

**EVALUATION OF MICROFINANCE BANK LENDING  
TO AGRICULTURE IN IMO STATE, NIGERIA**

***BY***

**NWACHUKWU MELISSA OJIUGO (B. Agric. Tech)  
REG. NO: 20094735458**

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## CERTIFICATION

This is to certify that this work titled, “Evaluation of Microfinance Bank Lending to Agriculture in Imo State, Nigeria” was carried out by **NWACHUKWU MELISSA OJIUGO** with Registration Number **20094735458**, a post graduate student of the Department of Agricultural Economics, Federal University of Technology, Owerri, Nigeria.

---

**Prof. J.I. Lemchi**  
*Principal Supervisor*

---

*Date*

---

**Dr. D.O. Ohajianya**  
*Co-Supervisor*

---

*Date*

---

**Prof. C.C. Eze**  
*Head of Department  
Agricultural Economics*

---

*Date*

---

**Prof. J.S Orebiyi**  
*Dean, SAAT*

---

*Date*

---

**Engr. Prof K.B. Oyoh**  
*Dean Post Graduate School*

---

*Date*

---

**Prof. E.C Okorji**  
*External Examiner*

---

*Date*

## **DEDICATION**

This project is dedicated to the Almighty God for His inspiration, and to my eternal companion and husband Mr. K.I Okwara for being with me through the undulating topography of Okigwe to the thorough Plains of Orlu.

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## Abstract

The study was an evaluation of microfinance bank lending to agriculture in Imo State, Nigeria. The specific objectives of the study were to (i) to analyse the institutional features of the microfinance banks in the study area (ii) analyse the socioeconomic characteristics of the loan beneficiaries, (iii) determine the amount of credit supplied by microfinance banks to farmers and their repayment performance, (iv) determine the factors influencing credit supply by microfinance banks to farmers, (v) determine the factors influencing credit repayment by agricultural loan beneficiaries of microfinance banks, (vi) determine the efficiency of microfinance banks loans to agriculture in the study area, (vii) determine the deposit portfolio of the microfinance banks in the study area, (viii) analyze the strategies employed by microfinance banks to guard against loan default by farmers and, (ix) analyze the major constraints affecting the performance of microfinance banks in lending to agriculture in Imo state. Two null hypotheses were formulated in line with the specific objectives. Both purposive and simple random techniques were used in the study. The purposive selection was based on the microfinance banks which had high level of agricultural lending. Out of 47 microfinance banks in the three agricultural zones of Imo state, 26 microfinance banks were randomly selected and used for the study. A sampling frame of 194 agricultural loan beneficiaries was obtained from the microfinance banks' list. From this list, 136 beneficiaries were selected through simple random sampling and this formed the sample size for the beneficiaries. A set of questionnaire was administered on the bank official while the other set was administered on the 136 loan beneficiaries. Data were analyzed using descriptive statistics, multiple regression analysis and tobit regression analysis. The result of this study indicates that the mean amount of credit supplied by microfinance banks to farmers was N163212.50. The overall repayment performance was 67.20% resulting in a default rate of 32.80%. The result of the multiple regression showed that the variables for average farm income ( $X_4$ ), loan period ( $X_5$ ), gender ( $X_6$ ) and distance ( $X_7$ ) were significant at 1% and 5% levels and are important factors influencing credit supply by microfinance banks in the study area. The tobit regression showed that variables age ( $X_1$ ), grace period ( $X_8$ ), education ( $X_9$ ), dependency ratio ( $x_{10}$ ), and collateral ( $X_{12}$ ) were significant at 1% and 5% levels of significance and are important factors influencing loan repayment performance of the farmer beneficiaries in the study area. A mean efficiency index of 0.06 was obtained showing that 6% of microfinance banks interest was spent on loan recovery while 25.78% of the interest was intact. The result of hypothesis showed that microfinance banks are efficient in their lending to agriculture. It was also discovered that the microfinance banks had a mean deposit portfolio of N121, 653,840.00 out of which they lent 163,212.50 to farmers in the study area. It was also observed that the geographic spread of microfinance banks in Imo state tilted towards the Orlu agricultural zone while Okigwe zone experienced the lowest spread and was therefore recommended that all concerned agencies should increase the number of microfinance banks in that area in order to extend credit facilities to small scale farmers, improve infrastructure and increase deposit mobilization. It was recommended that microfinance banks should review their policies as they affect the amount disbursed to farmers to make it adequate. Furthermore, age, education, dependency ratio collateral, grace period and other key issues in the study played vital roles in repayment performance, it was recommended that microfinance banks emphasize on them in designing loan schemes as it affects farmers. Since microfinance banks were efficient in their lending to agriculture there is need for them to make policies on agricultural lending in order to increase access to loan beneficiaries.

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## DEFINITION OF TERMS/ ACRONYMS

AE	-	Allocative efficiency
ABM	-	Annual board meeting
BOA	-	Bank of Agriculture
CBN	-	Central bank of Nigeria
CGAP	-	Consultative group to assist the poor
CIBN	-	Chartered Institute of bankers of Nigeria
CLR	-	Cost of loan recovery
DFI	-	Development finance institution
GDP	-	Gross domestic product
ICC	-	International criminal Court
LAR	-	Loan at Risk
LGA	-	Local Government area
MFBs	-	Microfinance banks
MFI	-	Microfinance Institutions
MIS	-	Management Information Systems
NACB	-	Nigerian Agricultural and Cooperative Bank
NGO	-	Non- governmental organization
NPC	-	National population commission
PAR	-	Portfolio at risk
ROA	-	Return on asset
ROE	-	Return on equity
ROSCAs	-	Rotating savings and credit associations
TE	-	Technical efficiency
TLR	-	Total Loan Recovered

SEALS	-	Special emergency loan scheme
SEEDS	-	State Economic Empowerment and Development Strategy
UNESCO	-	United nations educational scientific and cultural organization
UNICAP	-	Uniform Capitalization

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background Information

Agriculture is an important industry and like other industries requires capital. Due to the peculiarities of agriculture, especially its uncertainties, low return, high rate of risk etc. A large number of producers cannot meet up with the needed finance without recourse to borrowing. One of the most important lessons of universal agrarian history is that the agriculturist must borrow, due to the fact that capital is locked up in his lands and stocks (Sadhu and Sigh, 1993). For stimulating the tempo of agricultural production, it is necessary that the farmer must be provided with adequate and timely credit (Njoku, 2002). To raise agricultural production farmers have to borrow. It is thus in the interest of agriculture and general progress that credit be made available to farmers in adequate amount and at appropriate costs (Pinaki, 1998). Microfinance banks have been a key player in agricultural credit supply over the years. Microfinance is defined as the provision of financial services to low-income clients, including consumers and the self-employed, who traditionally lack access to banking and related services (Gonzalez-Vega, 2008). Microfinance is a provision of a broad range of financial services such as savings, credit, insurance and payment services to the poor or low-income group who are excluded from the normal banking sectors.

Recently, microfinance has received a lot of attention, both from policy makers and researchers. In particular, it has been mentioned as an important instrument to combat poverty. To support this view, the United Nations declared 2005 to be the international year of micro-credit. In 2006, the attention for microfinance and its role in reducing poverty was further buttressed when Mohammed Yunus received the Nobel

Peace Prize. These developments have led to high expectations among policy makers and aid organizations about the potential poverty reducing effects of microfinance.

Many microfinance institutions (MFIs) examples include NGO-MFIs and informal (ROSCAS and Co-operatives) are still dependent on subsidies from governments and non governmental organizations (NGOS). According to estimates from Deutsche Bank in 2007, only 1-2 percent of all MFIs in the world are financially sustainable i.e. they do not depend on outside subsidies. On the other hand, some microfinance institutions have demonstrated the potential to assist the poor make significant strides towards reducing their vulnerability, improving their livelihoods, paying for basic health care and financing their children's education (Little Field, *et al.*, 2003).

The potential of microfinance far exceeds the micro level, scaling-up to address macro-problems associated with poverty eradication of which agriculture is a major key player in eradicating poverty. Giving the rural people access to credit will bring about the much needed development thus reducing rural urban migration (Ijere, 1992). Agricultural credit is provided by microfinance markets and other financial institutions and the accessibility of a good financial service is considered one of the engines of economic development. (Milton and Wallace, 1990). The establishment and expansion of finance markets can be said to be one of the instruments to breaking the vicious circle of poverty. The provision of credit has increasingly been regarded as an important tool for raising the incomes of rural populations whose occupation is mainly agriculture, by mobilizing resources for increased productive uses (Briquette, 1999). As development takes place, the question becomes to what extent can credit be given to farmers in order to help them take advantage of entrepreneurial activities?

However, at low levels of income, the accumulation of such capital may be difficult since credit transactions are not costless and there is no single rate of interest to cover the costs of and returns to the three principal actors – borrowers, lenders and savers in the system. Instead each type of participant faces one form of transaction cost or the other (Ellis, 1994). High transaction costs threaten the viability of microfinance markets, cause transfer costs to borrowers or savers and result to lender preference for few big loans rather than many small ones (Ahmed and Sarap, 1990). They are likely to increase the costs of intermediation beyond the level imposed by explicit interest rate on the performance and efficiency of the financial institutions.

Although, microfinance banks are not a panacea for poverty, associated with small holder farmers, they are expected to fill the gaps created by commercial banks. They can do this by providing a broad range of microfinance services that would support farmers in their efforts to improve their own prospects and the prospects of their families. More so, without agricultural microfinance, the millions of cash starved small scale farmers who dominate the rural landscape will be unable to adopt most productivity enhancing technologies that abound in agriculture. Microfinance banks extend loans to these farmers and increase their capacity to earn more income. Knowing how efficient these microfinance banks are would help increase our understanding of their potential to reduce poverty and increase quality of service delivery as well as the potentials and shortfalls surrounding the sector in financing agriculture.

## 1.2 **Statement of the Problem**

Over the years agriculture has been of primary global concern. Prices of agricultural goods, such as cereals and milk, are hitting records highs on international

markets. Food security is no longer guaranteed. High food prices have become a crucial short-term problem for consumers, especially among the poor regions.

However, high performing agricultural markets have the potential to stimulate a new wave of agro-investment and innovation and give small holder farmers a chance to earn a decent living. But to take advantage of this historical opportunity, farmers would have to invest and increase production. Access to microfinance is therefore decisive. Yet so many farmers are excluded from the banking system.

Microfinance banks evolved with the aim of providing financial services to poor and low income households who lack access to formal financial institutions (Conroy, 2003). They are increasingly a central source of credit for the poor in many countries (Daley-Harris, 2006). Between 1964 and 1967, various Development Finance Institutions (DFIs) were established at both national and states levels in the country (CBN, 2000). Of more relevance to micro enterprise is the Nigerian Agricultural and Cooperative Bank (NACB) currently called Bank of Agriculture, established in 1973 to promote development of the agricultural sector in which most operators are micro entrepreneurs.

However, with the drastic reduction in government subventions to the DFIs, their operations reduced and by late 1990, they all ceased operating (Hassan, 2008). The poor performance of the DFIs notwithstanding, the need to channel financial resources to productive sectors has remained a major challenge to the government and monetary authorities. In December, 2007, the new government policy gave licenses to 107 microfinance banks and converted 600 out of 761 community banks to microfinance banks bringing the number of microfinance banks to 707 in the country, (Soludo, 2008). Despite this, poverty remains chronically high in the country. An

important question therefore is whether these microfinance banks are really efficient in their lending to agriculture based on their prevailing interest rates.

According to Anyanwu (2004), the interest rates charged by microfinance banks are much higher than the prevailing rate in commercial banks. This ranges between 32% - 48%. During this period (2002-2004), the banks are charging between 19.5% and 21%. Since Clients have to repay double of what they have received at all costs, default rates skyrocketed.

When default rates increase, the cost of lending increases thereby diminishing the number of people who should have access to credit and other financial services. To stem this tide, various measures have been taken by both government and financial institutions. For example, current microfinance policies especially those relating to loan eligibility and management require that a client or prospective client must be a member of a recognized group that is registered with the Microfinance Banks, attend group meetings regularly, have a business/an income-generating activity, be an adult, reside in the locality or operational area of the Microfinance Bank, have a recognized member of the community as surety and must have saved for a minimum of 3 months with the Microfinance Bank. Other measures relating to loan size, loan terms and conditions, first and subsequent loans repayment installments and plans etc have been put in place to curtail the incidence of loan default and enhance repayment capacity and improve efficiency (Oji, 2006).

Despite these measures and others so far put in place, the incidence of loan default remains high among beneficiaries of agricultural microfinance. This has great implication for continued flow of funds from microfinance banks to agriculture. One wonders why this has remained so. Is it that these Microfinance banks have not learnt from the experiences of the defunct DFIs? Or that they do not undertake proper loan

assessment before giving loans? Are their interest rates still high? Or do they lack capacity to track loan beneficiaries. These questions and others make one wonder if these banks operate efficiently under their present condition as to provide the needed service for the agricultural sector. Finding answers to these questions are pertinent because the Microfinance banks are naturally situated to fund agriculture. It is based on these problems that the topic is conceptualized.

