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Student Number: 1248775

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The Risk Management Practices of Microfinance Institutions in Nigeria

A Dissertation Submitted in Partial Fulfilment of the Requirements of the Royal Docks
Business School, University of East London for the degree of

MSc. International Accounting and Finance

[May,2014]

[15,267]

I declare that no material contained in the thesis has been used in any other submission for
an academic award

Student Number: 1248775

Date: 11/05/2014



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Dedication

This thesis is dedicated to Almighty God, the king of kings and the lord of all lords, the giver of life, wisdom and understanding.

Also to Mr and Mrs P.I. Alele for being the best parents and my first teacher in the world, I LOVE YOU!!!

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The completion of this thesis would not have been possible without resource support received from eminent persons. I would like to express my appreciation and thanks to God first for his manifold grace and blessings towards me in the completion of my programme.

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As Isaac Newton once said and I quote "If I have seen further, it is by standing on the shoulders of giants."

Abstract

Microfinance has been generally termed worldwide as a key developmental tool in reaching poor people, targeting and delivering quality evidence based program to alleviate the challenges of poverty and economy defects of the lowly in the society.

Risk is an all-encompassing phenomenon in the world of finance and it is situated at the core of any economic activities. The global financial Tsunami of 2007/2008 became a topical issue in the world of finance and an eye-opener amongst scholars and professionals in the financial world as the need for a more regulated and supervised financial system became more obvious.

The increasing need for implementation of an effective risk management strategy or policy necessary for booms and expansion in the economy has been an important goal of individuals, firms, and government of developing nations, especially a country like Nigeria with an official population figure of 170m.

The study employed Panel Data Analysis to investigate the impacts of an effective risk management tool using Return on Assets (ROA), Portfolio at Risk (PAR at 30days), and Gross Loan Portfolio as explanatory variables and then used the Capital Adequacy ratio as dependent variables while controlling for Inflation rate and Economic growth rate.

(Microfinance Banks, Risk Management, Capital Adequacy Ratio, Panel Data Analysis, Nigeria)

Chapter 1- Introduction

Introduction

Microfinance has been generally termed worldwide as a key developmental tool in reaching poor people, targeting and delivering quality evidence based program to alleviate the challenges of poverty and economy defects of the lowly in the society. (DFID, 2011; Petticrew & Roberts, 2006)

The availability of this depth is seen as an avenue to alleviating poverty and a core developmental strategy. These financial services range from credit, savings, insurance, funds transfer, and even entrepreneurial loans all at the micro level. This has increased the general economic welfare and health of the poor people. (Consultative Group to Assist the Poor, 2003)

In other words, microfinance has been seen to improve the status of poor people with a definite financial results or outcomes and non-financial results in terms of purchase of assets, savings, health, housing, employment, and economic empowerment. (Afrane, 2002; Beck, Demirguc-kunt, & Levine, 2004; Hietalahti & Linden, 2006; Hossain & Knight, 2008; Odell, 2010)

Also, Bateman (2010, 2011), Dichter (2007), Fernando (2006) and Roy (2010) has not only increased the questions of Microfinance being seen as a poverty reduction program with developmental outcomes but also there have been questions raised on its around its main ideologies

Therefore, Microfinance in developing countries is generally perceived as an avenue to ease the incidence of poverty and over the last three decades, it has provided the necessary platform for access to finance among the poor and the lowly in the society which increases their economic output as individuals and viability as a business. (Armenda ´ riz de Aghion & Morduch, 2005; Morduch, 1999).

In 2011, the Microcredit Summit Campaign reported that 3,703 MFIs were providing financial services to about 200million customers with 60% of them very poor.

There are several key risk elements facing the microfinance industry quest to transforming people's lives, which include but not limited to over-indebtedness, excessive lending, management quality, and lack of corporate governance framework as major problems in the industry. (CSFI, 2012)

The above view coupled with its inability to manage and supervise risks was also corroborated by the works of McKee (2012)

Armendariz and Morduch, 2010) submitted that Microfinance is an industry with thousands of firms and businesses or organisations serving about 155million clients. It was birthed as an economic tool to reach the unbanked and those who can't find access to financial services.

The growth of microfinance is curtailed with the increasing pressure and strong contest between traditional banking and microfinance (Evans, 2010; Hermes et al., 2011, Hoque et al., 2011; Khavul, 2010).

In light of the above, the goal of any microfinance scheme is to aid the process of reducing if not quashing the fiery darts of poverty with aids and charitable donations but this has always received little or no significant reward. (Armendariz & Morduch, 2010; Dichter, 1999)

Ledgerwood (1999) position was further buttressed by Patil (2011) saying that Microfinance has evolved to be an economic phenomenon with ability to make provision for better financial services and cheaper access to credit through the credit unions.

Microfinance Industry in the new dynamic world must endeavour to provide a whole gamut of products to the unbanked and those ignored by traditional

banks, thus, encouraging economic growth and entrepreneurial drive in the world poorest regions.

The envisaged growth will need some macro-wide changes in the structure of the microfinance area of finance and erase doubts to its role as a scheme for reducing poverty in the face of commercial banking struggles. (Chowdhury, 2009; Armendaiz & Morduch, 2010; Epstein & Yuthas, 2010; Roodman, 2012)

Although microfinance has gained momentum and speed because of its widespread acceptability, the recent past it has grown dramatically from being an offshoot of the banking industry into a more structured industry of its own with better governance practices and interesting financial performance.

Additionally, this growth has been spurred by the use of both quantitative and qualitative risk management tools. The distinctive nature of its specialist core gives microfinance its own goals and objectives and the research done in this area has given it's a platform of being successful and reaching a wide audience particularly determined by other things. (Al-Azzam, Mimouni & Ali, 2012; Al-Mamun, Adaikalam & Wahab, 2012) as well as operational subtleties. (Ayayi, 2012; Bhattamishra & Barrett, 2010; Hartaska & Nadolnyak, 2007)

Risk is an all-encompassing phenomenon in the world of finance and is at the core of any economic activities. The global financial Tsunami of 2007/2008 became a topical issue in the world of finance and an eye-opener amongst scholars and professionals in the financial world as the need for a more regulated and supervised financial system became more obvious. (F. Sajjad, U. Noreen & K.Zaman (2013)

The major impact of this global phenomenon has seen the financial health and stability of countries severely hit and the near-collapse of major world economies. Inadvertently, this has revealed the inadequacies and the flawed nature of the risks models used by these financial institutions and

importance of liquidity and safety of financial instruments or assets of clients. (Sutton, C.N. and B. Jenkins, 2007, Dalis, D.T., 2010)

The volatilities in the financial services sector is outside the purview of these mathematical models, it is more centred on effective regulatory systems with good corporate governance on the subject of behavioural finance. These financial institutions especially MFIs have come to the realization that managing risks is not about their peculiar differences but they must evolve to become dynamic and competitive in their daily operation. (Sutton, C.N. and B. Jenkins, 2007, Dalis, D.T., 2010)

Hull (2007) posited that the most important basic formation for every firm is that the banker must know the weight of risks with the nature of the risk she wants to fund going forward.

Risk is at the heart of financial intermediation between surplus areas and deficit areas. Firm specific risks management is still an evolving part of the microfinance industry. The growth and depth of Microfinance institutions has seen the underserved and unreached been able to have access to basic financial services which has indirectly increased the risk profiles of these firms. (Nimal A. Fernando, 2008)

Nevertheless, a higher percentage of these microfinance institutions still ignore the basic credit risk, operational risk, liquidity risk and other types of risks in favour of high growth rates in the industry.

The array of microfinance initiatives embarked upon all around the world are situated on the premise of trying to alleviate poverty (Khandker, 1998; 2005) as about 3billion poor people in developing countries are faced daily with the herculean task of living on less than \$2 daily.

Microfinance institutions are varied in depth and this diversity is attached to a larger number of them set up as charitable (Not for profit) organisations, non - governmental, and an increasing larger number as private-public partnerships.(Battilana& Dorado, 2010).

(Imai *et al.*,2012; Pitt and Khandker, 1998) see Microfinance institutions as a sure platform for easing then scourge of poverty.

Microfinance aims to serve as a platform of accessing financial services or systems by the poor of the society through carefully crafted economic programs for entrepreneurial success. These are given to individuals who have no access to a formal commercial banking institution.

However, the survivability of MFIs has been hindered by the lack of effective risk management skills or practices (Rwanda: Microfinance Sector, 2006; Alexander-Tedeschi, 2006, Jorion (2007).

Gupta, Chaula, & Harkawat (2012) submitted in their report that there is a high population of individuals who are in such developing countries that have gotten unfettered access to the main financial services through microfinance programs.

Nevertheless, there is still a large pool of communities who still don't have access to these products because of the demand cum supply complexities. Thus, in providing these financial services to the un-banked in developing countries, microfinance institutions need to embark on strict and regulated credit risk management and policies.

Ajayi (2012) posited that credit risk can be mitigated by deploying good qualitative and quantitative risk management tools.

The birth of an effective risk management policy or systems by microfinance institutions is more of a symbiotic relationship wherein microfinance institutions provide the funds and access to funding of different projects and the borrowers take up the funds for expansion and growth purposes.

In effect, there are various studies which indicated that the existence of a microfinance Institution with effective risk management practices can serve as a basis for growth and development in a country.

In retrospect, a fully developed financial market can only exist when it promotes economic and financial stability necessary for growth; this further

increases the propensity for foreign direct investment and ultimately provides the necessary links to a developed economy.

Background of the study

The Microfinance Industry is an interesting and challenging industry to study. The recent increase in interest generated by microfinance institutions has made the Industry as a whole be seen as an indicator for economic growth only if the risks inherent in this industry are managed effectively.

The underlying interest in Microfinance institutions is gleaned from the dynamic nature of the business environment and the reaction of these microfinance Institutions going forward. Efficient risk management practices are still at the front burner of most institutes and policy research units in trying to understand the 2007/2008 financial crisis.

Statement of the Problem

The research will look into the following problems in the microfinance Industry and attempts to proffer solutions to the raging problems impeding the growth and development of the country.

A large number of MFB's in Nigeria were poor in understanding the importance of microfinance and its potentials to delivering financial services to its target groups. Many of these MFB's were badly affected by the global financial crisis as their credit lines fizzled out, thereby raising their credit risk, high rate of default on their loans because of the pressures and shocks in the business environment.(CBN,2010)

All these pressures weakened the microfinance industry in Nigeria and rendered its powerless in contributing to the economic development of the rural areas.

The directive by the Central Bank to conduct target examination of these MFB's in 2010 revealed the existence of 224 out of the 820 MFB's were terminally distressed and technically insolvent and were not in business operation for at least six months. (CBN Press Conference on the state of Microfinance banks, 2010)

K.C. Moghalu, (2010), highlighted the following problems as the major causes of the problems in the MFBs:

- High occurrence of risky weighting in the profile of banks.
- The need for capital the operational framework of these MFB's
- High occurrence of non-performing insider related credits and insider abuse
- Lack of a strong management and weak governance.
- High operating losses due to high overheads.
- Weak management decisions as revealed by the poor asset quality, poor credit administration and little or no financial controls.

Research Objectives

The rationale or purpose of this research is aimed at the impact of risk management practices of MFIs in Nigeria with specific reference to the economic growth it can bring to the country.

It will also look at the financing gaps in the SME in Nigeria and the role they can play in developing a robust financial services sector.

More importantly, the research will evaluate the impact of the Microfinance policy and Guidelines established in 2005 with a revised paper in 2011 on the unbanked population in Nigeria. (CBN, Microfinance Policy 2011).

The study seeks;

- To critically evaluate the effects of risk exposure on capital position of MFBs in Nigeria.
- To determine the extent of economic indices on the portfolio quality of microfinance institutions.
- To determine the extent to which microfinance institutions are immune or shielded away from systemic risks
- To examine the impact of liquidity ratio on the risk capacity of microfinance institutions

Research Questions

The specific questions this research will attempt to answer in the world of microfinance Institutions in Nigeria include but not limited to;

- What are the implications of microfinance institutions exposure to credit risk management in Nigeria?
- What impacts does return on assets of microfinance institutions have on the overall economic growth of Nigeria?
- How can microfinance institutions use efficient risk management systems to retain capital and liquidity in the banking industry in Nigeria?

Research Methodology

The research will employ the use of descriptive approach in general and hypothesis formation, this gives a comparison between risk management in Nigeria and other countries.

The criteria of effective risk profiling in financial institutions is to prevent and withstand shocks and pressures of insolvency. Looking into this, the studies by Saunders and Cornett (2006) gives an interesting dimension on insolvency as it is premised on the twin effects of recurring liquidity problems and dire capital erosion.

