 10013, USA.

Fare, R., S. Grosskopf and C.A.K. Lovell (1994): Production Frontiers, Cambridge University Press.
Frank, H. Robert (2008): Microeconomics and Behaviour, Seventh Edition. McGraw-Hill International Edition.

Grifell-Tatjé, E., Lovell, C. A. K. (1996): Deregulation and Productivity Decline: The Case of Spanish Saving Banks. European Economic Review, 40, 1281–303.

Lafourcade, A., Isern, J., Mwangi, P. & Brown, M.(2005): Overview of the outreach and financial performance of microfinance institutions on Africa. www.mixmarket.org.

Lovell, C. A. K. (1996): Applying Efficiency Measurement Techniques to the Measurement of Productivity Change. *Journal of Productivity Analysis*, 7(2-3), 329-40.

Martinez-Gonzalez, A. (2008): Technical Evidence of Microfinance Institutions: Evidence from Mexico. M.Sc thesis, Ohio State University.

Vetrivel, S.C. and Kumarmangalam, S.C. (2010): Role of Microfinance Institutions in Rural Development. International Journal of Information Technology and Knowledge Management, July-December, 2010, Volume 2, No.2, pp 435-441.

Yunus, Mohammed (1994): Extracts from the keynote address delivered at the 85th Rotary International Convention held in Taipei, Taiwan on June 12, 1994.