### 1.3 Objectives of the study

The main objective of this study is to determine the efficiency of microfinance bank lending to agriculture in Imo State, Nigeria. The specific objectives are to:

- (i) analyse the institutional factors of the microfinance banks
- (ii) analyse the socioeconomic characteristics of the loan beneficiaries,
- (iii) determine the amount of credit supply by micro finance banks to farmers and their repayment performance in the study area,
- (iv) determine the factors influencing credit supply by microfinance banks to farmers,
- (v) determine the factors influencing credit repayment by farmer beneficiaries of microfinance banks loans,
- (vi) determine the efficiency of microfinance banks loans to agriculture,
- (vii) determine the deposit portfolio of the microfinance banks in the study area,
- (viii) analyse the strategies employed by microfinance banks to guard against loan default by farmers, and
- (ix) analyse the major constraints affecting the performance of microfinance banks in lending to agriculture in Imo State.

#### 1.4 Hypotheses of the study

The following hypotheses were tested.

- (1) The microfinance banks are not efficient in their agricultural loan recovery scheme.
- (2) The socioeconomic characteristics of the loan beneficiaries like age, education, household size, farm income, loan period, gender, distance, farming experience, enterprise type do not significantly influence their loan repayment.

#### 1.5 Significance of the study

It is generally agreed that for Nigeria and most other developing countries to achieve a breakthrough in agricultural development, there is need to increase agricultural credit to farmers. Over the years attempts have been made by some commercial banks, community banks, development finance banks and other finance institutions to achieve the objective of credit provision but to no avail. The formal financial system provides services to 35% of the economically active population while the remaining 65% are excluded from access to financial services. These 65% are often served by the informal sector microfinance institutions, money lenders, friends, relatives and credit unions (CBN, 2005).

This study is therefore prompted by the need to improve the performance and efficiency of microfinance providers and encourage private sector participation in terms of rural financial intermediation. It is expected that the outcome of this study would provide a policy and institutional frame work to improve microfinance efficiency in terms of lending and performance. It is equally expected that unraveling the problems of microfinance banks agricultural loan repayment would enhance the credit rating of beneficiaries or farmers thus encouraging increased financing of their operations. This will eventually lead to breaking the vicious circle of poverty because the farmers would

be empowered financially to be more productive. Furthermore, most studies have dwelt on the problems and prospects of microfinance without so much emphasis on efficiency. To researchers on efficiency of Microfinance Banks, the study will provide more micro data for further research.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Theoretical and Conceptual Framework**

##### **2.1.1 Concept of Credit and Agricultural Finance.**

Credit is a word derived from a Latin base meaning faith or trust. In economics or finance, the term is used specifically for the faith placed by a creditor (Lender) in a debtor (borrower) by extending a loan (usually in the form of money or goods) to the debtor. Credit is defined as a transaction between two parties in which the creditor supplies money, goods, services or security for a promised future payment by the other (borrower or debtor).

Credit is only a device for facilitating the temporary transfer of purchasing power from individual(s) or organization to others. (CGAP, 2006). Agricultural finance is defined in diverse ways depending on the way it is seen. It is said to be the financial intermediary that provides loans to agricultural and financial markets with which they operate. It can be seen as the financing and credit services provided to farm growers. Meagan,(2006) defined agricultural finance as a subset of rural finance dedicated to financing agricultural related activities such as input supply, production, distribution, wholesale, processing and marketing.

##### **2.1.2 Concept of Micro-Credit**

Nawai, (2010), defined micro-credit as extremely small loans given to impoverished people to help them become self employed. The loan characteristics are: small amounts, short-term; (a year or less), no collateral required; weekly repayment; borrower relatively poor, and mostly women who are not qualified for a conventional bank loans. Usually the loan attracts high cumulative interest rates because of the high cost in running micro credit program. The credit is required to spur entrepreneurship and help the borrower out from poverty group. These individuals lack collateral, steady

employment and verifiable credit history, which therefore, cannot even meet the most minimal qualifications to gain access to traditional credit (Nawai, 2010).

Grameen Bank defined micro credit as small loans given to the poor for undertaking self-employment projects that would generate income and enable them to provide for themselves and their families.

### **2.1.3 Concept of Default and Delinquency in Agricultural Loans**

The issue of loan default has been pronounced in many public lectures as one of the reasons commercial banks have not shown much interest in Agricultural financing. Balogun and Alimi, (1990), defined loan default as the inability of a borrower to fulfill his his/her obligation as at when due. It means that a debtor has not paid a debt which he or she is required to have paid (Baku and Smith, 1998). It is the failure to pay back a loan and may occur if the debtor is unwilling or unable to pay his/her loan. Some of the negative impacts of loan default as stated by Balogun, (1990) include the inability to recycle funds to other borrowers, unwillingness of the financial intermediaries to serve the needs of small borrowers and the creation of distrust.

On the other hand, loan delinquency is a situation that occurs when loan payments are past due. A delinquent loan (or a loan in arrears) is a loan on which payments are past due (Calmeadow, 2009). It is also referred to as arrears or late payments (USAID). It is a step to default. If loan delinquency continues, the borrower will eventually default on the loan. Many factors have been identified as major determinants of agricultural loan default. Okorie (1986); shows that the nature of the loan, time of disbursement, supervision and profitability of the enterprise, type of loan, interest on loan, poor credit history, borrowers income and transaction costs of the loans are all determinants of default.

#### 2.1.4 **Concept of Efficiency**

Efficiency is an input –output relationship. It is crucial in competitive markets. While efficiency of conventional financial institutions like commercial banks has often been studied, analyses of the efficiency of microfinance banks are less frequent due to the late emergence of this sector. There are different forms of efficiency. In 1957, Farrell decomposed production efficiency into two elements technical efficiency, (TE) and Allocative efficiency (AE). Technical efficiency measures the firm’s success in producing maximum output with a given set of input. It measures the ability of the firm to achieve maximum output given a set of input. Scale efficiency or scale technical efficiency can be referred to pure technical efficiency. This implies that if constant return to scale and variable return to scale are conducted on the same data and no difference is found in technical efficiency scores, we define this as pure technical efficiency (Coelli, 1996). Allocative efficiency or price efficiency quantifies the firm’s success in choosing an optimum combination of inputs. Economic or productive efficiency is the product of technical and allocative efficiencies (Farrell, 1957).

#### 2.1.5 **Concept of Microfinance**

Microfinance is defined as the provision of financial services to low-income clients, including consumers and the self-employed, who traditionally lack access to banking and related services (Gonzalez-Vega, 2008). Microfinance is described as “banking for the poor” Microfinance programmes provide loans, savings and other financial services to low-income people for use in small business (Okoye, 2005). According to Ledger wood,(1999), microfinance is a provision of a broad range of financial services such as savings, credit, insurance and payment services to the poor or low-income group who are excluded from the normal banking sectors. It is a development approach that provides financial as well as social intermediation. The

financial intermediation includes the provision of savings, credit and insurance services, while social intermediation involves organizing citizens' groups to voice their aspirations and raise concerns for consideration by policy makers and develop their self-confidence (Robinson, 2002). Moreover, Conroy, (2002) stated that microfinance is the provision of a broad range of financial services such as deposits, loans, payment services, money transfers and insurance to poor and low-income households and their micro enterprises. The World Bank defines microfinance as “small-scale financial services – primarily credit and savings – provided to people who farm or fish and who operate small enterprises or micro enterprises where goods are produced, recycled, repaired, or sold; who provide services; who work for wages or commissions; who gain income from renting out small amounts of land, vehicles, draft animals or machinery and tools; and to other individuals and groups at the local levels of developing countries, both rural and urban” (Robinson, 2001). From all these definitions, microfinance encompasses broad financial services given to the poor and low-income group for many reasons and not just for income generating activities.

Microfinance institutions (MFIs) were established to fill the gap in the financial services sector by providing funds to the poor and lower income group and thus alleviating poverty and enhance their business activities. The MFIs provide funds for start-up business or for working capital. In addition, some MFIs also provide funds for non-business activities such as for education and emergencies purpose. In the credit market, agency problem, moral hazard and adverse selection exist because of information asymmetries (Nawai, 2010). Information asymmetries are the main obstacle for MFIs to provide loans to clients. Financial institutions usually require business proposal, borrower past approving the loan. MFIs offer credit through group-based lending method(s) to mitigate agency problems, moral hazard and adverse

selection and to replace the collateral requirement. In group before applying loans and they also are responsible to other loan members. If one member defaults, the others will be responsible to pay the loan or they will be denied access for the next loans. MFIs are non-governmental organizations that are not profit-oriented. The difference between commercial banks and microfinance banks is the former focus on rich clients, while the latter to microfinance bank clients who are poor people. The most successful Microfinance bank is the Grameen Bank in Bangladesh.

### **2.1.6 Microfinance Bank Lending Models**

Microfinance itself is a credit lending model, and within this lending model exist several categories. Some models differ in terms of where their funds are sourced from and how the money is governed. They are; associations, bank guarantees, community banking/Grameen bank/village banking model, cooperatives, credit unions, non-governmental organizations, for profit banks and rotating savings and credit associations (ROSCAS).

#### **2.1.6.1 Associations**

An association is formed by the poor in the target community to offer microfinance services to them. The association, which can be formed on the basis of gender, religion or political and cultural orientation of its members gathers capital and intermediates between microfinance banks and its members. This model is based on over coming individual short comings by the aggregated accountability and security engaged by the formation of a group of these individuals. This collective approach also helps in educating and building awareness, collective negotiation powers, peer pressure etc.

#### **2.1.6.2 Bank Guarantees**

As the name implies bank guarantee is utilized when a loan from a commercial bank is needed. A donor or a government guarantees micro loans made by

microfinance, commercial bank to an individual or group of borrowers compulsory deposits by borrowers in such banks are also included in this model. In other words, the guarantee can be set up externally through using a donor or donation or a government agency etc, or internally through the use of member savings. There loan funds may be used for insurance claims and loan recovery.

### **2.1.6.3 Grameen Bank/Community Banking/Village Banking**

Community/village banks are formal versions of associations and are created by members of the target community who wish to improve their standards of living and to generate employment. By offering microfinance services, these banks seek to develop their communities. It entails that a bank unit be composed with a field manager and a set of bank staff covering a specified area, like 15 to 20 villages. The services start by the manager and staff familiarizing themselves with the native people and explaining to them the intent, functions, motives and mode of operation.

Finally, groups comprising of five future borrowers are formed out of which only two people get the loan and if within fifty weeks they return the principal/plus interest as per the banking rules, the others become as well. This is done so that there is a collective liability on the group, which serves as guarantee against the loan.

### **2.1.6.4 Cooperatives**

They are very much like ‘associations and community banks’ except that their ownership structure does not include the poor. A group of middle or upper class individuals may form a cooperative to offer microfinance services to the poor. A cooperative is a group of people who come together voluntarily to meet their mutual economic, social and cultural aspirations and needs the egalitarian controlled enterprise. Sometimes the cooperatives also include savings activities and member financing as well.

#### 2.1.6.5 **Rotating Savings and Credit Associations (ROSCAs)**

ROSCAs are small groups typically composed of women, where each member makes regular cyclical contributions into a common fund, which is given entirely to one member at the start of each cycle (weekly, monthly, and quarterly). The benefit of this model is the matching of a client's cash flows with the loan, the ability to structure the deal without interest rates and the absence of overhead costs.

#### 2.1.7 **Nature of Repayment Problems**

The high level of default and delinquency observed among borrowers can be categorized into four;

borrower-related causes

causes related to loan utilization

lender-related causes

extraneous causes (Olomola, 1999)

Borrower –related causes include ill-health, lack of regular meeting, imitation among group members (i.e. one member waiting for another to repay), burden of other debts and family problems.

The causes related to loan utilization are low sales; fall in products prices, poor yield, and low demand for products, perishable nature of products, pest attack and inclement weather (especially inadequate rainfall).

The lender-related causes are high interest rates and late disbursement of loans.

Other critical but extraneous factors are fuel scarcity, poor transportation and communication system and high cost of transportation.

### 2.1.8 Factors Affecting Repayment Performance

The literature on factors influencing repayment performance among financial institutions targeting the poor is very sparse and limited mainly to microfinance experience in low-income countries (Derban *et al.*, 2005; Silwal, 2003). The results of the studies show mixed result. Based on past literature, the factors affecting repayment performance of MFIs can be divided into four factors namely individual/borrower factors, firm factors, loan factors and institutional/lender factors. Several studies Greenbaum *et al.*;(1991); Hique(2000); Colye(2000); Ozdenoir and Boran, (2004) show that when a loan is not repaid, it may be as a result of the borrowers, unwillingness and/or inability to repay Stiglitz and Weiss, (1981) recommend that the banks should screen the borrowers and select the “good” borrowers from the “bad” borrowers and monitor the borrowers to make sure that they use the loans for the intended purpose. This is to mean that the borrowers can pay back their loans. Greenbaum and Thakor, (1995), suggest that the borrower’s past records be looked at as well as ascertain his economic prospects to determine whether the borrower is likely to repay or not. Besides characters of the borrowers, collateral requirements, capacity or ability to repay and conditions of the market should be considered before giving loans to the borrowers.

individual/borrowers characteristics affecting repayment performance.