Significance of the study

The significance tend to start from the unavailability or the little research work done in the field of microfinance institutions in Nigeria. Especially, risk management, which is a central theme in finance.

A key tool is also the need for appropriate policy guidelines on risk management which is critical to the success of the microfinance industry. This will help in expanding the operational strategy of meeting the financial needs of the low-income earners, entrepreneurs in the SMEs and the poor people in the country.

Therefore, there is the need for individuals, firms and the government at all levels to increase the total output by raising the standard of living and the

general economic well-being through sustained and concerted efforts. This will break the cycle of poverty; reduce economic lags, and eventually move towards attainment of full macroeconomic employment of resources.

The attainment of this full employment of resources or full output requires large capital injection to individuals with a need in small bits and this is the essence of microfinance.

Possible contribution to Knowledge

The Research study will help to reveal the various issues centred on risk management and much more importantly help in the provision of a research study into the risk practices in the financial services sector with more focus on the microfinance industry.

The study will look specific ways by which the industry can growth and strategies that can be undertaken by firms to reach the unbanked population in Nigeria.

It will also stimulate further research into ways by which the microfinance sub sector can also increase the depth and outreach. This will also help the corporate governance structure and internal control of MFIs in Nigeria.

The study will also help to increase the viability of microfinance lending to businesses and reduce the fears of individuals who still hold the view that MFIs are rural community banks and can't be involved in high structured financing transactions.

Structure of the study

Chapter one will serve as an introductory exposure into the field of microfinance institutions and the impact risk management have on microfinance institutions. It will include statement of the study, objectives of the study, significance of the study, limitations, and possible contribution to the study.

Chapter two will include critical literature review of existing theories on risk management within the microfinance institutions and the opinion of various empirical studies.

Chapter three will give an exposure on the research methodology to be used in the study and the approach to using research philosophy. It will look at the use of quantitative tools of research to explain the relationship between the variables and the connection to theory.

Chapter four will give a broad outline to the data collected in the previous chapter, explaining the links between the research questions and hypothesis testing.

Chapter five is a section that will answer questions within the research itself and provide answer to existing controversies around microfinance institutions and their risk management practices.

Chapter six will provide recommendations policy makers, management practice in microfinance institutions for the academic community and interests for proffering solutions to the knowledge gaps that may exist within this area.

Chapter 2 Literature Review

The objective of this critical literature review in this research will be on the various works and writings of various authors and writers on the risk management practices of financial institutions with particular emphasis on microfinance banks. It is in line with this, that we look at the specific context in themes and sub-themes. For this study, we will be looking at the current body of knowledge and identifying the gaps within the risk management of MFI's. The goal of this chapter is to link the hypotheses and literature together.

General Overview of the Microfinance Industry

Microfinance has seen today has become a force to be reckoned with in its clime, with a sizable amount of organisations and firms serving around 155million clients globally. (Armendariz & Morduch, 2010).

Microfinance was initially birthed as a poverty alleviation platform with its goals of providing financial services to the unbanked. (Dichter, 1999; Yunus, 2007)

In line with the spurt of growth potentials, came the need to battle the rising interest in the area of commercial banking. (Evans, 2010; Hermes et al., 2011; Hoque et al., 2011; Khavul, 2010).

Armendariz & Morduch (2010; Dichter, 1999) in their studies described the sole objective of traditional approaches to poverty reduction were tagged as failures, especially as it relates to Africa.

With this growth in microfinance came large pockets of shifts in the organisation of the microfinance industry with varying differences in its position as a poverty reduction scheme. This was spurred on with the spiralling interest in traditional banking (Chowdhury, 2009; Armendaiz & Morduch, 2010; Epstein & Yuthas, 2010; Roodman, 2012).

Evans, 2010; Khavul, 2010; Hoque, Chishty & Halloway, 2011; Hermes, Lensink & Meesters, 2011 in their studies evaluated the puzzling issues

surrounding how modern microfinance has been overtaken by commercial banking institutions that ignored the unbanked in the rural areas.

Armendariz and Morduch, (2010) posited that the objective of microfinance was to create avenues where the poor can conveniently have access to credit services which was very difficult to obtain from commercial banks and they had to employ agencies to recover it.

Additionally, Armendariz and Morduch, (2010) were also of the opinion that the group lending model of the early years of microfinance was also effective in reaching the poor in the society, which also reduced the transaction costs.

The various developments in microfinance industry brought about the need for infrastructural development in the industry with different organisations running research into Microfinance institutions and rating agencies like Mix Market serving and receiving voluntary information from Microfinance institutions. (Epstein and Yuthas, 2010)

Evolution of Microfinance

Microfinance was initially birthed as a poverty alleviation platform with its goals of providing financial services to the unbanked. (Dichter, 1999; Yunus, 2007)

The first movement in the field of MFI's was based on microcredit in 1970; most of the programs were aimed at providing US\$100 to highly disadvantaged with no collateral or avenues to formal credit.

Microcredit Institutions were generally NGO's which were non-profit organisations and welfare oriented. This saw the establishment of ACCION in Brazil and the development of microcredit in Bangladesh by Prof. Yunus in the 70's saw the Grameen Movement growing in numbers.

The successes that were recorded in Bangladesh from a humble start of US\$27 loan created a platform for the eventual spread and growth of microfinance throughout the world and led the UN to declare 2005 as the year of International Year of Microcredit. (Yunus, 2007)

The effects of the recent developments of economic recession and financial turmoil in the financial world have inflicted far reaching impacts on developing countries' economies.

The rate at which people lose confidence in the financial systems continue to rise, as well as the growing interest in microfinance being the developmental tool to solve the problems of poverty.

Even though there are conflicting reports on how microfinance can serve as a platform on which poverty can be alleviated.

(Imai et al., 2012; Pitt and Khandker, 1998) submitted that Microfinance is the developmental tool on which poverty can be alleviated and reduced as opposed to the contradictory views of view of (Bateman 2010) who felt it can't be sustained.

The increasing popularity of Microfinance has been made possible with its anti-poverty stance and drive to eradicating economic downturns in micro-businesses. (Banerjee & Duflo, 2011)

There has been a rampant increase in the number of MFI been establishes over the last three decades, which include an amalgamation of NGOs(non-governmental organisations, commercial banks with franchises, credit unions, finance houses, providing financial services to about 40million clients globally. The total loan portfolios of these MFIs have grown to about \$17billion in 2006 with a likelihood of growing to about 300billion in the nearest future. (Erheck, 2006)

Callaghan et al. 2007 posited that there are estimates of about 15% to 30% annual growth rates with a demand of between \$2.5b and \$5b for additional portfolio capital each year, this will require about \$300million additional equity to fund the loan portfolio.

According to the Asian Development Bank (2000), it was suggested that there are for major models of microfinance activities and operations within the Asian economy and listed as:

- **Grameen- Model Banking:** the most important form of microfinance with its establishment as a form of small group of people in an organisation with a unified goal or attachment and very structured procedures of operation.
- **Self –Help Groups:** these are large and more unique group of individuals or firms with a mix of socio-cultural and financial intervention.
- **Highly regulated and structured MFIs:** these are more structured financial institutions with favourable support of regulatory organisations operating with the backing of a board of directors.
- **Co-operatives;** these are more close to the poor in the society providing credit to these categories of people.

Easton, 2005 opined that the unifying factor that makes microfinance institutions appealing is the low default rates, low market risk, increasing growth rates and good returns.

Evidence from Ghana (A developing Country)

The Ghanaian concept of microfinance institutions is developed through the model of rural and community banks (RCBs), which are operated like a commercial entity, within a particular community and not permitted to operate outside that immediate environment. Aboagye and Otieku, 2010)

Pollio & Obuobie, (2010) submitted through their study that microfinance institutions in Ghana have been undergoing rapid growth within the last decade at an annual rate of 20-30% providing financial and allied services to about 4million people in Ghana as compared to the 2.5million served by the commercial banks.

According to IFAD (2008) the microfinance institutions otherwise known as rural and community banks in Ghana constituted about half of the total banking platform and are said to be the largest supplier of financial; services to the rural area residents.

Nair and Fissha (2010) corroborated the above with the fact that these RCB's mobilized GHC343.9m as deposits, gave out as loan advances GHC224.7m,

transferred GHC63.3million locally, GHC9.3million internationally, and cleared cheques of GHC993.7million within the 2008 financial year.

Aboagye and Otioku (2010) feared that with the above figures and at these low levels, the expected impact of raising socio-economic development of rural areas may not be realised.

Nair and Fiussha (2010) submitted that the rate of loan default among a survey of financial institutions for more than 4weeks was 16%: a rate that was too high compared to the world average of 3% in the microfinance sector.

Aveh, Krah & Dadzie, (2013) posited in their study that lending was a very important issue when it comes to the risk of default in microfinance industry, accounting for a high rate of MFIs shutting down or going into liquidation.

These are issues obstructing a healthy microfinance institution and credit management policy, belittle their financial sustainability; thus, impeding their contribution to economic growth and development.

As evidenced by the study of Tyrone, Chia-Chi, & Chun-Hung, (2011), they asked financial institutions to be careful in identifying and recognising risky ventures to which loan receipts may be funded.

Bogan (2012), ascertained that the financial structure of banking institutions holds a important item in the world of finance; and further noted that the increasing use of MFIs as developmental tool in economic growth of economies can be ascribed to the impact that market capitalisation has on such economies.

Overview of Microfinance Activities in Nigeria (2006 - 2010)

The Microfinance Industry in Nigeria had gone through a most challenging phase after the successful deployment of the Microfinance Policy in 2005. This was facilitated by the various issues raised within the banking sector

consolidation era of 2005 which severely affected confidence in the Microfinance Industry.

Thus, most of the newly established MFI's called Microfinance Banks (MFB's) and community banks were operated in the form of traditional commercial banks. (CBN Revised Microfinance Policy, 2012)

A microfinance bank (MFB), refers to any company fully licensed by the CBN to provide financial products, credit facilities, the business of providing financial services such as savings and deposits, loans, funds to clients in the rural areas. (Revised Regulatory and Supervisory Guidelines for Microfinance Banks in Nigeria, 2012)

This has generated an increase in the number of licensed MFB's from 500 community banks pre-2005 era to its present figure of 866 MFBs post 2005 offering financial services like micro- credit, savings, and rural payment advices to its teeming rural population.

In spite of this positive development, a study investigated by Enhancing Financial Innovation and Access (EFInA) in 2010, discovered that about 40million Nigerians representing 46% of banking adults in Nigeria lacked access to financial services.

Additionally, from the remaining 54% that had access to financial services, 36% used commercial banks, while 18% resorted to using the informal financial institutions for their financial transactions.

The impact of the above study showed that Nigeria was far behind other sub-Saharan African countries like Botswana, South Africa, and Kenya with high financial inclusion rate of 67%, 74% and 67% respectively. (EFInA, 2010)

One of the core platforms which have been highlighted to stimulate economic growth in Nigeria is the microfinance industry which recorded in 2012 a value of 17.6 million MSME in existence employing about 33million individuals in various business activities and contributing about 47% of nominal GDP. (CBN Microfinance Policy, 2011)

A joint survey by the IFC and McKinsey in 2010 revealed that about 80% of these MSMEs are excluded from the financial and financial services sector of the country.

The Microfinance Industry in Nigeria since the establishment of the Microfinance Policy Framework in 2005 had been battling with various impediments and challenges like ineffective risk management practices, inadequate understanding of their target market, lack of effective code of corporate governance amongst others. (CBN Microfinance Policy, 2011)

This later led to the demise of most of these microfinance institutions in the financial tsunami in 2008 which made competition stiffer and credit risk more intense as clients were faced with repaying their contractual obligations. The amalgamation of these factors led to the significant weaknesses found in the microfinance microcosm. (CBN Microfinance Policy, 2011)

As the microfinance institution and the industry as a whole begins to make waves in Nigeria with over (760MFI's), it becomes apparent that efficiency of these banks measure, identify, regulate, and mitigate against risk becomes an herculean task. Of particular interest is the credit risk management practices of these financial institutions as the core of their clientele are individuals or firms involved with lending funds with little or no asset backed securities. (CBN Microfinance Policy, 2011)

The high level of financial exclusion rate in Nigeria can be attributed to the uneven distribution of microfinance banks with a high number of them being domiciled in areas of high financial transactions and profitability.