Oke *et al.*, (2007) mention that firm’s profit significantly influenced loan repayment while some other authors link repayment performance with firm’s characteristics such as (Nannyonga, 2000, Arene 1992). But according to Eze and Ibekwe, (2007), the borrower characteristics include Age, Educational level, Gender while Njoku,( 1997) outlined borrower’s business experience as a borrower characteristic. Nannyonga, (2000) mentioned monthly income as a borrower characteristic.

## **Institutional/Lender characteristics influencing repayment performance**

According to Bhatt and Tang (2002), the threat imposed by the lenders, Regular monitoring by Zeller (1998); Arsyad,( 2006) and Transaction Cost Oke *et al.*,(2007) are microfinance characteristics. Other institutional/lender characteristics include Amount of loan size (Eze and Ibekwe, 2007), Repayment method and repayment period,(Guttman, 2007).

Loan characteristics also affect the repayment performance of microfinance institutions. These include the amount of loan (Loan size) Njoku, (1997), Eze and Ibekwe, (2007), Guttman, (2007). Repayment method; Derban *et al.*, (2005) and repayment period Jain and Mansuri, (2003).

### **2.1.9 Repayment Performance of Micro-Credit Programmes**

The calculation of performance indicators is important for donors, practitioners, and consultants to determine the efficiency, viability and outreach of micro credit programmes. Performance indicators collect and restate financial data to provide useful information about the financial performance of the micro credit institutions. The sustainability and viability of MFIs are important to make sure that MFIs can continually provide financing micro enterprise without depending on donors and government. Therefore, financial sustainability is a prerequisite for making micro financial services permanent as well as widely available (ICC, 2001). Chamhuri and Basri,( 2001) study on issues and constraints faced by microfinance institutions identified the issues and constraints especially with respect to outreach, viability/sustainability, resource mobilization and policy environment.

Based on institutionist approach Murdoch, (2000); Woller *et al.*, (1999), MFBs should be able to cover its operating and financing costs with programme revenues and not depend on subsidies and gifts from governments and donors. The UNDP and the

United Nations Capital Development Fund UNICAP,(2005) proposed five key indicators to measure the performance of MFBs namely. Outreach, client poverty level; collection performance; financial sustainability and efficiency. MFBs are quite dependent on the loan repayments to get fund for future loans. Therefore, MFBs must take great precautions to insure that the clients will repay the loan. Roodman, (2006) listed four key microfinance challenges and they include building volume keeping loan repayment rates high, retaining customers and minimizing scope for fraud in branches.

#### 2.1.10 Core Performance Indicators for Microfinance

Experience has shown that funding agencies microfinance interventions produce better results when design, reporting and monitoring focus explicitly on key measures of performance (Farrington, 2006). These basic tools for measuring performance of micro finance institutions in five core areas are:

**Outreach:** How many clients are being served? The Client poverty level, collection performance, financial sustainability and efficiency. These indicators do not capture all aspects of MFB performance. This involves the number of clients or accounts that are active at a given point in time. The interpretation of outreach is expanding the number of almost all microfinance interventions.

#### **Client Poverty Level**

$$\text{Average outstanding balance} = \frac{\text{Gross amount of loans or saving outstanding}}{\text{Number of active client or Accounts}}$$

The average outstanding balance includes only loan amounts that clients have not yet repaid or savings that the clients have not withdrawn. An average outstanding loan balance below 20% of per capita GDP or \$US 150 is regarded as a rough indication that clients are very poor (CGAP, 2003). The interpretation is that the average outstanding balance is roughly related to client poverty, because better off clients tend to be interested in smaller loans. But the correlation between loan balances

and poverty is very far from precise. Low loan sizes do not guarantee a poor clientele. Likewise, growth in average loan size does not necessarily mean that a MFI is suffering “mission drift”. As an MFI matures and growth slows, a lower percentage of its clients are first-time borrowers and average loan sizes will cease even if there has been no shift in the market it is serving.

**(iii) Collection performance**

Reporting of loan collection is a minefield. Some indicators camouflage rather than clarify the true situation. Moreover, terminology and calculation methods are not always consistent. Therefore, whenever any measure of loan repayment, delinquency, default, or loss is reported, the numerator and denominator of the ratio should be explained precisely. MFI’s self-reported collection performance often understates the extent of problems, usually because of information system weakness rather than intent to deceive. The standard measure of portfolio quality in banking is portfolio at risk (PAR) beyond a specified number of days.

$$\text{PAR (x days)} = \frac{\text{outstanding principal of all loans positive more than x days}}{\text{Outstanding principal balance of all loans}}$$

The number of (X) days used for this measurement varies. In microfinance, 30 days is a common break point. If the repayment schedule is other than monthly, then one repayment period (Week, fortnight, quarter) could be used as an alternative. Many young unsophisticated MFIs do not yet have loan tracking systems strong enough to produce PAR figures. Most of these, however, should be able to calculate the loan at risk (LAR), a simpler indicator that counts the number of loans instead of their amounts. As long as repayment is roughly the same for large loans and small loans, (LAR) will not differ much from (PAR).

**(iv) Financial sustainability (Profitability)**

The commonest measures of profitability are Return on Equity, which measures the returns produced for the owners and Return on Assets (ROA) which reflects the organization's ability to use its assets productively.

$$\text{ROA} = \frac{\text{Profits after tax}}{\text{Total Asset}}$$

$$\text{ROE} = \frac{\text{Profits after tax}}{\text{Equity}}$$

(v) **Efficiency**

A commonly used indicator of efficiency is the operating expense ratio. It expresses non-financial expenses as a percentage of the gross loan portfolio.

Operating Expenses

$$\text{Ratio} = \frac{\text{Personal \& administrative Expenses}}{\text{Period – average gross loan portfolio}}$$

Where gross loan portfolio means the total outstanding (not yet repaid) amounts of all loans.

**2.1.11 Loan Performance in Group Lending**

Microfinance policy frame work paves way for group lending as well as individual lending. Group lending programmes have been promoted in many developing countries of which Nigeria is one. A common characteristic of group lending is that the group obtains loans under joint liability, so each member is made responsible for repayment of his or her peers. Joint liability, in cities members to perform various functions, including screening of loan applicants, monitoring the individual borrower's efforts, fortunes and shocks and enforcing repayment of their peer's loan (Zeller, 1996).

In group-lending programmes, the functions of screening, monitoring and the enforcement of repayment are to a large extent transferred from bank to group members. The financial intermediary reduces recurrent lending transaction costs by replacing a multiple of small loans to individuals with larger group loan (Adams and Zeller, 1996), this reduction in transaction costs enables financial intermediaries to bank with the poor, who demand small loans and who would not receive any credit under individual loan contract because of excessive unit transaction costs of tiny loans. Zeller further argues that probably the most important rationale for group lending is the information and monitoring advantages that group-based financial institutions at the community level have, compared to individual contracts between a bank and a borrower. Group members get important information like reputation, indebtedness and asset ownership of the loan applicants at a lower cost. They can also easily monitor individual efforts made towards ensuring repayment. Groups also have the advantage comparatively in enforcing loan repayment. They may potentially employ social sanctions or seize physical collateral from the defaulter (Besley and Coate, 1995). Groups are also in a better position to assess the reason for default and offer insurance services to members who are experiencing shock that are beyond their control (Zeller, 1996).

Group lending is fraught with problems despite the benefits outlined above. Since the risk of loan default is shared by his or her peers, a member may choose a riskier venture compared to that of an individual contract; and may count on other members to repay his or her loan. Another problem is that repayment incentives for a good borrower will vanish under joint liability, when he or she expects that significant number of peers will default. Individuals select those whom they trust to form a group with that is they want those who can make regular repayments, have a good concern

about the possible loss they face in case of non-payment, ultimately leading to the exclusion of the poorest of the poor.

The capability of borrowers to repay their microcredit loans is an important issue that needs attention. Borrowers can either repay their loan or choose to default. Borrower defaults may be voluntary or involuntary (Brehanu & Fufa, 2008).

According to Brehanu and Fufa (2008), involuntary defaults of borrowed funds could be caused by unexpected circumstances occurring in the borrower's business that affect their ability to repay the loan. Unexpected circumstances include lower business revenue generated, natural disasters and borrowers' illness. In contrast, voluntary default is related to morally hazardous behaviour by the borrower. In this category, the borrower has the ability to repay the borrowed funds but refuses to because of the low level of enforcement mechanisms used by the institution (Brehanu & Fufa, 2008). Research has shown that a group lending mechanism is effective in reducing borrower defaults (Armendariz de Aghion, 1999). In group lending, the loan is secured by the co-signature of members within the group and not by the microfinance institution. Each member will put pressure on the others in the group to meet the loan repayment schedule. Thus, group sanction is important in discouraging defaults among members in microfinance (Van Tassel, 1999).

Studies on the effectiveness of the group-lending mechanism include Ahlin and Townsend (2007) on Thailand's microcredit borrowers and Olomola (2000) on Nigeria's microcredit borrowers. In addition, Sharma and Zeller (1997) and Zeller (1998) undertook studies on Bangladesh and Madagascar microfinance borrowers, respectively, examining the impact of group characteristics, lender characteristics and community characteristics on loan default rates. The repayment behaviour among borrowers in the group-lending model was also investigated by Wydick (1999). The

author investigated the impact of social ties, group sanctions and peer monitoring on loan repayment behaviour among Guatemalan microfinance borrowers, Bhatt and Tang (2002) conducted a study to investigate the determinants of loan repayments in microcredit programmes that applied the group lending approach, but took a different approach. Bhatt and Tang looked at the borrower's socio economic variables instead of the elements of group lending for their influence on loan repayment behaviour. The borrower's socio-economic variables included gender, educational level, household income and characteristics of the business ( type of business, years in business, etc.). In their study, they found that a higher education level was significant and positively related to better repayment performance.

Conversely, female borrowers, level of household income, type of business and borrower's experience had no significant effect on repayment behaviour.

#### Institutional factors of Microfinance Banks

The institutional factors cover the following areas; legal structure and history, ownership/ control and funding, leadership, human resource management, branch structures and geographical locations, internal control system and audit, and goals and objectives of the institutions (Onyeagocha, 2008).

#### 2.1.12 **Strategies used to avert Loan Default**

A loan default can occur when the borrower is unable to repay the credit to the lender. In some cases, a loan default could also include the violation of the terms and conditions of the loan agreement between the borrower and the lender. If the borrower has violated any of these terms and conditions, he would be considered as the defaulter by the lending institution and the latter has the right to impose restrictions or demand full repayment of the loan or even charge additional interest. If a loan has been offered to a corporate agency, it becomes a necessary condition, laid down by the bank that the

agency has to maintain certain level of capital amount. If the level is not maintained, the bank could possibly refer the borrowing agency as a defaulter and take action against it according to the agreement.

Loan default can happen in both secured and unsecured loan credit. In secured loans, the borrower usually mortgages his assets, either his house, plot of land or any other asset, which has a value in the market. If the borrower is unable to repay the loan he has taken against the property, the bank reserves the right to acquire the property and sell it off, as per the prevailing value of the property in the market. Under the loan defaulting terms and conditions, the bank could recover the credit extended to the borrowers from the selling of the assets of the borrower secured with the bank. The bank while extending the secured loan to the borrower ensures that the latter surrenders the ownership documents of the assets to the bank. If it is a house or a land mortgaged to the bank, then, in that case, the borrower has to give up his title deeds to the bank against the credit received.

The loan agreement clearly mentioned that if the borrowers are unable to repay the credit, the bank reserves the right to sell their assets to recover the loan amount.

In unsecured loans, the lender also has the right to take hold of the assets of the borrower as per the agreement between the lender and the borrower. Loan defaults keep happening depending upon the financial condition of the borrower. Although it is the responsibility of the lender to assess the repaying capacity of the borrower, in some cases, the defaults happen in unexpected manner. If the borrower fails to pay even the single loan monthly installment on time, he can be considered as a defaulter and the bank can begin taking action against him immediately.

### 2.1.13 Ways banks use to recover failed credit from customers.

There are basically two methods or strategies adopted in loan recovery:

- (1). Orthodox method
- (2). Unorthodox method

**Orthodox method:** This method includes demand letter, personal visit and telephone calls, debt counseling, litigation, sales of mortgages, opening of savings security account and dividend warrant etc.