Additionally, these MFB's carried over the technical inefficiencies, lack of knowledgeable micro-financing skills and paucity of requisite manpower experienced during the era of rural banking. (CBN Microfinance Policy, 2011)

In order to redress these anomalies in the microfinance industry, the Central Bank of Nigeria embarked on a drive of capacity building, information, and

sensitization on the pertinent model for Microfinance Institutions in 2007 with a timeline to align with the microfinance policies.

On the back of this, the microfinance policy looked into the enterprise structure and agricultural sector (especially farming and small enterprises) in rural areas as a sure way of alleviating poverty and reducing hunger in Nigeria. (NBS, 2011)

Sandstorm, (2009); Okpukpara, (2010) submitted that the growth of enterprise development is impeded by the lack of access to finance in Nigeria.

Thus, the germane challenges in rural enterprise financing are predicated upon risk in rural businesses, lack of access to credit facilities, inadequate provision for financing opportunities in rural areas. This is so despite the regulation that state governments and commercial banks are mandated to provide at least 1% of their fund top rural businesses for developmental purposes. (CBN, 2011)

The National Bureau of Statistics in Nigeria (2011) investigated the performance of rural businesses and gave the figures to be 20%. (NBS, 2011)

Therefore, the provision of facilities to local area dwellers could be the panacea to the problems of low productivity, poverty, and poor savings culture. (Liu. 2010)

Microfinance Policy Targets in Nigeria

The Microfinance Policy as revised in 2011 seeks the following objectives as panacea to the problems of poverty and lack of access to credit amongst others:

- i. To increase the financial inclusion rate of the poor by 10% annually;
- ii. To up the percentage of microfinance as a total percentage of total credit to the economy at large from 0.9% in 2005 to about 20% by year 2020. From 0.2% to GDP, to about 5% by 2020.
- iii. To reiterate the importance of microfinance participation to states and local government area by 2015.

- iv. To increase the rate of financial inclusion of women to financial services by at least 15%.

Risks in Microfinance Institutions

In the use of Microfinance institution, Risk may be defined as act of inhibiting or restricting the occurrence of a possible detrimental position: it involves methodically and in a consistent manner knowing, and monitoring the risks faced by a bank. (Fernando, 2008)

The Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) (2000) investigated the three major categories of risk, three major categories of risk facing microfinance operations:

- Financial risks — including credit, liquidity, and market risks.
- Operational risks — including transactional, fraud/ integrity, legal, and compliance risks.
- Strategic risks — including governance, reputation, and external business event risks.

The other issues that arose were borrower and lender specific issues, excess lending capacity as created by the high number of financial institutions providing services in the industry. (CSFI, 2012)

The issues around corporate governance are borne out of inadequate or no operational framework for mitigating against risks and managing financial performance. (CSFI, 2012; Mckee, 2012)

Although, the microfinance industry has grown in leaps and bounds as a key developmental tool in alleviating poverty, there are still issues of the risks it carries on a whole that inhibits the potentials to provide capital. (Banerjee & Duflo, 2011)

Risk can be said to be the degree to which an asset (financial asset or investment) move away from its normality and the likelihood of that it occurring. The two basic risks associated with the financial services sector are Systematic and Unsystematic risk. (Kannan, N.& N. Thangavel, 2008), Rowe, T. & J. Kim, 2010.

Systematic Risks are risks otherwise called market risks, in that they are correlated with the general industry. These risks are not the purview of individual firms and at such they are termed as uncontrollable or unavoidable risks. (Zou, H., M.B. Adams and M.J. Buckle, (2003)

Systematic risks cannot be eliminated by using risk diversification techniques but only be mitigated by risk mitigation tools.

Financial Services firms are exposed to varying degrees of risk with the microfinance institutions being affected mostly by credit risk.

Credit Risk

The act of granting credit facilities or loan advances by financial institutions is a highly technical area, with most firms trying to judge the clients ability to repay the advanced funds and accrued interest. Managers are faced with this highly sensitive task and take their decisions based on variables that may not truly reflect the reality on ground. (Mirzai, Nazarian & Bagheri, 2011).

The world of finance today is faced with the challenges poised by the attendant problems of bankruptcies which are an offshoot of credit risk within financial institutions. To avert such occurrences and mitigate risks properly, the deployment of a functional credit scoring system is of major necessity.

This will determine the creditability of clients in securing loans and their past history of creditworthiness, which serves as a way of determining their risk profile to the banks structure. (Akhbari, MokhatabRafiee, 2011, 80).

Credit risk is the possibility of a client defaulting in the repayment of his credit facilities extended to the clients within any particular timeframe. (Arab Mazar, Rouin Tan, 2006, 47).

Asare-Bekoe, (2010); Yussif, (2003), Cooperman *et al.*, (2000) categorised the risk attached to the banking industry as credit risk, market risk,(which include foreign exchange risk, liquidity risk, and interest rate risk) while operational risk sometimes encapsulate legal risk and strategic risk.

Credit risk in the banking industry is often severely impacted upon by the inadequacies in institutional framework, inefficient credit prudential guidelines, low capital adequacy ratios, state intervention, and regulation needs.. (Sandstorm, 2009; Laker, 2007; Bank Supervision Annual Report, 2006; Kithinji, 2010).

Jin et al., 2012 submitted that measurement of credit risk is the key to unravelling the credit risk situation and that credit rating assessment involves businesses, financials, and management areas.

Credit Risk management must grow for banks and other financial institution to manage and mitigate their loan portfolios which minimizes losses and provide a commensurate return to shareholders. (Focus Group, 2007)

Liquidity Risk

Liquidity risk often occurs from the inadequacies of the management to foresee and make plans for the different changes in the capital structure of an enterprise cash needs. (GTZ, 2000)

Efficient liquidity management involves managing cash reserves to meet client needs, give out loans while also investing proceeds to maximise value. (GTZ, 2000)

Liquidity Management is a very important component in the determination of the level of sufficient cash levels that MFI's should hold per time.

MFI's must be able to determine the optimal level of retaining cash for immediate needs and the funds needed for investment purposes. This covers the costs of its operations and the costs attached to remain competitive in its industry.

It must also understand how to be liquid enough to forestall cash shortages when clients make withdrawals. Effective liquidity management helps MFI to maintain a sufficient return on investments and stay in business while providing access to credit for the unbanked.

Constantinou and Ashta (2011), Patten *et al.* (2001), Paxton and Young (2011), all supported the notion that effective liquidity management helps MFI to offer saving products.

Market Risk

It includes interest rate risks, foreign currency risks, and investment portfolio risks.

Interest Rate Risk

This occurs from the likelihood that a change in the value of assets and liabilities relative to the changes in interest rates. It is a critical part of treasury variable wherein financial institutions use as a criterion to set maturity schemes and risk profiles of their financial intermediation business.

A mismatch of these assets to liabilities can result in severe banking crises like the 1980 savings and loans crises in the US. (GTZ, 2000)

Foreign Exchange Risk

This refers to the possibility for diminution of capital resulting from the volatilities and fluctuations in the value of various currencies over time.

MFI's are often faced with these volatilities when they mobilize funds in one currency and then lend to clients in another currency. Taking a clue from this, MFI's that mobilize funds in foreign currencies and lend to others in local currency risk loss in value of their portfolio if there is a dip in the local currency or it weakens against the foreign currency. (GTZ, 2000)

Investment Portfolio Risk

In some MFI's, a bulk ratio of the institutions assets are in cash and investments rather than in loans.

The investment base represents the input used for productive financial transaction.

Investment portfolio risks refer to future long term investment decision rather than short term management decision. Therefore, investment portfolio

must equate the credit risks for same level of investment, maturity, and timing needs. (GTZ, 2000)

Investment portfolio characteristics must always be to equate the needs of different classes of profile: thus, active strategies must be used to merge aggressive approaches while passive strategies will be a good fit to conservative approach. (GTZ, 2000)

Sharma and Zeller (1997) opined that diversifying activity across sectors and within specific groups would always help forestall against investment portfolio risks and is always a good strategy against investment portfolio risks.

Operational Risk

This occurs as a result of inadequacies in mechanical or human error while delivering financial products or services. It goes beyond all areas of the firm, but revolves around likelihood of inappropriate technology and information systems, operational problems, dearth of employees which result in unexpected losses. (GTZ, 2000)

Transaction Risk

It occurs in all financial products and services. It is defined as that which you encounter very regularly as in all the transactions of MFI's as they are being conducted. It is quite large for MFIs that are involved in high volume of transactions on a daily basis. This occurs because there are a lot of small transactions occurring repeatedly and because of the high dearth of right staff to make the necessary checks on the individuals, there is a high likelihood of error and fraud to occur. (GTZ, 2000)

The main source of operational risk is usually the loan portfolio which is the larger percentage of most MFIs assets. As the MFIs create additional financial; products and services, the level of operational risks increases.

Constantinou and Asha (2011) reiterated the need for a better educated staff and more training to manage the effects of transaction risks in MFI's.

Fraud Risk

Fraud risk has been one of the least addressed risks in the microfinance industry. It includes kickbacks, incorrect financial statements, theft of funds by employees, connivance to commit fraud amongst others.

Fraud can be mitigated if proper internal controls are put in place and all employees are second checked by line managers when involved in large loans or financial transactions. (GTZ, 2000)

Reputation Risks

These include risks affecting earnings or capital by virtue of the bad opinions or negative judgements made by the public. This inhibits MFI's from selling their products and services to the poor; or even has access to more funds. This all important intangible asset must be valued by all because it is much easier to lose than to rebuild. An array of successful MFI's builds their reputation with specific targets and investors as clients, thus strengthening their thoughts with the regulators. (GTZ, 2000)

Credit Scoring

The Basel Framework highlighted credit risk as the risk of default by the borrower. Voelgesang (2003) and Kleimeier and Dinh (2007) submitted that studies related to credit scoring in microfinance have traditionally looked at Latin America and Southern Africa with little evidence from developing nations.

Chieh Hsu & Wen Chi, (2012) posited that credit scoring model or system is an important verifiable tool for measuring risk in the financial industry.

This was further corroborated by (Jalili, KhodaiValahZagherd, Konshouleh, 2009, 127) who said that the proper way of measuring and managing credit risk is through credit scoring.

The recent financial turmoil has further opened the need to assess credit risk (2011, Yu & Yao Lai and Wang, 2011) in risk management with a bias towards repayment of loan advances and knowing the different classes of clients (Akhbari & Mokhatab Rafiee, 2010)

Credit rating tools are gradually becoming very popular among banking firms across the world now. (Blanco; Pino-Mejias; Lara & Rayo, 2013).

Chapter 3 Research Methodology

Introduction

This research will look into the design methods of research sampling of the data generated. It will also validate the various tools of collecting empirical data, and also give a general overview of the limitations involved in the data collection process.

Research Design

The main idea and concept around this research study was to investigate and evaluate the impact and effects of risk management practices of banks (microfinance institutions) on economic growth of Nigeria. The researcher was interested in answering the research questions and objectives of the study highlighted in Chapter 1 and given a critical review of its literature in Chapter 2. This will give background knowledge of answering these questions through quantitative approach in its data collection processes.

Sampling Size and Techniques

The above named research will be located in the positivist paradigm as its rests on the research methods used in investigating the impact of risk management practices of microfinance institutions in Nigeria.

The research philosophy will have an influence on the methodology approach for the study. By this, we mean the general approaches and ways by which the research process is structured. It will employ the software Eviews to interpret the parameters. (Ojo, 2008)

The study looked into the availability of getting the top 82 MFB's in Nigeria through the MIX Market website. This sample of MFBs was selected in order to restrict the sampling error to its barest minimum. The data was collected from MIX Market which contains all quantitative and qualitative information and profile description of all self-reporting MFI's. (Gonzales, 2007)

Gonzales (2007) opined that there are several ways by which data variables can be structured in the MIX database.

1. All data for MFIs are necessary for producing a minimum set of financial variables. Such that, they can be used to monitor the operations of MFIs
2. The self-reporting criterion in the database is very voluntary and not forced upon them, so most MFIs make data available in order to receive funding from donors or organisations. Thus, most MFIs in this category have a better portfolio quality and run profitable ventures.
3. The datasets gleaned from MIX Market are definitely a sub set of the entire population of Microfinance institutions.

Research Methodology

The most important area of this study was to look into the efficiency of bank risk management practices using the twin factors of profitability and other bank related metrics.

Therefore, panel data will be used to examine the impact of macroeconomic factors on bank related proxy of capital adequacy ratio in Nigeria.

Panel Data Methodology

The use of the above model follows from similar studies embarked upon by Althunbas et al. (2000) and Ahmad et al. (2009), and Fadzlan and Habibullah (2010) where they all used panel data analysis in their studies on capital position of banks.

Flamini (2009) also factored in growth of bank capital as a dependent regressand relative to the variations in other bank specific variables.

Additionally, Konishi and Yasuda (2004) also used panel data analysis to investigate the riskiness of banks operation in Japan.

Therefore, the study attempt to take cognizance of the fact that the use of panel data for its measurement criteria rests on the fact that the financial state of same entities within an industry could lead to increased correlation and eventually multicollinearity. The use of such results or output could be highly regarded as not valid and untrue or be termed spurious results.

(Altunbas et al, 2000)

The use of panel data regression is also accounted for and encouraged because of the fact that it has a high level of technical efficiency when such panel data are built. (Baltagi & Griffin, 1988).

It is also very effective as it uses a control variable or proxy helps individual heterogeneity which makes the model coefficients unbiased and an increase in the degrees of freedom.

The panel data methodology is a partnership between cross-sectional and time series analytical phenomenon. It has the uniqueness of pooling time series and cross sectional dimensions of data. It can also influence positively the enhancement of further revealing stationarity and uncorrelated shocks present in a model. (Baltagi 1995)

This is represented in the panel data regression form:

$$Y_{it} = \alpha + \beta X_{it} + \pi_{it} \quad (\pi_{it} = i + i) \dots\dots\dots \text{Eq(1)}$$

Where Y_{it} is the regressand factor of its i th component in time series t , X_{it} is the regressor of its component in time series t . X_{it} is adjudged exogenous if it is unconnected with the disturbance π_{it} . i is the unobservable individual effect, i is the residual of disturbance; α measures the intercept, and the β is the estimating factor.

Panel data as widely used can take many forms, this include the three main ways of estimation.

- General OLS Regression
- Fixed effect model (FEM)
- Random Effect Model (REM)

Within the Fixed Effect Model, unobservable disturbance terms(i) are generally thought to be fixed estimated coefficients, with stochastic term.(i).

The fixed effect model (FEM) is only considered appropriate when investigating individual effects of i th component of factor. Under this set of

assumptions, the β is assumed to be the same for all *ith* components but with different successive slope.

The revised FEM can be rewritten as

$$Y = \alpha_1 i + \beta X_{it} + \pi_{it} \dots\dots\dots \text{Eq}(2)$$

Fixed Effect Model has a recurring characteristic of focussing on micro-element, leaving out other variations within the industry. This neglect can be corrected through the application of the random effect model (REM) otherwise known as the Error component model. (ECM)

The random effect model (REM) is usually more appropriate in various studies because of the random sampling criteria of sourcing for its data. (Baltagi, 1995)

Baltagi (1995) opined that the fixed model would only be more appropriate if the study was investigating particular sample within a population. It would also imply that the use of the model will erode away the degrees of freedom because of the large number of observations.

The Hausman Test will be used to test and strengthen the choice of the best model between Random Effect and fixed effect model under the Null hypothesis with significant differences between the estimators of both model differ substantially.

At 5% significance level,

Ho: Fixed effects model is the most appropriate.

Ha: Random effect model is the most appropriate.

Decision Criteria:

If the Null hypothesis is rejected, then the individual effects are often times probably be correlated with other explanatory variables in the model.

But, if the Null Hypothesis Ho is accepted then it implies that the random effect model (REM) is the best source of appropriate model for the research.

This allows us to accept and confirm the micro effects and explanatory variables are uncorrelated or un-related. Otherwise, it is substantially different from zero.

The Hausman test as revealed by White (1980) will be used to test for the presence of cross sectional heteroscedasticity between the explanatory variables in the model.

Validity and Reliability of Data Collection Process.

In the process of collecting the necessary data, there has been a high level of testing to measure the best variable and the appropriateness of the scores. The concept of validity has been evaluated in seeking the purpose and fit of this study area.

Validity: It reveals the level of content mapping of the research area, requiring both reliability and validity of the measurement areas.

It refers to a way of saying how well an item will do in a given situation in the nearest future.

Hammersley (1987) submitted that a subject or phenomenon is valid or held true if only it describes with great accuracy the characteristics of the investigated research or it emphasizes or aim to portray a theory.

Reliability: It is the level of trustworthiness by which one can measure a variable over time. It is usually indicated of a high score which gives credence to the variables under study and indicates a minimum error variance.

Campbell and Frisk (1987) opined in their treatise on Hammersley (1987) that reliability is the coming together to establish the works of different authors related by the same efforts to achieve the same output.

Generalizability: This implies that the inferences and various conclusions drawn from a sample size from a population sample can be applied to other larger sets of data. This goes to suggests that the results of an investigation can be applied to a general larger inquiry into the same phenomenon.

Maxwell (1992) submitted that the level to which a phenomenon is judged to be generalizable is a criterion that gives it the uniqueness on the manner of approach to such research area.

Research Plan

The fundamental objective examines the importance of measuring MFIs risk management practices as shown by the bank – specific indicators (credit risk measured by portfolio at risk for 30days, liquidity risk measured by debt to equity ratio, asset quality measured by return on assets) which also indicate their profitability metric.

The measure of debt to equity ratio as a proxy for liquidity is used primarily from the works of Rajan and Zingales (1995), (Prasit U, Seksak J, Pornsit J, 2011)

Size which is the natural logarithm of the total assets in this study is indicative of the studies done by Jacelly, Maximiliano and Carlos (2010). It implies an inverse relationship between the risks of a financial institution going bankrupt.

Additionally, to the above bank specific indicators or variables, the inclusion of macroeconomic variables of economic growth and inflation rate too will be of added advantage.

All of these variables will be fed into the E-views software to look at the relationships between them and extract behaviours of these variables in relation to examining the effects of risk management of Microfinance Institutions in Nigeria. (See Appendix AAA for calculation of variables)

Using data analysis, the capital adequacy ratio will serve as the dependent variable while other variables will serve as the independent variables for analytical purposes. (See Appendix AAA for calculation of variables)

The basic reason for setting up a risk management department for banks and much especially microfinance institutions is to forestall occurrence of insolvency. This has generated and necessitated the need for an effective risk

management guideline for mitigating against insolvency risks in such microfinance institutions.

Saunders and Cornett (2006) opined that insolvency starts as a result of existence of prolonged liquidity challenges and severe capital depletion. That is, insolvency occurs as a result of either illiquidity or capital inadequacy.

Illiquidity results in bankruptcy where a firm cannot meet its short term obligations and therefore, the assets are traded below the market price to settle its liabilities.

Saunders and Cornett (2006) were credited with speaking about insolvency occurring from capital inadequacy as the capital available to financial institutions fall below the prudential minimum level. This, also imply that the assets and liabilities are no longer congruent.

Research Strategy

Description of Capital Adequacy Ratio as a variable for Risk Management

The Basel III requirement for risk measurement states that capital adequacy is a key element used by market regulators to measure the impact of managing risks in the financial sector.

Capital Adequacy examines the level of banks strength in terms of capital relative to its risks portfolio, and other risks. (Hitchins et al., 2001)

Bikker and Hu (2002) submitted in their studies that bank efficiency is determined and greatly influenced by the volatilities in macroeconomic situation in spite of the changes in the industry, using the highly sophisticated financial mathematics models to account for risk that is accompanied by economic cyclicity.

Business Cycles are a representative of periods of times of economic boom and gloom in varying length and time duration. Usually, most financial institutions during periods of sustained economic boom and growth will shore up their capital by ploughing back profits and heavy involvement in capital markets. Bikker and Hu (2002)

In other period of recession or not too good economic activities, they keep funds and not release it due to the high cost of capital.

Sathye et al., (2003) opined that the challenges of continued credit defaults severely affect the financial sustainability of most financial institutions.

Altunbas et al., (2000) reiterated that a banks attempt at following through on observing the prudential guidelines is very important and germane. It is further necessary for its capital-risk ratio to be adhered to strictly under the Basel committee recommendations.

Therefore, the capital adequacy ratio as managed by regulators in the financial institutions is structured to restrict the financial institutions risks exposures to its capital outlay.

Description of Dependent and Independent Variables in Model Specification

This study will make use of a panel data and regression model to study the interaction between risk management practices and economic growth of the country. It specifically tries to measure the impact of its capital adequacy in times of crises or shortfall in its core business.

Dependent Variable

The use of capital adequacy as a dependent variable stems from previous empirical studies done by Kwan and Eisenbeis (1997), Berger and Young (1997), Hitchins et al. (2001), Ojo (2008), and Ahmad et al. (2009).

Chie et al (2009) submitted that there is a relationship between risk efficiency and bankruptcy, with capital adequacy ratio being used as the variable for measuring risk management efficiency.

The regressand or dependent variable (capital adequacy) is itself defined as the combination of both micro and macro items. The micro items are the bank specific variables which are influenced by the financial institutions policy. (See Appendix AAA for calculation of variables)

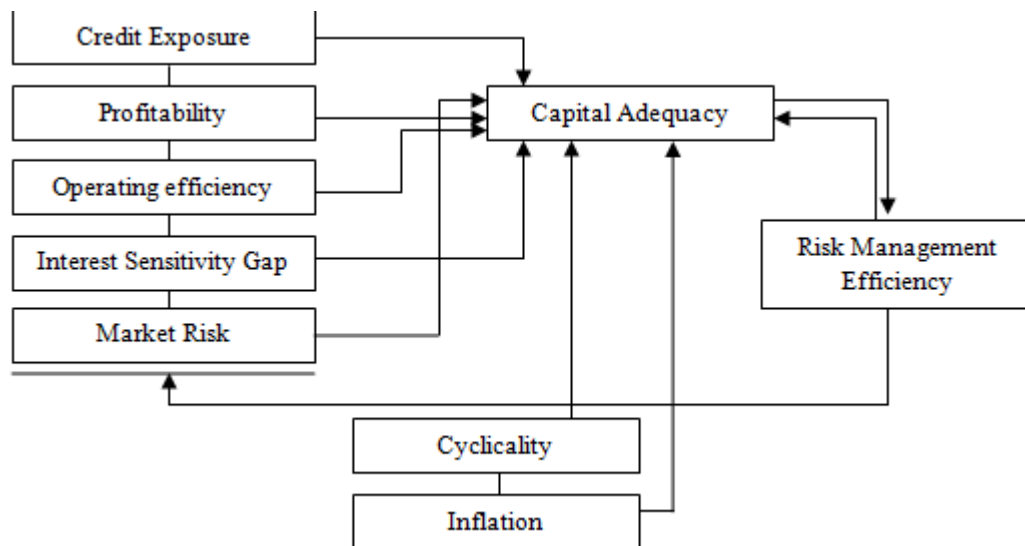
The weight of risky assets in the financial institutions portfolio, size of total assets, and the board of directors serve as an indicator of management's quality.

Other macro items which also influence capital adequacy include interest rate element, economic growth and inflation rate which are outside the purview of bank specific indicators but are very much aligned and influence the risk identification and management. (See appendix AAA for calculation of variables)

Bank-Related Proxies

The bank-specific indicators are the variables used to regress the relationship or behaviour of risk management practices of microfinance institutions. They are very important tool in modelling the impact of capital -total asset ratio of these microfinance institutions. Thus they represent the counter party risk exposure of microfinance institutions. (See Appendix AAA for calculation of variables)

The probability of defaulting in a financial transaction with financial institutions raises the credit risk of that organisation. Thus, one can also include profitability of these financial institutions as reiterated by Rivard and Thomas (1997) saying return on assets (ROA) measures the operating efficiency.



Source: Risk Management Framework as depicted by Awojobi .O., et al. 2011

Figure 1 above gives a structure of a bank's risk management profile with which efficiency can be a source of input and influenced by both broad wide parameters and firm specific factors.

Macroeconomic Determinants

There are various interpretations of economic phenomena as they occur in the business environment. One of such is periods of contraction wherein the likelihood of clients defaulting on their loan advances increases with the problems of lack of access to capital at a lower cost.

Inadvertently, this affects financial institutions by threatening their very existence except there is a positive performance to their assets in lieu of their capital items in the organisation.

The empirical investigation study embarked upon by Demirguc-Kunt and Huizinga (1998) and Bikker and Hu (2002) gave background knowledge into the issues around bank efficiency such that the volatilities in the business environment is very sensitive in spite of reassurances of the workings and methodologies of quantitative finance.

Neely and Wheelock (1997) submitted that the business cycles of banking environment is such that it moves in tandem with GDP per capita. This also

implies that economic growth rate can be used as an indicator for business cyclicity.