- (a) **Demand letter:** This is a letter to the borrower, one month before the maturity of a loan to remind him that capital loan and interest thereon are due for repayment. It is best written by the legal department of the bank, who will insert some clause to the letter. The debtors who fail to pay could be sued to court.
- (b) **Personal visit and telephone calls:** The bank officers could pay a visit to the debtor's business premises or home to discuss and see things for themselves. Telephone calls could be used consistently as this will make the customer restless.
- (c) **Debt counseling:** The bank officer would be able to discuss with customers the nature of his problem (personal or business) especially why he has not made good his/her debt. After the exercise, the bank officer could be able to advice the customer as to know to how to re-order his or her priorities and start repaying his debt.
- (d) **Litigation:** This is the last resort to any bank in Nigeria because of the attitude of the judiciary to financial institutions. Courts are always in sympathy with debtors.

However, when a debtor is unable to pay, bank may go to court to prove the debt and attach the assets of the debtors after obtaining judgment.

**The unorthodox methods:** Include publication include publication of names of debtors in national dailies, the use of armed men, private investigation, technical embarrassment, use of professional seizures, debt collections etc.

- (a) **Publication of names of debtors in national dailies:** Whenever efforts have been made to recover debts from the bank debtors, the bank goes out of its way by publishing the names of debtors in national newspapers and magazines. Through this debtors will be able to repay the loan.
- (b) **The use of armed men:** This is the situation whereby banks use armed policemen and soldiers in recovery of the loans from debtors.
- (c) **Private investigation:** With Nigerians attitude to repayment, it becomes more difficult to recover loans granted to bank customers who had already made up their minds not to repay such loans, and those who had moved to other locations. The banks employ private investigators to look for them no matter where they may have gone to.
- (d) **Technical embarrassment:** Banks use technical method like all staff affairs in loan recovery. This is an unconventional means where all staff go for loan recovery from their debtors.
- (e) **Debt collection:** Due to delay and adjournment of cases in the courts, banks resort to debt collectors to help in the recovery of their outstanding indebtedness.

#### **2.1.14 Implication of non-recovery of loans**

Banks play a vital role in economic development, if there is any delay in loan repayment or if there is a default, it will result to underperformance of the banks. An aggregate of non-repayments of debts will affect the profit of the bank, it may lead to distress, and money for investment would not be available.

### 2.1.15 Regression Analysis

Regression is the amount of the variations in the value of one variable associated with a unit change in the value of another variable (Odi,2001). Regression analysis aims to establish and/or prove how one variable is related to another. That is, the amount of change in the value of another variable which derives from a unit change in the value of the other based on the statement of causal or functional relationship between variables (Eboh, 2009).

There are two classes of variables in regression analysis and they are called the dependent variable or endogenous variable or response variable or regressand or criterion variable and the independent variable or the exogenous variable or the predictor variable or the regressors. The key relationship in a regression is the regression. The regression equation contains regression parameters whose values are estimated using data. The estimated parameters measure the relationship between the dependent variable and each of the independent variables. When a regression model is used, the dependent variable is a modeled random variable because of either uncertainty as to its value or inherent variability. The data is assumed to be a sample from a probability distribution, which is usually to be a normal distribution

A regression analysis is simple when it involves only one independent variable and it is mathematically expressed

$$Y = f(X) \quad \text{implicit form} \dots\dots\dots 2.1$$

$$Y = b_0 + b_1 X_1 + e \quad \text{explicit form} \dots\dots\dots 2.2$$

Where  $b_0$  = intercept

$b_1$  = slope

$e$  = stochastic error term

e, error picks up unpredictable part of the independent variable Y. Where,  $b_0$  and  $b_1$  are the regression coefficients to be estimated. The coefficient  $b_1$  could be positive or negative, then we have an inverse relationship between X and Y.

One task in research analysis is to estimate such functional or causal relationship and test the validity or falsity; thus achieved through the use of linear regression analysis.

Regression analysis provides a method for determining the regression line which is defined as the best straight line approximation of a relationship between the dependent and independent variables. Once a regression model has been constructed, it is important to confirm the goodness of fit of the model and the statistical significance of the estimated parameters. Commonly used checks of goodness of fit are the  $R^2$  (square), analysis of the pattern of residuals and construction of an ANOVA table. Statistical significance is checked by an F-test of overall fit, followed by the t-tests of individual significance.

Interpretation of the results relies heavily on the assumptions of the model. The results of a t- test or F-test are meaningless unless the modeling assumptions are satisfied (Nachmias and Nachmias, 1992).

#### 2.1.16 Assumptions of Linear regression models

Linear regression has the following assumptions:

- (1) The independent variables must be linearly independent, that is the independent variables are independent of each other and must not be possible to express any independent variable as a linear combination of others.
- (2) The error terms must be normally distributed with a constant variance and zero mean that is  $e = N(0, \sigma^2)$  and independent of all explanatory variables, that is  $E(e_i, x_i) = 0$
- (3) The variance of error term must be constant across all levels of the independent variable (Homoscedasticity).

### 2.1.17 Multiple Regression Analysis

Multiple regression analysis is a multivariate analysis which involves the interaction between more than two variables. While simple regression analysis involves an independent variable, multiple regressions involve more than one independent variable. The aim of multiple regression analysis is to predict the single dependent variable by a set of independent or explanatory variables. The dependent variables are endogenous to the model while the independent variables are exogenous to the model (Eboh, 2009). Both dependent and independent variable should be metric (interval or ratio) data. In some cases dummy coded variables are used.

The multiple regression equation is as follows:

$$Y = b_0 + b_1x_1 + b_2x_2 + \dots + b_nx_n \dots \dots \dots 2.3$$

Where  $b_0$  = constant

$b_1, b_2 \dots b_n$  = coefficients or standardized partial regression coefficients showing the relative impact on the criterion variable.

The coefficients can be interpreted as the net change in Y for a unit change in  $x_1, x_2 \dots x_n$  holding the other x's constant. (Kothari, 1990).

### 2.1.18 Uses of Regression Analysis

1. Regression analysis can be used as a descriptive method of data analysis such as curve fitting without relying on any assumptions about underlying processes generating the data.
2. When paired with the assumptions in the form of a statistical model, regression can be used for predictions (including forecasting time-series data), inference, hypothesis testing and modeling of causal relationships.

### 2.1.19 Conditions for Using Multiple Regression

1. Multiple regression statistical technique is used when exploring linear relationships between the dependent and independent variables, that is when the relationship follows a straight line.
1. The dependent or criterion variables should be a continuous scale (such as interval or ratio scale ).
2. The predictor variables or independent variables should be measured on a ratio, interval or ordinal scale. A nominal predictor variable is legitimate but only if it is dichotomous as in the case of dummies.
3. Multiple regressions require a large sample size. The number of cases must substantially exceed the number of independent variables. The absolute minimum is that there should be five the sample size as the independent variables.

### 2.1.20 Some Uses of Dummy Variables in Multiple Regression

A dummy variable or binary variable is one which is used as proxy for another variable which cannot be measured quantitatively. The uses of dummy variables include:

1. A dummy variable can be used as proxy to qualitative or categorical explanatory factors such as sex, religion etc.
2. A dummy variable can be used as proxy to quantitative explanatory variable when no observations on the variable is available or when it is suitable to do so. Example, age is a quantitative variable but can be used as a dummy variable by forming two categories of age, that is, 0 if the household heads have ages less than 20 years and the value of 1 if the household heads have ages 20 years and above.

3. A dummy variable can be used to measure the shift of a mention over time. A shift in regression (curve) would imply a change of constant intercept, while the coefficients remain constant. Example, year with war is zero and year without war is one.

#### 2.1.21 Statistical Criteria or First Order Tests

After obtaining estimates of regression model, the next procedure is to evaluate the statistical and econometric reliability of the estimates. This procedure is done using the following statistical criteria. They are:

- (a) **Coefficients of multiple determination ( $R^2$ )**
- (b) T- statistics
- (c) F-statistics
- (d) Adjusted  $R^2$
- (e) Standard error (SE)
- (a) F test for testing overall significance.

This is used for testing the overall significance between the dependent and independent variables. In regression, if F-calculated value is greater than F-tabulated value, there is a significant impact between the dependent and independent variables in the regression equation but if otherwise there is no significant impact between the dependent and independent.

- (b) **The coefficient of multiple determination ( $R^2$ )**

This is the measure the goodness of fit. It is used to determine the explanatory power of the independent variables on the dependent variable.  $R^2$  denotes the percentage of variations in the dependent variable that is accounted for by variations in the independent variables. So, the higher the  $R^2$ , the more the model is able to explain

the changes in the dependent variable hence the better the regression based on the ordinary least square (OLS) technique.

However, if the  $R^2 = 1$ , it implies that there is 100% explanation of the variation in the dependent variable  $s$  by the independent variables. This signifies a perfect fit of the regression line. If  $R^2 = 0$ , it indicates that the explanatory variables do not explain any changes in the dependent variable.

Therefore, the closer the  $R^2$  is to 1, the higher the goodness of fit achieved by the model (Odi,2001).

### (c) **Adjusted $R^2$**

The value gives the most useful measure of the success of the model. It is the measure of how good a prediction of the criterion or the dependent variable can be based on the independent variables.

#### 2.1.22 **Econometric Criteria or Second**

These are used to know whether the assumptions of the econometric method used are satisfied or not in any particular case. They determine the reliability of the statistical criteria and also establish whether the estimates have the desirable properties of biasedness and consistency (Koutsoyiannis, 1977).

#### 2.1.23 **Indicators of Multicollinearity**

Multicollinearity occurs when the independent variables are strongly correlated in other words, it is when two or more of the predictors are linearly related or correlated. The predictor variables should not be strongly correlated with one another but with the dependent variable. When there is a correlation between two or more of the predictors, there is collinearity or multicollinearity. The causes of multicollinearity include; the nature of data or variables that move together naturally and the use of lagged values of the predictors. The indicators of multicollinearity are:

- (i) A relatively high  $R^2$  in an equation with few significant t-statistics.
- (ii) High simple correlation between one or two pairs of explanatory variables.

This problem can be reduced by increasing the sample size (n), removing all collinear variables and changing the functional form of the equation.

#### 2.1.24 Tobit regression

When the dependent variable is a qualitative measure rather than a continuous or interval measure, regression analysis would be unreasonable because it misestimates the magnitude of the effects of the independent variables and therefore renders all the standard statistical inferences such as the hypothesis tests, construction of confidence intervals and extrapolation and forecasts useless.

Therefore, qualitative choice models are used where variables cannot be measured on continuous scale and are limited with respect to the dependent variable Y. here the dependent variable is a discrete variable that represents a choice or category from a set of mutually exclusive choices or categories and the independent variables are presumed to affect the choice or category (Kothari, 1990).

Consequently, tobit regression is used in cases where the dependent variable is either zero or positive. It is used in situations where the dependent variable has the property of jumping discretely to zero or any other threshold (Punch, 1998). The estimation method used is the maximum likelihood under the assumption of homoscedastic normal disturbances.

The model used by Tobin in 1958 and thus specified as follows:

$$Y_i^* = \beta x_i + U_i \quad \text{where } u_i \sim N(0, S^2) \dots\dots\dots 2.4$$

But  $Y^*$  is not observed

$$Y_i = Y_i^* \quad \text{if } Y_i^* > Y_0 \text{ and } Y_i = Y_0 \quad \text{otherwise}$$

$Y_i$  = observed

$Y_0$  = known

$S^2$  = often treated as known

$X$ 's = are observed for all

A tobit model is based on censored dependent variable, a sample in which information on the regressand is available only for some observations (Green, 1998).

If the dependent variable ( $Y$ ) value takes the value of 1 or 0, the probit model should be applied. If the dependent variable ( $Y$ ) value takes the value between 0 and 1, logit regression model is advisable and finally if the value of  $Y$  has a discrete jump at zero, in other words, no values at some observations, the tobit model is suitable.

## 2.2 Empirical Literature

### 2.2.1 Loan Repayment

Several studies have been conducted in Nigeria with respect to loan repayment. Ajayi (1992) employed correlation and multiple regression analysis in his study about factors affecting default in Federal Mortgage bank of Nigeria. His results revealed that cost of production, monthly repayment, loan to volume ratio, market value of property, age of borrower and annual income of borrower enhanced loan defaults while expected rental income of property reduced loan default. (Zeller) 1996 analysed the determinants of loan repayment of credit groups with the purpose of quantifying the effect of intra-group pooling of risky projects by controlling the community level and programme design factors that influence repayment rate of group loans. He used tobit model by employing a data set on groups for different lending programmes. The results showed that socially cohesive groups pool risks by diversifying the members' asset portfolio so that their repayment performance is improved even in communities with high risk exposure. Groups with higher level of social cohesion as measured by the number of common bonds, have a better repayment rate. (Kashulizu) 1993 used a linear regression

model to analyze determinants of loan repayment in small holder agriculture in Southern Tanzania. His study showed that level of education, attitude towards repayment; farm income and off-farm income positively affect loan repayment with farm income being significant while age, house hold expenditure and household size have negative influence on loan repayment performance with household expenditure being significant. Bekele *et.,al*, (2003) employed logistic regression model to analyze the factors influencing loan repayment performance of small holders. The authors used data on 309 borrowers of input loans and found out that individuals who took larger loans had better repayment performance than those who took smaller loans. The results further revealed that late disbursement of inputs purchased by the loan funds was an important bottleneck in repayment while livestock were found to be important in improving the farmer's repayment performance. Kobansal and Mansoori (2009) investigated factors influencing loan repayment behaviour of farmers that received loan from agricultural banks of Khorasan-Razavi province of Iran using a logit model. Their result showed that farmers experience, income, loan size and collateral value have positive effects while loan interest rate application costs and number of installment showed a negative effect on repayment performance of farmers.