Demirguc-Kunt and Huizinga (1999); and Sufian and Habibullah (2010) opined that there is a relationship between inflation rate and banking activities.

Econometric Specification

The use of quantitative method cannot be over emphasized in this research because the challenges around finance in the modern world as construed today is centred around the problems created by ineffective risk management practices.

The regression model is as follows:

$$CAR_{it} = f(CR_{riskit}, LQR_{it}, ROA_{it}, SIZE_{it}, OP_{rit}, OPexPLon ECO, INFdm)$$

This is represented in the equation as

$$CAR_{it} = \alpha + \beta_1 * CR_{riskit} + \beta_2 * LQR_{it} + \beta_3 * ROA_{it} + \beta_4 * SIZE_{it} + \beta_5 * OP_{rit} + \beta_6 * OPexPLon_{it} + \beta_7 * ECO_{gr} + \beta_8 * INFdm_{it} + \epsilon_{it} \quad (\epsilon_{it} = v_{it} + u_i) \dots \dots \dots Eq3$$

Where,

i' is a notion for individual microfinance banking institution,

t' describes the time period,

ϵ_{it} is the disturbance term.

The splitting of ϵ_{it} is necessary so as to be able to capture the error from unobservable bank specific variables not specified in the model.

These variables are represented by (v_{it}) , while u_i is the variable for robust standard error.

α is the intercept, β are estimates for the various estimated values.

Chapter 4 Data Analysis and Interpretation of Results

Introduction

In this section, the study will attempt to link the objectives of the research with relevant theory through the testing of the various hypothesis mentioned in Chapter one. It will try to establish through quantitative means, the research questions, and its connections with the theoretical background and explain the risk management practices of microfinance institutions using various data and variables.

Data Collection and Process

The sample size was obtained from the Microfinance Information Exchange (MIX) database, which contains a brief outlook and quantitative information of MFIs all over the world.

The process of collecting data started with looking at the MFIs from Nigeria with self-reporting status of their annual accounts from 2003 – 2012. Thus, we have 80 as our sample size out of the MFI's listed on the Central Bank of Nigeria.

These MFIs are then filtered to reveal those with at least 4 diamonds (the level of reporting and financial sustainability). The final sample is located in various states and regions around Nigeria and accounts also for over US\$378.7m in loan portfolio, 1.8m active borrowers with US\$252.8m deposits and 2.4m depositors. (See Appendix 1)

Gonzales (2007) posited that there are various selection challenges associated with the use of MIX market data as most of these MFIs are self-reporting and have just a few sets of financial variables monitoring their operational efficiencies.

Processes in data collection:

- Collate all data from Mix market website

- Filter according to country and years starting with 2003 and ending with 2012 being the most recent year of collecting data
- Select 80 Microfinance banks as the sample size of the microfinance banks for the 10 years.
- Run a Panel Data Regression to reveal the relationship between the FEM, REM and Pooled Regression.
- Analyse the result based on the various test done in Panel Data Regression.

Empirical Analysis

Panel Results

Panel data econometrics was employed to investigate the approached of risk management efficiency in Microfinance Banks in Nigeria.

Kennedy (1998) submitted that the estimation of panel data regression helps to control for individual uniqueness or heterogeneity, lowers the general level of bias, and therefore improves the efficiency and reliability of the entire model. This happens by way of more variability in data used and reduction in collinearity.

Therefore, the specified regression model in Equation (3) will be structured in three ways:

Panel OLS

Fixed Effect Model

Random Effect Model

Descriptive Statistics

Table 1 below gives a descriptive statistics of panel; data variables for the sample size. The main rationale behind these statistics is to investigate the level of divergence or imbalances of the cross -sectional variants.

It depicts that a minimum value of 0.0000001 to be accounted for by PAR coefficient and a maximum of 0.965400 for the Industry, with 0.066788 being accounted for as the mean value.

The Skewness of the distribution measures the symmetry or lack of symmetry in the distribution set. This implies from the table that there is presence of positive skewness as most of the data are positive and such the tails goes right.

The Kurtosis indicates that the following variables (CAR, INF, ECG) all showing a value closer to 3 which is the standard.

The wide distortion in the distribution gives an evidence of the likely randomness of the cross-sectional variables where there was a mix of community banks and regional microfinance banks in the sample size.

[See Appendix 3 – Descriptive Statistics]

Estimates for Panel Regression Model

This section will attempt to explain the regression result from the output generated by E-views 6.0 Software. There are three patterns of this model:

Panel Ordinary least Square Model estimates

Fixed Effect Model estimates

Random Effect Model estimates.

Trying to reduce the issues around poor estimation criterion, the appropriate model would be adopted and critically analysed. The Hausman test for correlated random effects is used to investigate and determine the most appropriate model for the sample size. [See Appendix 4 – Hausman Test for result].

It tries to confirm the variance in each estimate of both random and fixed effect model are significant to influence the variables towards biasedness.

Decision Criteria implies that if the test is statistically significant, then there is a plausibility of unobserved individual heterogeneity being uncorrelated to the regressand, it implies that the micro-unit effects and regressors are uncorrelated. Thus the random effect model parameter is the most appropriate.

Table 1- Parameter Estimates on Panel Data Regression

Independent Variables	Panel regression	Fixed Effects	Random Effects
PAR	0.03811** (0.4039)	0.107442*** (1.06031)	0.07563 *** (0.78903)
ROA	0.004962** (0.1375)	0.098488*** (1.08242)	0.03963** (0.4627)
SIZE	0.014083** (1.51003)	0.00871** (0.90566)	0.01238** (1.22045)
LQTY	0.0661*** (1.4666)	0.120922 (2.68598)	0.09598*** (2.21059)
OPR	0.04326** (1.7010)	0.008628** (0.30372)	0.026342** (1.0077)
OPEXPON	0.023717** (1.4668)	0.02032** (1.15976)	0.021903** (1.33610)
INF	0.00346** (3.08473)		0.00344** (2.080118)
ECO	0.04326** (1.7010)		2.0702 (2.13925)
Constant	0.40784	0.06764	4.858842
F statistics	1.4736	2.8747	2.4616
R square	0.7376	0.8552	0.8661
Prob (F-Stat)	0.22577	0.0000001	0.012287
Durbin Watson	1.6268	2.068	1.5958

The outputs as revealed by the values in parenthesis are real figures of the t statistics with * implying the significance level at 1%, 5%, 10% rejection of the Null hypothesis. The panel Data was run on E-views. See Appendix 5A, 5B and 5C for output of regression of Panel, FEM and REM

Furthermore, there was the need to make modification to ascertain that the variance in disturbance terms is aligned over time.

Accordingly, Baltigi (1995) submitted that the OLS model might become inefficient when there is evidence of Heteroscedasticity. Therefore, we go ahead to use a general least squares (GLS) to estimate the error variance, with a plausibility of imbalances in the model.

Capital adequacy ratio is a necessity and prerequisite for risk mitigation and evaluation in the Basel III document, and it is a ratio between bank capital and total asset to stand as a parameter for risk profiling of a bank. (BIS 2011)

A'Priori Expectations and Statistical Significance

This section will attempt to investigate the impact and confirmation of the parameter estimates confirming the economic theories. Thus, the researcher attempts to see the differentials that exist between variables and the deviations that occur away from the acceptable levels.

Thus a priori expectation which conforms to economic theory states that capital adequacy ratio and credit risk must be positive.

Results in Table 1 reveal and confirms the a priori expectation that exist between credit risk and capital adequacy ratio wherein the value was (0.4039). The standardised t-statistics also reveals that the parametric estimate is statistically significant at the 0.05 level.

A comparative analysis between the random effect and fixed effect reveals that the same situation holds for the random effect model as the parameter estimate is positive at (0.78903) and statistically significant at the 0.10 level.

The fixed effect though confirms with the economic theory with a positive value of (1.06031) that states that as credit risk increases so also do the capital adequacy of bank should be increased. It is also statistically significant at the 0.10 level just like the random effect.

This also goes to look at the rate of efficiency of controlling the risk profile of the microfinance banks in Nigeria can only be successful with introduction of more capital in the bank's loan portfolio.

In the liquidity of microfinance banks, it is also a very important area that the banks must always align their current assets with their current liabilities in order to be deemed to be liquid enough to meet all its obligations as at when due.

Thus a microfinance bank with a low level of liquidity is more susceptible to adverse terms when the operational efficiency is at a minimum either through accidental occurrence or otherwise. This puts it at risk of not being able to fulfil its obligations to her customers.

When this happens, a microfinance bank may resort to parting with some of its assets or reduce its capital level to meet such obligations in that period.

A low level of liquidity will impact on the capital adequacy ratio negatively and from the results gleaned from the panel regression.

The Results in Table 1 reveal and confirms the a priori expectation that exist between liquidity risk and capital adequacy ratio wherein the value was (1.4666) for the general panel regression while the standardised t-statistics reveals that the parametric estimate is statistically significant at the 0.10 level.

It also confirms the a priori expectation that exist between liquidity risk and capital adequacy ratio as the value was (2.6859) for the fixed model regression while the standardised t-statistics reveals that the parametric estimate is not statistically significant at any of the 0.01, 0.05 and 0.10 level.

The Random model also exhibits the same characteristics as the findings in the fixed model where it confirms the a priori expectation that exist between liquidity risk and capital adequacy ratio with a value of (2.21059) and also statistically significant at the 0.10 level as evidenced by the standardised t-statistics.

The output from the panel regression relative to the return on assets is a very important variable. This is so because the ROA is employed to reveal banks profitability which measures the risk efficiency of banks.

Saunders and Wilson (2001) noted that there exists a nexus between bank capital ratio and its charter value with the profitability measurement as a valid criterion for its future prospect.

It means that a microfinance bank with positive returns on asset and stability of its management policies is well position for future expansion in its operations with a good source of capital base.

Bodie et al. (2008) opined that the earning power and payout policy of a firm is sometimes influenced by managers attempting to enhance the returns to the investors (dividend payment) by smoothing this variable over successive periods. This happens when the firm has increased in its earnings, managers often decide to plowback some of these in order to increase its capital buffer.

This invariably by way of a priori expectations confirms that there exist a positive relationship between return on assets as a measure of profitability (ROA) and capital adequacy ratio of microfinance banks.

From the panel regression results in Table 1, there exists a positive result of the influence of ROA on CAR which confirms the a priori theoretical expectations and findings of Cebenoyan *et al.* (1999), Saunders and Wilson (2001).

Thus, results in Table 1 confirm the a priori expectation that exist between return on assets (ROA) and capital adequacy ratio wherein the value was (0.1375). The standardised t-statistics also reveals that the parametric estimate is statistically significant at the 0.05 level.

A comparative analysis between the random effect and fixed effect reveals that the same situation holds for the random effect model as the parameter estimate is positive at (0.03963) and statistically significant at the 0.05 level.

The fixed effect although also confirm with the economic theory with a positive value of (1.08242) that states that as return on assets (ROA) increases so also do the capital adequacy of bank be increased. It is also statistically significant at the 0.10 level.

The next variable to be evaluated in the regression is Size which is the employed as a proxy for measuring the risk management efficiency of banks, especially in this context, microfinance banks.

The panel regression results in Table 1, shows that there exists a positive result of the influence of size as a determinant of risk efficiency of banks. It confirms and the a priori theoretical expectation that as bank size increases so also do their ability to effectively manage risk is also increased.

Thus, results in Table 1 confirm the a priori expectation that exist between bank size and risk management efficiency with a value (1.51003). The standardised t-statistics also reveals that the parametric estimate is statistically significant at the 0.10 level.

A comparative analysis between the random effect and fixed effect reveals that the same situation holds for the random effect model as the parameter estimate is positive at (1.22045) and statistically significant at the 0.05 level.

The fixed effect also confirms with the economic theory with a positive value of (0.90566) that states that bank size increases so also do the bank's ability to effectively manage risk increases. It is also statistically significant at the 0.05 level.

In terms of operational efficiencies, a bank's ability to manage efficiently its operations serves as an additional buffer to its capital position. It is calculated as the net operating income divided by the operating expenses. We assume that as efficiencies increases in the operations of microfinance banks, the management are equipped to increase profitability and add value to the capital position. Awojobi. O., et al (2011)

Thus, it goes on economic theory that as operational risk increases so thus the capital adequacy ratio required by banks must also increase.

The Results in Table 1 reveal and confirms the a priori expectation that exist between operational efficiencies and capital adequacy ratio wherein the value was (1.7010) for the general panel regression while the standardised t-statistics reveals that the parametric estimate is statistically significant at the 0.05 level.

This is also confirmed for the fixed effect model as the a priori expectation on the relationship between operational efficiencies and capital adequacy ratio revealed a positive value of (0.30372) while the standardised t-statistics reveals that the parametric estimate is statistically significant at any of the 0.01 and 0.05 level.

The Random model also exhibits the same characteristics as the findings in the fixed model where it confirms the a priori expectation that exist between operational efficiencies and capital adequacy ratio with a value of (1.0077) and also statistically significant at the 0.05 and 0.10 level as evidenced by the standardised t-statistics.

In terms of asset quality, a bank's ability to increase its assets and retain qualitative assets cannot be overemphasized as this increases its capital level.

Thus, it goes on economic theory that as asset quality increases so thus the capital level required by banks must also increase.

The Results in Table 1 reveal and confirms the a priori expectation that exist between asset quality and capital level wherein the value was (1.4668) for the general panel regression while the standardised t-statistics reveals that the parametric estimate is statistically significant at the 0.05 level.

This is also confirmed for the fixed effect model as the a priori expectation on the relationship between asset quality and capital level revealed a positive value of (1.15976) while the standardised t-statistics reveals that the parametric estimate is statistically significant at the 0.05 level.

The Random model also exhibits the same characteristics as the findings in the fixed model where it confirms the a priori expectation that exist between asset quality and capital level with a value of (1.33610) and also statistically significant at the 0.05 level as evidenced by the standardised t-statistics.

Additionally, the results in Table 1 reveal and confirm the a priori expectation that exist between loan portfolio and capital adequacy ratio wherein the value was (1.4668) in the general panel regression. The standardised t-statistics also reveals that the parametric estimate is statistically significant at the 0.05 level.

A comparative analysis between the random effect and fixed effect reveals that the same situation holds for the random effect model as the parameter estimate is positive at (1.33610) and statistically significant at the 0.05 level.

The fixed effect also confirms with the economic theory with a positive value of (1.15976) that states that as loan portfolio increases so also do the capital

adequacy of bank should be increased. It is also statistically significant at the 0.10 level just like the random effect.

This also goes to look at the rate of efficiency of controlling the risk profile of the microfinance banks in Nigeria can only be successful with introduction of more capital in the bank's loan portfolio.

Therefore, the influences of risk management as determined by the macro-economic proxies of economic growth and inflation will attempt to investigate the impact on a macro level.

Result in Table 3 reveals that economic growth as a determining representative of business cycle predict a positive relationship of (1.7010) and also statistically significant at 0.05 level.

This is also the same thing as it relates to the random effects model as it also returns a positive value of (2.0801) at the 0.05 level. This is indicative of the fact that the banking environment in Nigeria is pro-cyclical to economic volatilities. Awojobi O., et al (2011)

In times of productive and profitable periods, microfinance banks have access to more capital by way of demand for more business ventures by entrepreneurs. While, during periods of economic crises, there is a contraction, it is a direct opposite of supply of capital. This occurs as debtors are prone to defaulting and a high cost is leveraged on credit facilities.

On the other hand, inflation shows a positive relationship on the random effect model as it has the ability to influence the availability of credit rates as most microfinance source for funds in parity with the interest rate.

In Nigeria, the high rate of inflation has negatively affected the business community in terms of the entrepreneurial population. It has stifled business growth as the country employs floating interest rate and exchange rate.

The random effect model although have a positive value for its parametric estimates but in real terms the estimates itself is not statistically significant.

Conclusively, the model reports 86.61 percentages in its R squared and also a statistically significant figure of 0.012287 at the 0.05 level.

Test of Robustness

The model will be examined by further analysis into the sufficiency of the model. This will be done through the coefficient of F statistics, D-W test for autocorrelation and covariance analysis through multicollinearity.

Baltagi (1995) opined that in order to test for the presence of autocorrelation among variables, the number of variables must be less than the number of cross sections.

The D-W output reveals that there is absence of first order autocorrelation in the model and the error terms are uncorrelated. The F-statistics value of 0.012287 states additionally gives credence to the model as it is statistically significant at the 0.05level.

The R^2 value of 0.8661 on the random effect model side implies that 86.61percent variation in capital adequacy ratio is explained by the variables of portfolio at risk, bank size, liquidity risk, operational risk, asset quality, management quality, and business cyclicity.

More Discussions and Findings

Therefore with the main discussions of the research findings discussed in details. The study was able to unravel the nature of the risk factors that may be associated with the microfinance banks in Nigeria.

The next section will attempt to corroborate the various influences centred on the impact of inefficient risk management practices as it relates to the study.

Distribution of Microfinance banks in Nigeria.

The study found out that a high concentration of microfinance banks are situated in urban centres and the level of depth and outreach to the unbanked in the rural area continue to reduce.

The main objective of microfinance is to act as a platform to make banking services available to everyone irrespective of status but most microfinance banks consider this not a priority as they are mostly situated in the urban areas like Lagos with a total population of 9,113,605 has about 151 microfinance banks. See Appendix 6

These microfinance banks have to contend with the commercial banks for deposits and clientele which are quite difficult to manage in such a large city. Hence, this can only increase the risk profile of these microfinance banks as they won't be able to challenge for the deposits they seek. This will indicate that they may fail in their financial intermediation objective.

This same situation goes for Anambra with a population of 4,177,828 with 68 microfinance banks. This will generally indicate that the level of entrepreneurial activities in this region of the country may account for its large number of microfinance banks. It may also be appropriate to note that with this high number of microfinance banks comes the huge responsibility in terms of risk management of their business units and access to credit facilities.

Additionally, Abuja comes third in the ranking of microfinance banks with its 45 number of microfinance banks in Nigeria, partly because it is the capital and many of the similar banks will have their branch networks spread across this city. This is to give a national outlook to these microfinance banks which then raises its risk profile if not managed properly.

The next in line is the number of microfinance banks in Oyo with 42 being registered as the figure. This implies that in almost all of the state capitals is a huge chunk of the microfinance banks. It literally mean that these microfinance banks prefer to establish their banks in the urban areas where

there seem to be a flush of capital to fight for and neglecting the unbanked in areas with no seemingly big industries or businesses.

This seems to have a debilitating effect on the main objective as to the establishment of microfinance banks, as they are established to serve uncharted territories or rural areas where the access to financial services is at an abysmal low.

Also, the ranking of microfinance in terms of the number of branches and banks in an area may not do justice as to the risk management of these microfinance banks. But, it has been proven in the research and other empirical studies that bank size itself makes a big criteria of its ability to withstand shocks and provide capital buffer in times or periods of need.

This is evidenced by the continued pronouncements by the regulator agency in Nigeria (CBN) to recapitalise the microfinance banks and place them in various categories like the regional, state and local wide to serve the unbanked in the inner-most areas of these places.

This also happens to be the same story as it revolves around these states, as Ogun with a population of 3,751,140 and 40 microfinance banks faces the same uphill task of trying to ditch the microfinance objective and mobilize deposits necessary for business purposes.

The same fate befell the last two states of Imo and Osun with 3,927,563 and 3,416,959 respectively. They do have the figures in terms of population but the outreach levels in these states have been traditionally low as the cost of making bespoke arrangement to facilitate credit provision to the most deficit units has often been met with resistance because of the lack of trust among the indigenous residents.

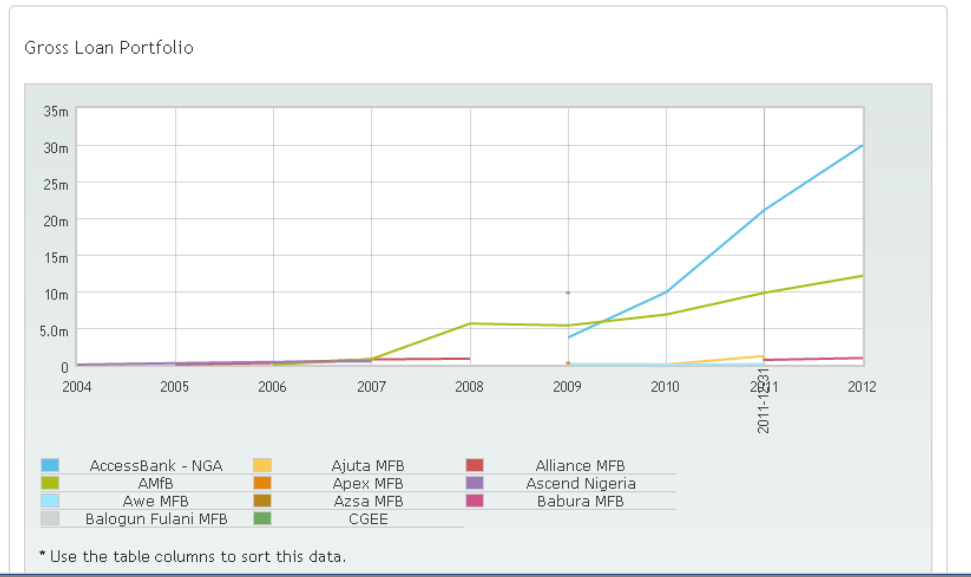
Table 3 : List of Microfinance Banks in Nigeria

No.	State	Population	No of MFB's
1	Lagos	9,113,605	151
2	Anambra	4,117,828	68
3	Abuja	1,406,239	45
4	Oyo	5,580,894	42
5	Ogun	3,751,140	40
6	Imo	3,927,567	28
7	Osun	3,416,959	26

Gross Loan Portfolio Distribution of Microfinance Banks

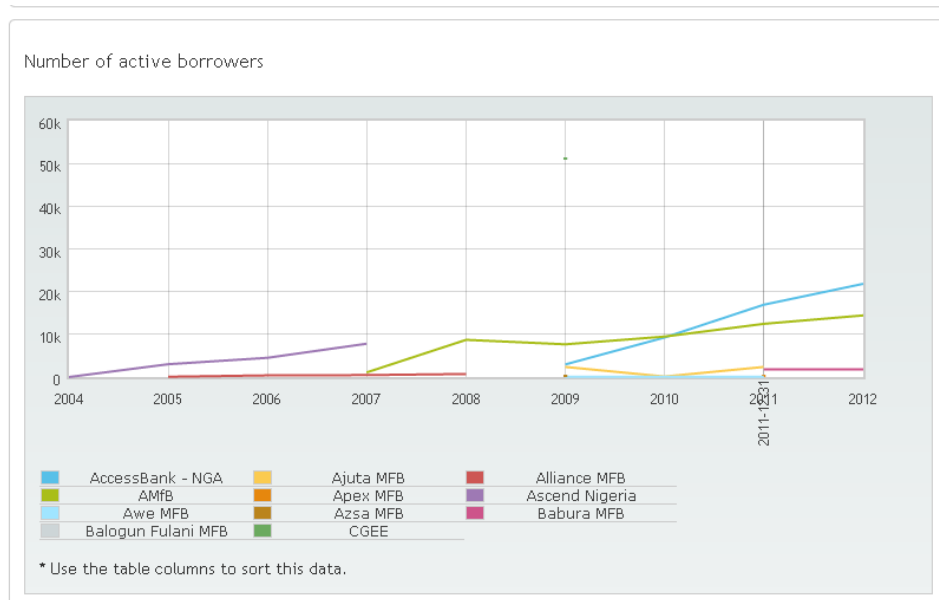
As this was one of the independent variables used to measure the impact of risk efficiency in microfinance banks, it became imperative to see the trend of events as it relates to this proxy. From the Appendix, one will see the impact of pre financial crises being felt by the microfinance banks with all of the assets under the gross loan portfolio within the US\$0.5m but shortly after the banking crises and recovery started to return back to the market, Microfinance banks with Access MFB leading the pack started to increase its loan portfolio and provide more credit facilities to clients as it should. This saw a rise from less than US1m in pre crises period to about US\$30m within three years post banking crises.

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Number of Active Borrowers

The number of active borrowers within the pre banking crises was at a minimum figure of less than ten thousand but as the economy started to show signs of recovery and spurts of economic growth, the number started to increase and got to about twice the size of that in about three years. There was a new level of number of borrowers which exceeded the twenty thousand mark in 2012.