Eze and Ibekwe (2007) used the ordinary least squares (OLS) method of regression to estimate the determinants of loan repayment under indigenous financial system in Southern Nigeria. Results from the study showed that coefficients of the amount of loan borrowed, age, occupation and farming experience were positively correlated to with the amount of outstanding loan. Age, the amount of loan borrowed, household size, education and occupation were statistically significant at 5% level. Interest rate, household size and education were negatively correlated but statistically significant at 5% level.

Feroze *et.,al* (2011),used the Tobit regression to ascertain the factors influencing group repayment performance in Haryana, India. The result revealed that peer monitoring, group size and female percentage have positive influence on repayment performance while homogeneity and loan amount have negative influence on repayment performance. Sileshi *et.,al* ( 2012) also used the tobit regression model to determine the factors affecting loan performance of smallholder farmers in Ethiopia, the study revealed that agro ecological zone, off farm activity and technical assistance from extension agents positively influenced the loan repayment performance of smallholder farmers while production loss, informal credit, social festival and loan to income ratio negatively influenced the loan repayment performance of smallholder farmers ( $p<0.05$ ). Olagunju and Ajiboye (2010) used tobit regression model to ascertain the determinants of loan approval decision and loan size. The study revealed that risk averseness of the beneficiaries affected the size of the loan, household size and farm size also add up to affect the decision to give loans or not. The determinants of loan repayment rates for agricultural loans were investigated by Brehanu and Fufa (2008). Using probit and logit regression, they conducted a study on the determinants of repayment performance among small-scale farmers in Ethiopia. In the study, they found that borrowers with larger farms, higher numbers of livestock and farms located in a rainfall area had a higher capacity to repay loans, since all those factors increased the farmers' productivity and income. The study also found that borrowers who had extra business income and were experienced in using agricultural technology had a good repayment performance. Roslan and Abd Karim (2009) investigated microcredit loan repayment behaviour in Malaysia. They conducted a study on microcredit loan borrowers from Agro Bank Malaysia. Agro Bank is a commercial institution specializing in loans to borrowers involved in agricultural business. Apart from giving large-scale loans, it also

provides small-scale loans, such as microcredit loans, to borrowers. In their research, they found that male borrowers and borrowers who had a longer duration for repayments had a higher probability of defaulting. Borrowers involved in non-production oriented business activities such as in the service or the support sectors who had training in their particular business and who borrowed higher loans had lower probabilities of defaulting. Okorie (1986) studied the repayment behaviour in one agricultural corporation in Nigeria. The author's results from interviews with borrowers showed that the nature of the loan, either cash or in kind (seeds, fertilizer and equipment) can influence the borrowers' repayment behaviour. He found that borrowers who received a loan in kind had higher repayment rates than borrowers who received a cash loan. This was because many borrowers misused the cash, diverting it into personal consumption instead of investing in making their business productive. Regular visits by the loan officer to the borrowers' business site and higher profits generated by the borrowers also contributed to higher repayments by borrowers.

### **2.2.2 Efficiency**

Various studies have examined various measures of micro finance institution efficiency across many countries. The study by Farrington (2000) identifies a number of accounting variables to reflect the efficiency of microfinance institutions. The accounting variables are administrative expenses ratio, number of loans per loan officer and loan officers to total staff, portfolio size, lending methodology, source of funds and salary structure as the drivers and hence the measurements for microfinance efficiency. Lafourcale, Isern, Mwangi and Brown (2005) used cost per borrower and cost per saver as measures of efficiency. Some other researchers have used partial productivity approach to evaluate efficiency. One of the objectives of this study which is the evaluation of microfinance bank lending to Agriculture in this study would be analyzed

using the index of efficiency analysis. This would help measure the efficiency level of microfinance banks in Imo state.

### 2.2.3 Socioeconomic Characteristics of Loan Beneficiaries

Ohajianya (2002) found that farmers with no formal education did not receive credit from the bank. However, a large proportion of the farmers (40.95%) spent 9-12 years in school. Cumulatively, every beneficiary had some form of formal education or the other. Education plays an important role in agriculture especially in area of loan repayment, adoption of new technique. It increases the repayment capacity of farmers since it allows for more effective organization and allocation of credit. Loan repayment performance is affected adversely by illiteracy since good management and utilization of microfinance loans are based on sound education.

Onuoha (2003) observed that the coefficient of age in his model is small but positive this does not mean that the older the farmer, the more credit he needs but seems to suggest that age of the farmer has an influence on the demand for credit.

Ohajianya (2002) also observed that the average years of farming experience acquired by loan beneficiaries in the State is 21 and above while the less experienced farmers benefit more than their less experience counterparts.

Okerenta (2005) found out that the mean annual income of his respondents was N55,000 and classified it as low. The higher the level of annual income of loan beneficiaries, the higher the amount of credit obtained.

Adebayo and Adeola (2008) in their study discovered that the respondents had large family size with majority falling within the range of 6-10 persons per family. Akubundu (2010) found out that 55.55% of the loan beneficiaries had between 4-6 persons in their household with a mean household size of 6 persons. This implies that the farmers spend a modest amount on non-farm activities such as clothing, feeding,

children's school fees and hospital bills etc. Ibekwe (2001), observed that households with greater number of members especially those not dominated by children are more advantageous because they add more to free labour thus leading to increased production. Eze (2006) observed that the capital formation of male farmers though more than that of the females, they still borrow to augment their capital production. Akubude (2010) found out that majority of the farmers 87.77% were married this implies that the banks seem to be more favourably disposed to granting loans to married farmers who possibly are seen to be able to provide the collateral and surety often required for the loan.

#### **2.2.4 Factors Influencing Credit Supply**

Oboh (2010) observed that certain factors such as age, gender, education, annual income, farm size, household size etc affected the amount of credit allocated to the agricultural sector. He discovered that majority of the farmers were male and most farmers spent an average of 8.3 years in formal school. Age of beneficiaries maintained the right a priori positive sign suggesting that credit supply to the farm increases with increasing age of farmers. Education was positive as well as farm size. This implies that the more educated a farmer is, all things being equal, the more efficient he is in allocating resources. (Nwaru, 2005). The bigger the farm size, the bigger the amount of credit supplied because more inputs would be employed thus necessitating additional capital. Emerole (2004) found out that an increase in farm size increases the amount of credit supplied. Household size was negative implying that credit supply to the farm sector decreases with increased household size. Mejeha (2005) observed that the bigger the household size the greater the tendency that the funds would be diverted for the upkeep of the family.

## CHAPTER THREE

### METHODOLOGY

#### 3.1 Study Area

The study area is Imo State, South-east Nigeria. It lies on Latitudes  $4^{\circ} 45^1$  N and  $7^{\circ} 15^1$  N and Longitudes  $6^{\circ} 50^1$  E and  $7^{\circ} 35^1$  E. The State shares common boundaries with Anambra State on the North, Abia State on the East, Delta State and Rivers State on the West and South respectively. Imo State is made up of 27 Local Government Areas and a population of about 3,927,563 persons comprising 1,976,471 males and 1,951,092 females (National Population Commission, 2006). It has a land area of  $5289.49\text{km}^2$  with a population density of 605 persons per square kilometer (Ministry of Lands, Survey and Urban planning Imo State, 2006). The temperature in Imo State increases from the southern to the northern part of the state except in January when the situation is reversed by the haze of harmattan. The mean annual temperature ranges between  $26^{\circ}\text{C}$  and  $28^{\circ}\text{C}$ . The soils of Imo State are dominated by sandy loam and feralitic soil, making the soil rich in free ion, low nutrient reserve and fertile status. The mean annual rainfall ranges from 2400mm in the South to about 1,900mm in the North. Imo State has an average annual relative humidity of 75% which is highest during the raining season, when it rises to about 90% (Imo State Tripod Vision, 2006). The high temperature and humidity experienced in the State favour luxuriant plant growth which produces the state's rich and beautiful vegetation of the tropical rainforest. Agriculture is the major economic activity of the people of the state while others are civil servants, traders, and artisans. (Ministry of Commerce, industry and Tourism,2005). Different credit institutions operate in Imo State and they include commercial banks, development banks, the micro finance banks, esusu, money lenders and thrift societies. The study concentrated on microfinance banks. Imo State was chosen as the study area

because it is an agrarian state and about 80% of the population is engaged in subsistence farming (Adegbehin, 2006) who are in need of microfinance services to increase agricultural production as well as increase household income.

### **3.2 Sample Selection**

Both simple random sampling and purposive sampling techniques were used in the study. A list of microfinance banks were collected from the Owerri office of Central bank of Nigeria. From this list, 26 MFBs were selected. The purposive selection was based on the microfinance banks that had the highest number of agricultural loan beneficiaries. The lists of agricultural loans beneficiaries were obtained from the microfinance banks compiled by the credit officers. A total of 194 beneficiaries were obtained from the list and this formed the sampling frame. From this sampling frame, 136 loan beneficiaries were randomly selected. The beneficiaries selected represented 70% of the sampling frame. The information contained the names of the beneficiaries and their locations.

### **3.3 Methods of data Collection**

Data were collected from both primary and secondary sources. The primary data were collected using structured questionnaire which were administered on the selected beneficiaries. The variables on which information were collected include age of respondents, gender, education, household size, annual farm income, type of enterprise, farming experience, interest rate of loan received, total cost of application, loan size, type of collateral, moratorium, farming experience, dependency ratio, farming objective, loan period, actual amount paid bank, cost of loan recovery and total loan recovered. The questionnaire was face validated by placing it side by side with the specific objectives of the study. The reliability of the questionnaire was tested using the test-re-test method. The questionnaire was administered twice in one month to twenty

(20) of the loan beneficiaries with the help of trained assistant. The product moment correlation coefficient (r) between the first and second tests was computed and found to be significant at both 5% and 1% probability levels thereby making the questionnaire a valid and reliable instrument for the field survey.

Secondary information was obtained from past research reports, microfinance institutions publications, internet, documents from Ministry of Agriculture and other relevant materials.

### 3.4 Methods of Data Analyses

Data collected were analyzed using descriptive statistics, multiple regression analysis and efficiency model. Objectives (i), (ii), (iii), (vi), (vii), (viii) and (ix) were analyzed using descriptive statistics such as mean, frequency distribution and percentages.

Objective four (iv) which is to determine the factors influencing credit supply by microfinance banks to farmers was achieved by the use of multiple regression analysis (karylowski,1985). Following the multiple regression analysis, the generalized functional form is,

$$Y = f(x_1, \dots, x_n, e) \dots\dots\dots 3.1$$

Where:  $x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8, x_9$ , are independent variables and Y is the dependent variable. The various functional forms that were employed are explicitly expressed as follows:

$$L_n Y = a_0 + a_1 L_n x_1 + a_2 L_n x_2 + a_3 L_n x_3 + a_4 L_n x_4 + a_5 L_n x_5 + a_6 L_n x_6 + a_7 L_n x_7 + a_8 L_n x_8 + a_9 L_n x_9 \dots\dots\dots + e \quad \text{Double log function} \dots\dots\dots 3.2$$

$$L_n Y = a_0 + a_1 x_1 + a_2 x_2 + a_3 x_3 + a_4 x_4 + a_5 x_5 + a_6 x_6 + a_7 x_7 + a_8 x_8 + a_9 x_9 \dots\dots\dots + e$$

Exponential function.....3.3

$$Y = a_0 + a_1 x_1 + a_2 x_2 + a_3 x_3 + a_4 x_4 + a_5 x_5 + a_6 x_6 + a_7 x_7 + a_8 x_8 + a_9 x_9 + e$$

Linear function .....3.4

$$Y = a_0 + a_1 L_n x_1 + a_2 L_n x_2 + a_3 L_n x_3 + a_4 L_n x_4 + a_5 L_n x_5 + a_6 L_n x_6 + a_7 L_n x_7 + a_8 L_n x_8 + a_9 L_n x_9$$

.....+ e                      Semi log function .....3.5

**Where:**

Y = amount of microfinance bank agricultural credit supply (N)

X<sub>1</sub> = Age (years)

X<sub>2</sub> = Education (years)

X<sub>3</sub> = Household size (Number of persons)

X<sub>4</sub> = Net farm income (N)

X<sub>5</sub> = Loan period (months)

X<sub>6</sub> = Gender (Dummy Variable, male=1, female=0)

X<sub>7</sub> = Distance (Km)

X<sub>8</sub> = Farming experience (years)

X<sub>9</sub> = Enterprise type (Crop production =1, 0 otherwise )

e = error term

It is expected *a priori* that the coefficients of x<sub>1</sub>, x<sub>2</sub>, x<sub>4</sub>, x<sub>6</sub>, x<sub>9</sub>, >0; x<sub>3</sub>, x<sub>5</sub>, x<sub>7</sub>, <0.