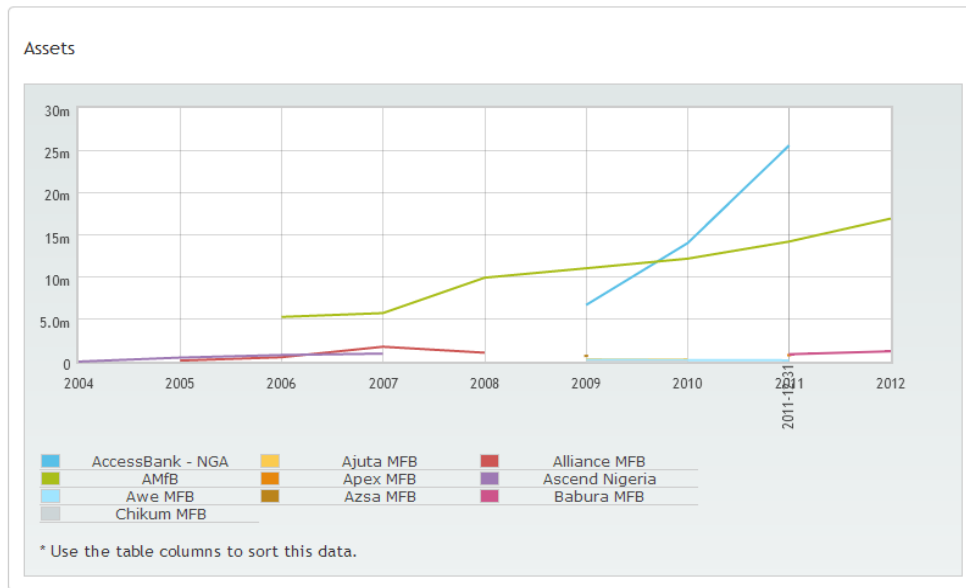
Deposits

The level of deposit mobilization by microfinance banks in Nigeria is very interesting and an eye opening phenomenon. There were cases of ups and downs in the mobilisation of deposits in the banking crises period. However, all of this changed for the better as the economy showed signs of improvement in early 2009 with deposits shooting as high as US\$4.0m from a low of less than US\$1 m



Assets

The growth of assets of microfinance banks also dipped and was indeed flat from 2004 to 2008. However, sometimes in 2009 it started rising and going further into higher levels of almost reaching US\$25m from a low value of about US\$5m



Capital – Assets Ratio

This ratio is otherwise known as the capital adequacy ratio and it tries to measure the impact of capital position of microfinance banks as a buffer in terms of economic shocks or crises. It was used as a proxy for measuring how risk reliant the microfinance banks were in the face of another economic crises or financial tsunami and it has been increased by the regulators from time to time just as to forestall and collapse of the banking industry.

From the chart, one will see interesting features of this variable as it mirrors an image of 1:1 in the chart and shows that the asset and capital adequacy of these microfinance banks could take up any economic shocks in the society.

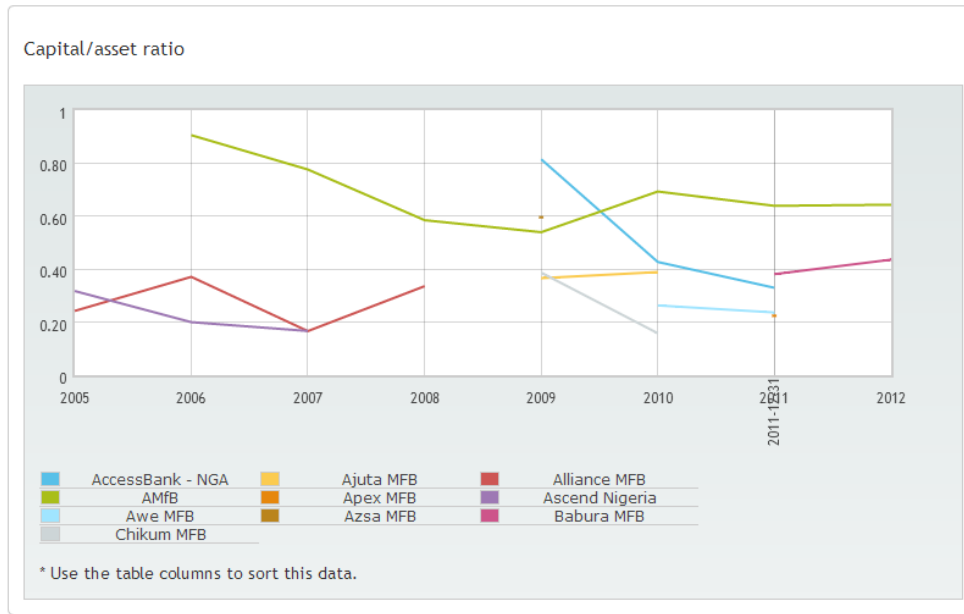


Table 4 - Hausman Test for Model Appropriateness

Test Summary		Chi Sq. Stats	Chi sq. d.f	Prob.
Cross Section Random		9.920214	6	0.1281
Variable	Fixed	Random	Var (Diff)	Prob.
C	0.275139	0.067644	0.000187	0.00001
PAR	0.107442	0.075168	0.075168	0.3500
ROA	0.09848	0.039631	0.039631	0.0453
LQTY	0.120922	0.09598	0.09598	0.0359
SIZE	0.008717	0.11238	0.11238	0.03680
OPEXPLO	0.02032	0.021903	0.021903	0.7980
OPR	0.008628	0.026342	0.026342	0.01114

Accordingly, the output from the model relative to the Hausman Test (Chi Sq. Statistics) failed to reject the null hypothesis that unobserved firm specific heterogeneity are not correlated with the regressors and this has led the researcher to concentrate on interpreting the estimates provided by the random effect model.

Chapter 5

Summary and Conclusion

One of the core reasons behind embarking on an investigative study of the subject area was to try and see the core influences or determinants of risk management practices in Microfinance Banks in Nigeria. The study looked into long run equilibrium between various financial ratios with explanatory coefficients, and macroeconomic variables.

Considering our research, the panel data was employed to look into both bank and economic factors.

A major crucial and fundamental criteria or rationale behind this research was to investigate the key influences around risk management practices for microfinance banks in Nigeria. This was ascertained through the use of various financial ratios and proxies with various coefficients and macroeconomic variables. The use of the capital adequacy ratio has the dependent variable was gleaned from previous studies where it measured risk management efficiency.

Panel regression method was employed to investigate empirically the bank specific and macro-wide variables. The findings indicate that economic growth which is a measurement of cyclicalities had a positive relationship on risk management efficiency among microfinance banks in Nigeria; inflation had a negative relationship with capital adequacy ratio of banks which was in accordance with the a priori expectation and economic theory.

The study therefore confirms that the risk management efficiency among Nigerian microfinance banks has not been efficient. The Basel II rules and requirements was enacted to shore up the capital requirements of banks in order to act as buffer in cases of shocks and imbalances.

Additionally, the study was also able to confirm that capital position in microfinance banks was positively associated with liquidity, credit risk, management quality, asset quality, bank size and operational efficiency. Though when considering the panel analysis in terms of the fixed effects, the

macroeconomic variables became redundant and were not recorded as parameter estimates.

Therefore, microfinance banks are by implication also termed efficient in managing their loan portfolio according to the available evidence of sustained capital buffer especially in the not too recent recapitalization and categorization of banks into regional and national banks.

Usually, risk measurement and performance in the banking domain in Nigeria is flooded with pro-cyclicality and the studies also went to confirm this though this is on sharp contrast to the submission of Francis and Osborne (2009) where they opined in their study of UK banks that risk capital ratios are counter-cyclical.

Economic Growth is a very important tool in the determinant of stability within the banking industry and even at the macro level in direct contrast to inflation levels in Nigeria.

The whole gamut of risk management in banking is to implement the objectives and aims of Basel framework on risk management.

There remain empirical studies that include Francis and Osborne (2009), Borio and Drehmann (2009), and Clement (2010) and Awojobi et al. that has confirmed the findings of this study on risk management in banks.

Therefore, Saurina (2009) suggested employing the use of cycle inputs rather than risk methods. With additional, risk processes can be reduced if the regulators often times examine the capital position of microfinance banks at unscheduled times in order to avert banks crises.

Chapter 6 Recommendations

Policy Recommendations: A Brief Outlook

This study has been so interesting and very important to the structure and restructuring of a more viable and profitable MFB's in Nigeria that we cannot afford not to make recommendations in the light of the startling revelations. A more dynamic and rejuvenated microfinance banks can only be achieved through the set up of an efficient risk management department with cross links over other financial institutions.

This section will look at giving various recommendations to Industry practitioners, regulators, or policy maker and all other concerned stakeholders within the Microfinance Industry.

Conceptually, within the several empirical studies as noted within microfinance literature, this study aimed to investigate through hypothesis testing and contribute to existing literature and policy direction in the risk management and efficiency.

Recommendation to Industry Practitioners

The risk management practices of microfinance banks in Nigeria cannot just be from risk identification, risk evaluation, and risk management only. The will to make them sustainable and alive to their responsibilities must be presented in a more structured manner by the regulators.

The management of these microfinance banks must then set up an effective risk management department with evaluations on a regular basis of their portfolio to check for the various risks that may negatively impact on their capital adequacy or ability to grant credit facilities.

Firstly, this research study has also been able to look into the spread of the Microfinance banks in Nigeria as most of these are located in urban areas. This type of regional location should be discouraged since it puts them in direct competition with established and stronger commercial banks. They are most needed in the rural areas and communities where the outreach and depth will be more useful and relevant.

Recommendations to Regulators and Policy Makers

Policy Implications

This section will give a brief identification of areas that need to be improved on from the perspectives of policy makers and regulators.

Firstly, we recommended that there should be a constant, intended, and purposeful alignment or arrangement of all microfinance programmes and schemes. This will bring an order and structure to the evaluation process for the risk management objectives for the Industry at large.

Thus microfinance supporters or financiers are then known and visible to the regulators which helps to know the sources of funding for these organisations for risk management purposes.

The management of Microfinance banks in Nigeria can also form alliances with each other and regulators alike to project a formidable force in proffering solutions to the poverty debacle in Nigeria through a concerted effort in risk management. This is a major objective and aim of setting up a microfinance bank.

Secondly, on the basis of developing an adequate risk management regulation; loan pricing and disbursements has to be premised on the target market. This means that, regulators must also be interested in the client not just looking and giving broad overviews to market operators. Thus, the ability to identify recurrent defaulting creditors in various regions or areas within Nigeria will flag off on their monitoring systems thereby preventing systemic risks in the Industry.

Additionally, this implies that there must be increased alertness on the part of the regulators to partner with the classical client differentiation models which integrates the client's economic status to the communities or areas in which their businesses are established.

In other words, there must be an alignment of the customer's financial abilities and capabilities to the credit facilities they may require at each

successive period. The period in which microfinance banks were allowed to do as they pleased wherein they gave out credit facilities without appropriate checks and balances on the recipients is no longer acceptable.

This will facilitate the achievement of credence by microfinance banks knowing fully well that the clients have been served according to their specific needs and business activity.

Thirdly, the regulators must create an enabling environment which is necessary to stimulate growth and development of the financial sectors should be a core platform on which Microfinance banks can build upon. This factor cannot be overemphasized as we propose an avenue in which development partners or government at various levels can address issues of bureaucracies in public sectors and granting of banking licenses to multiple microfinance banks without the right infrastructure for risk management.

Lastly, we recommend that Microfinance banks through the influence of continued regulation by the regulators must be asked to publish their efficiency indicators which includes but not limited to social and financial indicators only. The philosophy and motivation behind this is that, it will help customers and financial supporters or investors to identify efficient microfinance banks and raise the level of professionalism within the microfinance industry.

This is further hinged on the belief that categorizing efficiency based on financial and social indicators gives the customers an enhanced view on the risk profile, leverage, and competitive advantage that exist within successive microfinance banks.

Further Considerations and Research

This research work has been able to take various positive comments from the assigned supervisor and attempted to include these into the whole thesis but

for the restrictions in terms of time and resources, the researcher has not been able to include all of these reviews.

Firstly, the dataset used to examine the relationship between all the measures of risk management and the influences in Microfinance banks might take the form of a non-linear relationship and more variables may be included to establish all other types of risks in financial systems.

Additionally, the issue of Panel data analysis for this regression in terms of cross-sectional and time series analysis can be looked upon from various methodologies. We can assume that a regional analysis may bring in more robust results necessary for comparison purposes.

Lastly, the policy influences may be looked upon in terms of risk analysis, and management of microfinance banks with an outlook on national level in comparison to other regions. Thus, this establishes a template, trend, or growth indicator for the microfinance industry at large.