In estimating the regression model, the data collected were fitted to the four functional forms and the form that gave the best fit, based on the value of the coefficient of multiple determinations (R<sup>2</sup>), number of significant variables and conformity to *a priori* expectations was chosen as the lead model.

Objective five (v) which is to determine the factors influencing credit repayment by farmer beneficiaries of microfinance banks was achieved using the tobit Model. The rate of loan repayment was computed as a proportion of total loan amount repaid on the promised date to the total amount borrowed plus interest rate (Sharma and Zeller, 1997).

The tobit model was used because the dependent variable had the property of jumping discretely to 0 or any other threshold and the information for the regressand was available only for some observations (Green, 1998). The other advantages of the tobit model include believable error term distribution, as well as realistic probabilities (Wongnaa, 2013). The variable was zero in the case of non-repayment on the schedule date and was equal to one in the case of complete repayment as shown in equation 3.1. The influence of different factors on rate of repayment performance was estimated using tobit which is based on maximum likelihood estimates. The model is expressed as

$$\begin{aligned} \text{LRP} &= 0, \text{ if the farmer has not completely repaid.} \\ \text{LRP} &= 1, \text{ if the farmer has completely repaid.} \dots\dots\dots 3.6 \end{aligned}$$

The function for loan repayment performance was defined in equation 3.2 as

$$\text{LRP} = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12})$$

.....

- 3.7  $X_1$  = Age (years)
- $X_2$  = Sex (Dummy variable, male = 1, female = 0)
- $X_3$  = Average Farm Income (naira)
- $X_4$  = Interest rate (%)
- $X_5$  = Total application Cost (naira)
- $X_6$  = Grace period (weeks)
- $X_7$  = Distance (Km)
- $X_8$  = Farming Experience (years)
- $X_9$  = Education (years)
- $X_{10}$  = Dependency ratio (%)
- $X_{11}$  = Loan period/Tenure (months)
- $X_{12}$  = Collateral (Dummy variable, yes = 1, No = 0)

It is expected *a priori* that the coefficients of  $x_2, x_3, x_6, x_8, x_{10}, x_9 > 0$ ;  $x_1, x_4, x_5, x_7, x_{10}, x_{11} < 0$ .

Objective Six (vi) which is to determine the efficiency of microfinance banks loan recovery to agriculture was achieved using descriptive statistic and index of efficiency. The index of efficiency is defined as the cost of loan recovery divided by the total loan recovered or the cost of loan recovery divided by the loan amount and compared with the prevailing interest rate.

Mathematically expressed thus:

$$\frac{CLR}{TLR} = e \dots\dots\dots 3.8$$

Where,

e = index of efficiency of loan recovery

CLR = Cost of loan recovery

TLR = Total loan recovered

**Decision rule:**

If efficiency index is greater than the prevailing interest rate (The bank is inefficient)

If efficiency index is less than the prevailing interest rate (The bank is efficient)

If efficiency index is equal to the prevailing interest rate (Breakeven point)

**3.5 Test of Hypotheses**

Hypothesis one (i) which states that the microfinance banks are not efficient in their agricultural loan recovery scheme was tested using the result from the index of efficiency analysis in achieving objective (vi).

Hypothesis two (ii) which states that farmers repayment of microfinance banks credit is not influenced by their socioeconomic characteristics was tested using t-values obtained from tobit regression results in objective (v).

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.1 Institutional Features of Microfinance banks

The institutional features of the banks covered age, ownership/control and funding, leadership human resource management, management information systems (MIS), geographic locations of the banks, internal control system and audit.

##### 4.1.1 Age

The distribution of the microfinance banks according to their age is presented in Table 4.1

Table 4.1 Distribution of Microfinance Banks by Age

Age (years)	Frequency	percentage
1- 2	3	11.50
3 – 4	6	23.10
5 – 6	17	65.40
Total	26	100

Mean 5. 23 years

Source: Field data, 2013

Table 4.1 showed that about 65.4% of the respondents were between 5 and 6 years old. Then 23.10% of the others were between three and four years old. The mean age of the banks was 5.23 years suggesting that most of them were relatively young. This could be attributed to the recent upgrade of some community banks in 2008 to Microfinance banks.

##### 4.1.2. Ownership/control and funding

The Owner and main decision-making entity is the Annual General Meeting (AGM) held every month. The annual meeting gave important direction on policy matters for

their organization. The appointment and directors as well as the management staff were approved by the Central bank of Nigeria (CBN). The microfinance banks visited had substantial evidence that their Heads of department possessed proven skills and competence in practical microfinance banking and had undergone or is undergoing training. Onyeagocha (2009) in his comparative study of the methods and performance of microfinance institutions in South-Eastern Nigeria also observed that the Heads Departments of NGO-Microfinance institutions had enough evidence to show competence of their departmental heads.

The profile of head of department of microfinance banks by Certificate of Chartered Bankers of Nigeria (CIBN) registration is presented in Table 4.2

Table 4.2 Profile of microfinance banks by CIBN

Microfinance banks	CIBN
Owerri	09
Orlu	16
Okigwe	2
Total Registered	27
Total unregistered	20
Grand total	47

Source: Bank directory, 2013

Table 4.2 showed that 27 out of 47 microfinance banks have registered their departmental heads for CIBN programme. The CIBN is an important umbrella professional body for bankers in Nigeria which is authorized to control entry into the banking profession, to set standards for bankers and maintain professional ethics through sanctions of erring members. This implies that more than half of the banks in

Imo State have either acquired or are yet to acquire the proven skills for better operation and efficiency.

#### **4.1.3 Funding of Microfinance banks**

The distribution of the microfinance banks according the funding is presented in Table 4.3.

Table 4.3: Distribution of Microfinance Banks according to funding

Funding	Frequency*	Percentage
Share Holder's Fund	4	15.39
Deposits/Savings	8	30.77
Interest Income	6	23.08
Grant/Donations	12	46.15
Fees And Commissions	5	19.23

\*Multiple responses recorded

Source: Field data, 2013

The result showed that 46.15% of the Microfinance Banks received funding through grants and donations from individuals, government, organization, various tier of government and some commercial funding from international sources. About 30.77% of the banks received funding through deposits and savings.

#### **4.1.4 Ownership of Microfinance Banks**

The Distribution of the microfinance banks according to their ownership is presented in

**Table 4.4.**

Table 4.4 Distribution of Microfinance Bank by Ownership

Item	Frequency	Percentage
AGM/BOD	3	11.50
Public	8	30.80
Cooperatives	1	3.90
Communities	5	19.20
Private	9	34.60
Total	26	100

Source: Field data, 2013

The result showed that about 34.60% of the banks were owned by private organizations while 30.8% of the banks were owned by the shareholders of the banks. Furthermore, 19.20% of the banks were owned by communities in the study area.

#### **4.1.5 Human Resource Management**

The microfinance banks in the study area had a simple organizational structure with little or no bureaucracy. The staff strength of banks and the ratio of clients per credit officer were very low. The rate at which staff disengaged was also so high thus attributable to the quest for greener pastures or higher learning or education. The remuneration on the other hand was poor when compared with the average salary of a credit officer in the commercial bank.

#### **4.1.6 Leadership**

The leadership of the microfinance banks rested on the board and management. The leadership was moderate and had knowledge with respect to actualizing their goals but was constrained by conservatism and slow reformation process.

#### 4.1.7 Geographic location of Microfinance banks

Distribution of the microfinance banks according to geographic location is presented in Table 4.5

Table 4.5: Distribution of Microfinance bank by geographic location

Zone	Frequency	Percentage
Owerri	20	42.55
Orlu	23	48.94
Okigwe	4	8.51
Total	47	100

Source: Field data, 2013

Table 4.5 showed that 48.94% of the microfinance banks were location in Orlu Agricultural zone of Imo State while 42.55% of the banks were located in Owerri agricultural zone. Okigwe zone recorded the lowest geographic spread of microfinance banks in the study area. This implies that those who would want to source funds from microfinance banks in the area would source funds from other zones. More so, the ratio of clients to credit officer would also be high. This may make the banks device stricter loan terms and conditions thus excluding the poorest of the poor.

The high percentage of microfinance banks Orlu be an indication of the level of commercial activities in the area.

#### 4.1.8 Management Information Systems (MSI)

The distribution of respondents according to their management information systems is presented in Table 4.6

Table 4.6: Distribution of Microfinance Banks by Management Information Systems.

Item	Frequency*	Percentage
Software Package	19	73.08
Computers	24	93.31
Internet	10	38.46
Other media forms e.g Television, radio	14	53.46

Multiple responses recorded

Source: Field data, 2013

The result shows that the microfinance banks had their branches reasonably computerized. About 92; 31% of the banks had computer while 73% of them had both relevant software configuration for efficient service delivery. This implies that those banks which had computers and internet facilities as well as the requisite software configuration would perform more effectively and efficiently than those without the afore mentioned facilities. More so, those banks with computers and requisite soft configuration tracked loan beneficiaries better than their counterparts.

About 53.46% of the banks had other forms of media that enabled them access information.

#### 4.1.8 Internal control system and Audit

The microfinance banks in the study area observed standard checks against misappropriation of resources. They had up-to-date and well documented records of disbursements and inflows. Most of the banks had current Central Bank of Nigeria's (CBN) revised regulatory and supervisory guidelines for microfinance banks in Nigeria. The banks also had Internal auditors and afforded the services of external auditors.

## 4.2 Socioeconomic characteristics of the Microfinance Banks loan beneficiaries

Socioeconomic characteristics which covered the respondents' age, gender, marital status, household size, educational level, occupation, farming experience and annual farm income were discussed since past studies have shown that they influence both credit supply and repayment of loan by farmers ( Eze, 2006).

### 4.2.1 Age

The distribution of the respondents according to their age is represented in

Table 4.7

**Table 4.7: Distribution of Microfinance Bank Loan beneficiaries by age**

Age (years)	Frequency	Percentage
21– 30	12	8.82
31 – 40	34	25
41– 50	50	36.8
51 – 60	34	25
61 – 70	6	4.4
<b>TOTAL</b>	<b>136</b>	<b>100</b>
Mean	44.62 years	
Minimum	20	
Maximum	69	
Standard deviation	10.11	

**Source:** Field data, 2013.

The age of the respondents ranged from 20 years to 69 years. The mean age of the respondents was 44.62 years. The table showed that 36.8% of the respondents were in the group of 41-50 years while only 4.4% of them are in the age bracket of 61-70 years.

The mean age of the respondents being 44.62 years implies that most of the respondents are still in their active stage of life to perform tedious farm work.

This also means that they are expected to be more economically active and willing to explore avenues and adopt new methods in order to raise productivity. This is consistent with the findings of (Olagunju and Ajiboye, 2010).

#### 4.2.2 Sex

The distribution of the respondents according to their age is presented in Table 4.8.

**Table 4.8: Distribution of respondents by Sex.**

<b>Sex</b>	<b>Frequency</b>	<b>Percentage</b>
Male	83	61.02
Female	53	38.98
<b>TOTAL</b>	<b>136</b>	<b>100</b>

**Source:** Field data, 2013.

The table shows that a greater proportion which is 61.02% of Microfinance bank loan beneficiaries were males while 38.98% of them were females.

This does not mean that women are denied access or do not borrow but may indicate that men have relatively greater capital formation than their female counterpart. This collaborates with the findings of (Akubude, 2010). Evidence suggests that both female and male farmers have access to credit to some extent. However, male farmers are the most recipients of Agricultural credit yet female farmers remain the backbone of food production in the developing countries. Hence their contribution to the economic development of the country is often not recognized. This is in line with the findings of (Mukole, 2012) who found out that female farmers had less access to credit than the male.

### 4.2.3 Marital Status

The distribution of the respondents by their marital status is presented in Table 4.9.

**Table 4.9: Distribution of the respondents by their Marital Status**

<b>Marital Status</b>	<b>Frequency</b>	<b>Percentage</b>
Married	123	90.44
Single	10	7.35
Widow	3	2.21
<b>TOTAL</b>	<b>136</b>	<b>100</b>

**Source:** Field data, 2013.

Table 4.9 showed that majority of the microfinance bank loan beneficiaries 90.44% were married while 7.35% were single. A small proportion of 2.2% were widows. This implies that the bank is favourably disposed to granting loans to married farmers who are seen to be stable and are able to provide the requisite collateral than the widowed or single farmers.

In addition, the married farmers may be considered as more responsible and reliable than the single farmers. This collaborates the findings of (Amjad *et.,al* 2009) and (Etonihu *et.,al* 2013). But Wonga (2013) in his study of the factors affecting loan performance among Yam farmers in Sene district of Ghana, pointed out that single farmers showed a better repayment performance than their married counterpart because the married ones spend a considerable proportion of their income on family expenses.