Appendix AAA - Calculation of Variables

Variable	A'priori	Explanation	Measurement
CAR		This acts as a measure of the banks capability to buffer against solvency risks	Regulatory Capital divided by Total Risk Weighted Asset
<u>Independent Proxies:</u>			
<u>Bank-related</u>			
CRisk	(+)	Credit risk measures banks' exposure to counterparty risk	Loan/Total asset
LQRisk	(+)	This is a measure of insolvency in a bank when the firm can provide its short term obligations	Liquidity ratio: As measured by debt to equity ratio
ROA	(+/-)	Return on total assets measures how profitability Banks	Net income divided by total asset
SIZE	(+/-)	It reflects the profitability of financial institutions.	Natural logarithm of total asset
<u>Macroeconomic</u>			
ECOgr	(+)	Economic growth rate is proxy for	From The World Bank

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		cyclicality	
<i>INFdom</i>	(+/-)	Domestic rate of inflation	From The World Bank

Source: Awojobi O., Amel R., and Norouzi S., (2011)

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Appendix 1- Nigeria Market Profile



Iba MFB	2011	457,244	396	319,698	3,286
Ibu-Aje MFB	2011	371,615	1,103	411,350	4,988
ICMFB	2008	311,889	895	401,384	9,551
Ikire MFB	2011	409,735	876	523,440	8,647
Ikoyi-Ile MFB	2011	259,803	709	180,518	1,848
Ilobu MFB	2011	418,021	296	488,366	5,010
Iloffs MFB	2011	274,061	—	376,283	—
Ilorin MFB	2011	95,694	212	86,461	—
Ilorin MFB	2011	430,173	470	407,454	7,287
IMFB	2008	24,465,686	23,304	14,336,279	152,827
IMHOKHAI FARMERS INITIATIVE	2010	28,442	216	715	216
Insight MFB	2011	314,266	214	465,808	15,551
Ipapo MFB	2010	343,289	2,440	341,908	4,204
Iperu MFB	2011	361,498	266	996,868	14,570
Karis MFB	2007	136,635	220	—	996
Keffi MFB	2012	264,924	2,478	656,577	6,883
Kemel MFB	2011	132	223	146	1,878
LAPO-NGR	2012	108,410,676	559,227	62,715,664	756,904
Leadcity MFB	2011	511,005	—	365,142	—
Legend MFB	2011	406,350	1,902	557,324	9,790
LFH	2006	276,423	1,882	—	0
LMI	2004	32,434	6,800	—	0
MBA MFB	2011	297,207	567	108,896	2,894
Mbaitoli MFB	2012	49,226	80	77,638	1,058
Moyofade MFB	2011	353,699	1,858	772,096	10,126
Multinvest MFB	2011	444,649	1,067	517,219	10,156
Mutual Alliance SBL	2004	175,179	2,500	687,466	3,500
Nagarta MFB	2012	719,071	850	2,197,887	6,759
Nasarawa MFB	2010	862,678	2,538	1,200,170	17,979
North Capital MFB	2010	—	—	123,301	—
NSD	2010	248,981	1,520	329,308	1,860
Oakland MFB	2011	405	622	411	4,593
OAU MFB	2011	160,284	1,367	364,753	—
Obokun MFB	2011	128,989	393	84,692	1,818
Ogiyan MFB	2011	417	3,539	1,272	8,381
Okigwe Industrial MFB	2010	278,197	338	150,158	—
Okuku MFB	2011	712,330	342	462,842	4,181
Olofin MFB	2011	525,684	465	1,640,092	15,210
Ologbon MFB	2011	477,725	2,189	463,459	8,644

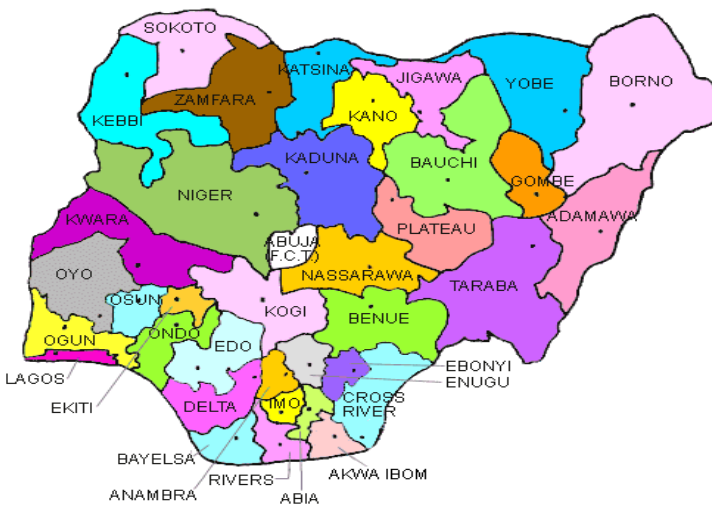
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MFI	Year	Assets	Loans	Capital	Reserves
Okigwe Industrial MFB	2010	278,197	338	150,158	—
Okuku MFB	2011	712,330	342	462,842	4,181
Olofin MFB	2011	525,684	465	1,640,092	15,210
Ologbon MFB	2011	477,725	2,189	463,459	8,644
Olomi MFB	2007	697,457	—	971,425	—
Olubasiri MFB	2011	725,308	2,967	660,456	5,708
Omak MFB	2011	410,506	1,791	—	3,080
Onibu-Ore MFB	2011	477,193	33,208	328,534	41,914
Oroke MFB	2011	385,530	1,271	609,612	5,409
OSCOTECH MFB	2011	424,926	750	610,777	2,808
Osofo MFB	2011	162,065	1,615	70,080	2,411
Ospoly MFB	2011	158,995	164	1,763,989	3,031
Pace Setter MFB	2010	488,715	3,200	472,946	—
Pathfinder MFB	2011	236,307	534	279,692	3,501
Paypal Thrift and Loans	2010	918	5,011	—	—
SEAP	2012	59,419,085	349,470	42,264,282	372,130
TrustFund MFB	2011	2,433,294	2,164	2,857,885	41,334
WODASS	2010	156,310	1,520	20,698	1,530
Zion MFB	2010	201,789	866	371,980	2,250

Appendix 2 – Descriptive Statistics

	MFI	FYR	CAR	PAR	ROA	LQTY	INF	ECO	OPR	OPEXPLO
1	Date: 05/10/14	Time: 16:24								
2	Sample: 1 800									
3										
4										
5										
6	Mean	NA	0.403416	0.066788	0.072087	0.704577	11.40032	0.073830	0.274056	0.371226
7	Median	NA	0.322900	0.031250	0.038650	0.731850	11.01542	0.068800	0.167600	0.173100
8	Maximum	NA	2012.000	1.567200	0.985400	1.179900	2.911900	26.75076	0.106000	8.474900
9	Minimum	NA	2003.000	-0.036200	0.000000	0.000000	-4.320573	0.054000	0.000000	0.000000
10	Std. Dev.	NA	2.874078	0.291609	0.111787	0.119718	0.230418	9.566604	0.016460	0.405847
11	Skewness	NA	0.000000	0.639551	4.320385	4.011682	0.835296	-0.012984	1.042935	11.59846
12	Kurtosis	NA	1.775758	2.427621	27.05937	25.09280	15.76011	1.783766	2.719893	215.0088
13	Jarque-Bera	NA	49.95898	65.45804	21783.97	18415.54	5520.373	49.32992	147.6159	1514271.
14	Probability	NA	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
15	Sum	NA	1860600.	322.7329	53.43060	57.66970	563.6619	9120.252	59.06400	218.9706
16	Surr Sq. Dev.	NA	6600.000	67.94365	9.984573	11.45157	42.42095	73124.42	0.216478	131.4398
17	Observations	0	800	800	800	800	800	800	799	800

Appendix 3 – The Nigerian Map



Source: NigeriaNews

Appendix 4 – Hausman Test

EViews [Equation: RANDEFFECTMODEL Workfile: UNTITLED::Untitled]

Correlated Random Effects - Hausman Test
Equation: RANDEFFECTMODEL
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	9.920214	6	0.1281

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff)	Prob.
PAR	-0.107442	-0.075168	0.001192	0.3500
ROA	-0.098488	-0.039631	0.000943	0.0553
LQTY	0.120922	0.095989	0.000141	0.0359
SIZE	0.008717	0.011238	0.000008	0.3680
OPEXPON	0.020320	0.021903	0.000038	0.7980
OPR	-0.008628	-0.026342	0.000124	0.1114

Cross-section random effects test equation:
Dependent Variable: CAR
Method: Panel Least Squares
Date: 05/10/14 Time: 17:45
Sample: 2003 2012
Periods included: 10
Cross-sections included: 80
Total panel (unbalanced) observations: 799
WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.275139	0.067644	4.067459	0.0001
PAR	-0.107442	0.101330	-1.060318	0.2894
ROA	-0.098488	0.090988	-1.082425	0.2794
INF	NA	NA	NA	NA
ECG	NA	NA	NA	NA
LQTY	0.120922	0.045020	2.685984	0.0074
SIZE	0.008717	0.009625	0.905687	0.3654
OPEXPON	0.020320	0.017521	1.159763	0.2465
OPR	-0.008628	0.026410	-0.303702	0.7614

Effects Specification

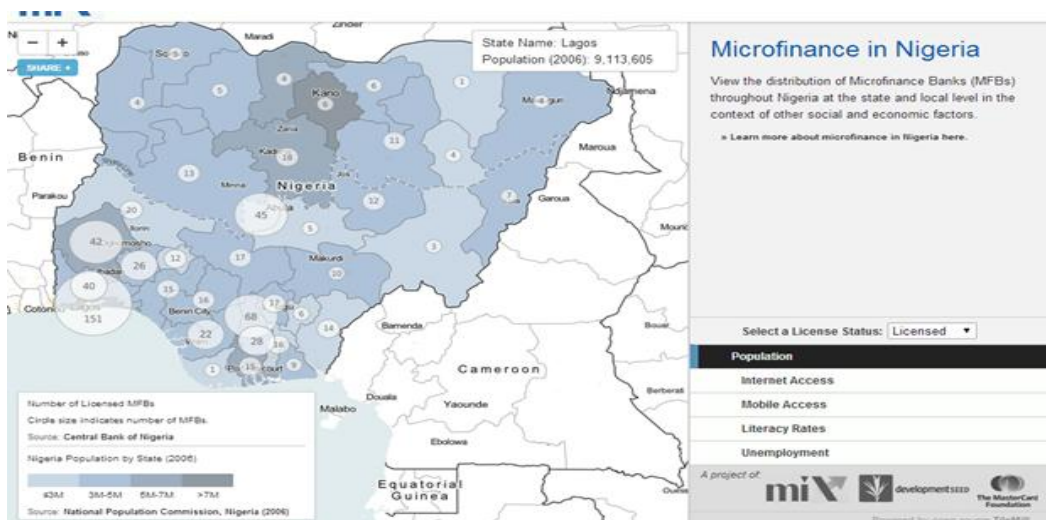
Appendix 5 – Coefficient Covariance Matrix

EViews [Equation: RANDEFFECTMODEL Workfile: UNTITLED::Untitled]

Coefficient Covariance Matrix

	C	PAR	ROA	INF	ECG	LQTY	SIZE	OPEXPON	OPR
C	0.009249	0.000574	-0.000316	-3.88E-06	-0.065837	-0.001132	-0.000550	4.28E-05	-9.22E-05
PAR	0.000574	0.009075	-4.29E-05	-3.59E-06	-0.015214	0.000129	-2.12E-05	-3.04E-05	0.000128
ROA	-0.000316	-4.29E-05	0.007336	1.36E-06	-0.000931	-9.89E-05	-1.30E-05	-6.32E-06	-2.31E-05
INF	-3.88E-06	-3.59E-06	1.36E-06	2.74E-06	-0.000314	-9.22E-07	-2.70E-07	-4.48E-06	-5.09E-07
ECG	-0.065837	-0.015214	-0.000931	-0.000314	0.936555	-0.003047	0.000608	-0.000873	0.000538
LQTY	-0.001132	0.000129	-9.89E-05	-9.22E-07	-0.003047	0.001886	6.42E-06	1.65E-06	-7.88E-06
SIZE	-0.000550	-2.12E-05	-1.30E-05	-2.70E-07	0.000608	6.42E-06	8.48E-05	-2.61E-06	-1.95E-05
OPEXPON	4.28E-05	-3.04E-05	-6.32E-06	-4.48E-06	-0.000873	1.65E-06	-2.61E-06	0.000269	-3.61E-05
OPR	-9.22E-05	0.000128	-2.31E-05	-5.09E-07	0.000538	-7.88E-06	-1.95E-05	-3.61E-05	0.000683

Appendix 6 Distribution of Microfinance Banks in Nigeria



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