### 4.2.4 Household Size:

The distribution of the respondents according to their household size is presented in Table 4.10.

**Table 4.10 Distribution of Respondents by household size**

<b>Household Size (No of persons)</b>	<b>Frequency</b>	<b>Percentage</b>
1-3	21	15.44
4-6	84	61.76
7-9	23	16.91
10-12	8	5.89
<b>TOTAL</b>	<b>136</b>	<b>100</b>
Mean	5 persons	
Minimum	1	
Maximum	12	
Standard deviation	2.21	

**Source:** Field data, 2013.

The household size ranged from one person to 12 persons per household and a mean of five persons per household. The table shows that 61.76% of the microfinance bank loan beneficiaries had between four to six persons in their households while 15.44% of them had between one to three persons in their households.

The mean household size showed that the loan beneficiaries spent a moderate amount of their income on feeding, clothing, children's school fees, hospital bills etc.

#### **4.2.5 Level of Education**

The distribution of the respondents according to their level of education is presented in Table 4.11.

**Table 4.11: Distribution of respondents by their level of Education.**

<b>Level of Education (Number of years spent in School).</b>	<b>Frequency</b>	<b>Percentage</b>
0(No formal education)	2	1.50
1-6	18	13.20
7 – 12	65	47.80
13 – 18	51	37.50
<b>TOTAL</b>	<b>136</b>	<b>100</b>
Mean	10.82 years	
Minimum	0	
Maximum	20	
Standard deviation	4.23	

**Source:** Field Data, 2013.

The level of education attained by the farmers ranged from 0 to 20 years with a mean of 10.82 years. The table shows that 47.8% of the microfinance banks loan beneficiaries had between seven and 12 years of education. This implies that they completed their secondary education and this has a positive relationship with loan repayment and credit supply. The more educated a farmer is, the more is the tendency that he understands the terms and conditions of his loan and the more likely he is to repay his loan within the tenure given (Kashulizu, 1993). On the other hand microfinance banks and other financial institutions are more likely to grant loans to educated farmers because these class of farmers are in a better position to understand the terms and condition of the loan. The respondents with post-secondary education were 37.5%.

This implies that education is essential in the area of credit utilization, credit supply, repayment performance of the farmers, efficient allocation and organization of resources. The mean years spent in school was 10.82 years. This is inline with the findings of Onyeagocha,(2008) who reiterated the correlation between education and

repayment performance. The more educated a farmer is, the more aware he becomes of the importance of best practices as it affects his enterprise.

#### 4.2.6: Farm Enterprise

Table 4.12 shows the distribution of the respondents according to their farm enterprise.

**Table 4.12: Distribution of respondents by the type of farm enterprise**

<b>Types of Farm Enterprise</b>	<b>Frequency</b>	<b>Percentage</b>
Livestock	10	7.35
Crop production	59	43.38
Agro processing	67	49.27
<b>TOTAL</b>	<b>136</b>	<b>100</b>

**Source:** Field data, 2013.

Table 4.12 shows that 49.27% of the respondents engaged in Agro processing like oil palm production while 43.38% of the respondents engaged in crop production. A smaller percentage of 7.35% were involved in livestock production owing to the nature of the enterprise.

This result is attributed to the fact that Agro processing has minimal risk unlike livestock production which is fraught with a lot of risk. The risky nature of a farm enterprise has a negative effect on the decision to grant loans or not, as those enterprises with a lot of risk are granted fewer loans (Olagunju and Ajiboye, 2012). The incidence of diseases and pests can be controlled to an extent in crop production than livestock and Microfinance banks are favourably disposed to granting loans to those with minimal risk. Crops such as maize and garden egg have minimal gestation period and were among the 43.38% found in crop production. Agro processing and marketing accounted for the 49.27% of the enterprise type obtained.

#### 4.2.7 Farming Experience

The distribution of farmers according to their farming experience is presented in Table 4.13

. Table 4.13: Distribution of respondents by their farming experience.

Farming Experience (years)	Frequency	Percentage
1-10	82	60.29
11-20	42	30.88
21-30	5	3.68
31-40	5	3.68
41-50	2	1.47
<b>TOTAL</b>	<b>136</b>	<b>100</b>
Mean	11.01 years	
Minimum	1	
Maximum	48	
Standard deviation	8.4	

**Source:** Field data, 2013.

The farming experience of the farmers ranged from one year to 48 years. The table also shows that 60.29% of the respondents had between 1-10 years of experience in farming 30.88% of the farmers had between 11-20 years of farming experience.

The mean farming experience is 11.01 years. This result implies that the beneficiaries have experience in farming and if loans are eventually granted there is a greater tendency that loan diversion would be minimized. Farming experience correlates positively with age (Onu *et.,al* ,2000). Wongnaa (2013) also observed that farming experience had a positive effect on loan repayment.

#### 4.2.8 Annual Farm Income of respondents.

The distribution of the respondents according to their annual farm income is presented in Table 4.14.

**Table 4.14: Distribution of respondents by their Annual Farm Income.**

<b>Level of Annual Farm Income (N'000)</b>	<b>Frequency</b>	<b>Percentage</b>
≤ 50	1	0.74
51–200	84	61.76
201–350	33	24.26
351 – 500	17	12.50
≥500	1	0.74
<b>TOTAL</b>	<b>136</b>	<b>100</b>
Mean	N200,179.4	
Minimum	48,000	
Maximum	600,000	
Standard deviation	117965.6	

**Source:** Field data, 2013.

From the table above, the annual farm income of the farmers ranged from N40,000 to N600,000 while the mean annual farm of N200,179.4 was obtained. The table also showed that the highest percentage 61.76% of the respondents earned an income which ranged from N51,000 to N200,000 while 24.26% of the respondents earned between N201,000 and N300,000.

This means that the respondents have a low annual farm income. This low annual farm income could have a negative effect on the amount of credit a respondent can obtain from a microfinance bank, his output, productivity and general well-being.

### 4.3 Amount of credit supplied by microfinance banks to farmers and their repayment performance.

#### 4.3.1 Amount of credit supplied by the microfinance banks

The distribution of the respondents according to the amount of credit supplied is presented in Table 4.15.

**Table 4.15: Distribution of microfinance banks by the amount of credit supplied**

Amount supplied (₦'000)	Frequency	Percentage
≤ 24	1	0.74
25-124	67	49.26
125-224	28	20.59
225-324	21	15.44
325-425	4	2.94
≥ 426	15	11.03
<b>TOTAL</b>	<b>136</b>	<b>100</b>
Mean	₦163212.50	
Minimum	22,400	
Maximum	500,000	
Standard deviation	125,294.80	

**Source:** Field data, 2013.

The table shows that 49.26% of the respondents received between 25,000 and 124,000 naira worth of credit. The other 20.59% received between 125,000 and 224,000 naira as credit. Furthermore, 30.15% of the respondents received between 225,000 and 500,000 naira for their farm operation.

The result implies that a greater percentage of the respondents that is 49.26% received micro loans which were found to be between 25,000 naira and 124,000 naira and this confirms that microfinance banks are naturally situated to grant micro loans to small scale entrepreneurs. This finding is also consistent with the results of Akubude, (2009) who discovered that farmers were also granted small loans that are rather inadequate for major farm operations.

Furthermore, 15.44% of the respondents borrowed between 225,000 and 324,000 naira worth of loan while 11.03% of the respondents borrowed greater than 425,000 naira. The mean amount of credit supplied to the respondents was ₦163,212.5.

#### 4.3.2 Amount of credit repaid by the respondents

The distribution of the respondents according to the amount of credit repaid is presented in Table 4.16.

**4.16: Distribution of microfinance banks by the amount of credit repaid.**

Amount Repaid(₦'000)	Frequency	%
≤ 10	1	0.74
11-110	101	74.26
111-210	13	9.56
211-310	8	5.88
311-410	4	2.94
≥411	9	6.62
<b>TOTAL</b>	<b>136</b>	<b>100</b>
Mean	109688.8	
Minimum	9833.33	
Maximum	507,000	
Standard deviation	114642	

**Source:** Field data, 2013.

The amount of credit repaid by the farmers ranged from ₦9,833.33 to ₦507,000 and a mean amount repaid of ₦109,688.8. The table showed that 74.26% of the beneficiaries of microfinance bank loan repaid between 11,000 and 110,000 naira. 9.56% of them repaid between 111,000 and 210,000 naira, which includes both principal and interest. The mean amount repaid which was 109,688.8 naira implied that out of the 163,212.5 naira worth of credit borrowed, 109,688.8 naira had already been repaid. That is to say that 67.20% of the borrowed loan had been repaid with an outstanding debt of 32.80%.

The overall repayment performance showed an encouraging performance and it is expected that a near recovery rate of 100% may be realized at the end of the repayment period as the repayment exercise was an ongoing process. This is consistent with the findings of (Akubude, 2010) who found out that farmers showed an encouraging repayment performance when timely credit is given to them.

#### **4.5 Factors influencing credit supplied by microfinance banks to farmers**

The result of the multiple regression analysis on the factors influencing credit supply by microfinance banks to farmers is represented in Table 4.17.

**Table 4.17: Results of Multiple regression analysis on factors influencing credit supply by Microfinance banks to farmers.**

<b>Explanatory variables and important statistics</b>	<b>Double log</b>	<b>Semi-log</b>	<b>Linear</b>	<b>Exponential</b>	<b>Double log P&gt;/t/</b>
Age (X <sub>1</sub> )	0.314507 (1.6825)	57046.4 (1.5507)	13767.3 (1.4416)	0.005306 (1.0974)	0.0942
Education (X <sub>2</sub> )	-0.12629 (-1.5255)	-32583.4 (-1.9999)*	-2145.2 (-1.0364)	-0.00408 (-0.3866)	0.1289
Household (X <sub>3</sub> )	0.160035 (1.6624)	22410.1 (1.18247)	18929.4 (0.4918)	0.021285 (1.1225)	0.0982
farm income (X <sub>4</sub> ) (Net)	0.421095 (5.9225)**	80774.4 (5.7726)**	0.3851 (5.5616)**	1.94E-06 (5.4909)**	1.65E-08
Loan period (X <sub>5</sub> )	0.625821 (6.2539)**	92442.1 (4.6938)**	12333.9 (4.6749)**	0.084069 (6.2517)**	3.01E-08
Sex (X <sub>6</sub> )	-0.17092 (2.0638)*	-20390.4 (-1.2510)	-26874.3 (-1.6568)	-0.19519 (-2.3608)*	0.0405
Distance (X <sub>7</sub> )	-0.35982 (-3.6146)**	-37798.7 (-1.9294)	-4737.8 (-2.2979)*	-0.04532 (-4.3122)**	0.0003
Farming experience(X <sub>8</sub> )	-0.10252 (-1.6725)	-30491.8 (-2.5276)*	-2479.7 (-2.2979)	-0.00611 (-1.0706)	0.0962
Enterprise type (X <sub>9</sub> )	0.13049 (1.62705)	20195.2 (1.2795)	25899.9 (1.6242)	0.176048 (2.1659)*	0.1055
Constant	5.289963	1018298	13537.95	10.85334	
R <sup>2</sup>	0.565017	0.458496	0.4608204	0.564159	
F- value	25.11282*	16.36969	16.523616	25.02535	2.85E-27
Sample size	136	136	136	136	

**Source:** Computed from field data, 2013

Figures in parenthesis are t-ratios

\*\* = P 0.01 and \* = P 0.05.

t<sub>0.05 and 0.01</sub> = 1.96

The results show that the double log function produced the highest value of the coefficient of multiple determinations (R<sup>2</sup>), the highest number of significant variables and conformed to a priori expectations. The test of significance of R<sup>2</sup> produced an F-

value of 25.11 which is significant at 0.01 levels, implying that the double-log function gave a good fit and therefore was chosen as the lead equation.

The coefficient of multiple determinations was found to be 0.565017, implying that about 56.5% of the variation in the amount of microfinance bank agricultural credit supply to farmers is jointly accounted for by the independent variables investigated as well as the other variables. For microfinance banks, the factors that significantly affected credit supply were age, household size, net farm income, loan period, gender, distance and farming experience. The factors that were not significant were education and type of farm enterprise.

**Age:**

This is how old the farmers are and it is measured in years. It was hypothesized to have a positive relationship with credit supply. This result upheld the *a priori* expectation strongly and this is because the more mature a person is, it is assumed the more experience he/she would accumulate overtime when compared with younger people who have not experienced much in life. This finding is in line with Arene (1992) who found out that age has a positive relationship with loan repayment performance and credit supply. Oni *et., al* (2006) also confirmed that the age of the respondents positively influenced the probability of a default.

**Household size:**

This is the number of people in a particular household. It was expected *a priori* that the coefficient of the variable (household size) should be negative or an inverse relationship with credit supply, implying that the credit supply should increase with reduced household size. This variable was significant at 1% but went contrary to a priori expectations. This maybe because microfinance banks target the poor and these poor are usually associated with large family sizes unlike what is obtainable in commercial banks, whose focus maybe on the elite who have fewer children. This

finding is consistent with that of Oni (2005) who observed that the household size was statistically significant but went contrary to a priori expectation with respect to the sign.

**Average farm income:**

This variable was positive and significant at 1%. This went in line with a priori expectations of direct relationship. This implies that credit supply increases with increased net farm income of the farmer. This also means that as the net farm income of the farmer increases, the more likely it is for the farmer to obtain a facility from a bank and the easier it would be for him to repay within the payback period.

**Loan period:**

This indicates the tenure of the loan or how long the loan is expected to last. In other words, this is the duration of the loan. The coefficient of the variable was positively significant at 1%. This went against a priori expectations of inverse relationship. This may be theoretical.

**Sex:**

Sex was found to be negative and significant at 5%. This result goes against *a priori* expectations. This negative sign on the coefficient of gender indicated that credit supply is skewed towards the females meaning that more female farmers obtained credit when compared with the male respondents. This in line with the results of Suraya (2011) who observed that women are given more credit in microfinance institutions because they are more responsible and show less repayment problems.

Also, Abosede (2011), whose research findings collaborated with this result argued that microfinance banks are gender sensitive but suggested that gender distribution characteristics should not be the determinant of their mode of operation in Africa.

**Distance:**

This is the distance from the house of the beneficiary to the bank or vice versa. The coefficient of the variable was found to be inversely related to credit supply and

significant at 1%. This finding is consistent with a priori expectations of inverse relationship. It implies that credit supply increases as the distance to the bank reduces, meaning that the shorter the distance from the house of the beneficiary to the bank, the higher the amount disbursed. Shorter distances will help the microfinance banks appraise potential projects and those already existing ones easily as well as take necessary actions in the case of a default. This also cuts down the cost of loan recovery in the event of a default as well.

**Farming experience:**

The coefficient of farming experience was observed to be significant at 10% but went contrary to the hypothesis of direct relationship. This could be theoretical than what is obtainable in real life situations.

#### 4.5 Factors influencing credit repayment of farmer beneficiaries of microfinance banks.

The result in Table 4.18 shows determinants of credit repayment of the farmers in Imo State

**Table 4.18: Distribution of the factors influencing loan repayment.**

<b>Explanatory Variables</b>	<b>Co-efficient</b>	<b>t-value</b>	<b>P&gt; /t/</b>
Age (X <sub>1</sub> )	-0.006594*	-2.03	0.0461
Sex (X <sub>2</sub> )	- 0.0053731	- 0.09	0.932
Average Farm Income (X <sub>3</sub> )	-5.13e-07	-1.57	0.119
Interest Rate (X <sub>4</sub> )	- 0.0009108	1.947	0.076
Application cost (X <sub>5</sub> )	- 0.0000138	-0.93	0.335
Grace period (X <sub>6</sub> )	0.0528706**	3.89	0.000
Distance (X <sub>7</sub> )	0.0057912	0.14	0.889
Farming Experience (X <sub>8</sub> )	0.0003758	0.04	0.970
Education (X <sub>9</sub> )	-0.0036998*	-2.261	0.021
Dependency Ratio (X <sub>10</sub> )	-0.0633458**	-2.2764	0.0098
Loan Period/Tenure (X <sub>11</sub> )	-0.0120505	-1.12	0.263
Collateral (X <sub>12</sub> )	0.0098313*	-2.189	0.0341
Constant	0.754058*	2.041	0.0436
Sigma	0.3343514	13.92	
Log Likelihood	-167.81		
Chi Square (X <sup>2</sup> )	127.22		
Pseudo	0.5671		
No. of Observations	136		
Left censored observations at loan repayment ≤ 0	21		
Uncensored Observation	108		
Right censored Observation ≥ 1	7		

Note: \*\* =P 0.01; \* =P 0.05

$t_{0.01,0.05} = 1.96$

Source: Field Data, 2013.

Here tobit model was employed because the dependent variable had the property of jumping discretely to zero or any other threshold. It is based on censored dependent variable, that is, information on the regressand is available only for some observation (Green, 1998). This was the case in this study as detailed in table 4.16 above.

The result showed that this study used rate of repayment of loan by farmers to capture their repayment obligation on the schedule date. Tobit coefficients for loan application cost, educational level and collateral significantly influenced the rate of repayment performance of loan borrowed by these farmers in the State. However, it could be seen from the result that all the explanatory variables such as sex, interest rate, application cost and education are significant at 5 percent while collateral is significant at 1 percent critical level.

The functional parameters such as Chi square value of 127.22 and Log likelihood ratio of 167.81 are significant at 5% critical level showing that the model is fit and the included explanatory variable actually account for the changes in the rate of repayment performance of loan by the beneficiaries in the area. Again the pseudo  $R^2$  of 0.5671 shows that about 56.71% variations in the endogenous variable can be accounted by the included explanatory variables. The result further showed that only 21 counts are left-censored otherwise truncated to zero with 108 uncensored counts while seven counts were right-censored.

Furthermore, the result showed that all other explanatory variables had negative signs except grace period. This implies that they had an inverse relationship with the rate of repayment performance for the loan they collected based on those variables except grace period. The age of the farmers was negative implying that the rate of performance reduces with the age of beneficiaries. It was hypothesized to be negative

and this was in line with a priori expectation. Loan repayment performance improves with the age of the respondents. This has a positive impact on earnings and productivity thus necessitating better repayment. This is consistent with the findings of (Abula *et. al*, 2013) in their study of the performance of rural farmers loan beneficiaries of Microfinance banks in Kogi state.

Again, grace period is the time past the deadline for an obligation during which a late penalty that would have been imposed is waived. The grace period was positive and consistent with a priori expectation. This means a direct relationship with repayment performance showing that as the period of grace increases, performance increases. Dependency ratio is expressed as the proportion of dependents in the total household size. The ratio decreases as the performance increases meaning that the more the grace the better the repayment performance.

Contrary to expectation, the level of education as showed in the table above was negative but significant at 5% percent critical level. This shows that with lower formal education level, beneficiaries loan repayment performance increases in the area. This could be due to the fear of losing the chances of getting further loan by this group of farmers. Their level of education however, is expected to increase the loan repayment performance rate as education has already built in the consequences of loan delinquency in the mind of such categories of farmers (Von, 2004).

Again, it could be deduced from the result that collateral has a positive effect on rate of repayment of loan in the area. This is consistent with the a priori expectation that with collaterals loan beneficiaries are ready to pay in due time to enable them claim their security back. The collateral which serves as security to the loan are given back to the beneficiaries as soon as they pay up in due time, hence its presences in the area can improve loan performance among the beneficiaries.

#### 4.6 Efficiency of microfinance banks loans to agriculture.

The distribution of microfinance banks according to the amount of loan recovered from its borrowers is presented in Table 4.19.

**Table 4.19: Distribution of microfinance banks according to the total amount of loan recovered.**

<b>Total Amount of loan recovered (₦000 )</b>	<b>Frequency</b>	<b>Percentage</b>
≤ 50	9	34.62
51-100	10	38.46
101-150	4	15.38
151-200	2	7.69
≥201	1	3.85
<b>Total</b>	<b>26</b>	<b>100</b>

**Source:** Field data, 2013.

The result showed that the amount recovered ranged from 1000 naira to 250,000 naira with a mean amount of 68,969.23 naira.

Table 4.19 presented the distribution of the microfinance banks based on loan recovery in the area. The table showed that 38.46% of the respondents recovered between 51,000 naira and 100,000 naira while 34.62% of the respondents recovered less than 50,000 naira. This implies that the method of recovery is efficient and if these funds are not recovered the microfinance banks would stay out of business. Thus, an aggregate of non-repayments of debts will affect the profit of the bank, money for investment and eventual distress of the bank. (Nawaz, 2012).

##### 4.6.1 Cost of loan recovery

The distribution of respondents according to the cost of loan recovered is presented in Table 4.20.

**Table 4.20: Distribution of the cost of loan recovery of microfinance banks**

<b>Cost of loan Recovery (₦,000)</b>	<b>Frequency</b>	<b>Percentage</b>
≤3	15	57.69
4-6	5	19.23
7-9	2	7.69
10-12	1	3.85
≥13	3	11.54
<b>TOTAL</b>	<b>26</b>	<b>100</b>
Mean	₦3571.73	
Minimum	0	
Max	15,000	
Standard Deviation	3815.96	

**Source:** Field data, 2013.

The cost of loan recovery ranged from 0 to 15,000 naira. The mean cost of recovery was found to be 3571.73 naira. About 57.59% of the respondents spent less than three thousand naira in their loan recovery effort while 19.23% of the banks spent between four thousand naira and six thousand naira in their loan recovery effort. This implies that the respondents spent a small fraction of their profit in recovering the loan. This result should be encouraging to Microfinance banks when considering granting facilities to potential customers who want to venture into Agriculture.

The distribution of the respondents according to their efficiency index is presented in Table 4.21

**Table 4.21 Distribution of respondents according to their efficiency index.**

<b>Efficiency index</b>	<b>Frequency</b>	<b>Percentage</b>
$\geq 0$	3	11.50
0.01-0.1	17	65.40
0.11-0.2	5	19.20
0.21-0.3	0	0.00
0.31-0.4	0	0.00
0.41-0.5	1	3.90
<b>TOTAL</b>	<b>26</b>	<b>100</b>
Mean	0.06	
Minimum	0	
Maximum	0.5	
Standard deviation	0.101	

**Source:** Field data, 2013.

The table shows that the efficiency index of the microfinance banks ranged from 0 to 0.5, and has a mean of 0.06. About 65.4% of the respondents had an efficiency index of between 0.01 and 0.1 while 19.20% of the respondents had between 0.11 and 0.2 efficiency index. This also showed that 96.10% of the respondents fell within the index of 0 and 0.2. This index of efficiency involved the cost of recovering the loan to the total amount of loan recovered from the beneficiaries of microfinance banks. This implies that for every one thousand naira recovered from the beneficiaries of microfinance banks, the banks spent sixty naira from their interest in recovering the loan. This result showed that the banks still had enough profit remaining despite recovering their loans. This should be encouraging to microfinance banks since they spent a small fraction of their profit in recovering the loans.

More so, credit has to be readily available for investment and to potential borrowers but when credit is tied up as debt, they feel reluctant to disburse the loans.

Table 4.22 below is the distribution of the respondents according to the interest rate charged by the banks.

**Table 4.22 Distribution of the interest rate charged by the Microfinance banks**

<b>Interest %</b>	<b>Frequency</b>	<b>Percentage</b>
≤ 30	104	76.47
31-40	28	20.59
≥ 41	4	2.94
<b>Total</b>	<b>136</b>	<b>100</b>
Mean	31.78%	
Minimum	30	
Maximum	48	
Standard deviation	3.93	

**Source:** field data, 2013.

The interest rate ranged from 30% to 48%. The mean interest rate obtained from the study was 31.78%. The study revealed that 76.47% of the banks charged interest about 30% while 20.59% of the microfinance banks charged between 31% and 41%. This rate was so high when compared to that charged by the commercial banks between 2012 and 2013. This may lead to loan default

#### 4.7 Deposit portfolio of microfinance banks in Imo State.

The distribution of the microfinance banks according to their deposit portfolio is presented in Table 4.23.

**4.17: Distribution of the Microfinance banks according to deposit portfolio**

<b>Deposit port.(N'000,000)</b>	<b>Frequency</b>	<b>Percentage</b>
≤ 50,	4	15.40
51 – 100	4	15.40
101 – 150	12	46.20
151 – 200	3	11.50
201 – 250	2	7.70
251 – 300	1	3.80
<b>TOTAL</b>	<b>26</b>	<b>100</b>
Mean	₦121,653,840.0	
Minimum	23,000,000	
Maximum	280,000,000	
Standard deviation	61,890,000	

**Source:** Field data, 2013.

The result showed that 46.2% of the microfinance banks had a deposit portfolio of between ₦101, 000,000 to ₦150, 000,000.

About 15.40% of the banks had a deposit portfolio of less than ₦50, 000,000 while another 15.40% of the microfinance banks had a deposit portfolio of between ₦51,000,000 and ₦100,000,000. Also 11.5% of the microfinance banks had a deposit portfolio size of between ₦151, 000,000 and ₦200, 000,000. The mean deposit portfolio of Microfinance banks in the study area was ₦121, 653,840.00

#### 4.8 Strategies Employed by Microfinance banks to guard Against Loan Default.

The distribution of the respondents according to the strategies employed to avert loan default is presented in Table 4.24

**Table 4.24: Distribution of microfinance banks by the strategies they employed to avert loan default.**

Strategies	Frequency*	Percentage
Additional guarantors	16	61.54
Collateral	7	26.92
Constant Monitoring/visits	9	34.62
Proper loan appraisal	12	46.15
Use of police	10	38.46

\* Multiple responses were recorded.

Field data, 2013.

The result in table 4.24 indicated that 61.54% of the banks ensured additional guarantors as a prerequisite for disbursing loans to farmers. About 46.15% of the other banks ensured proper loan appraisal before granting the loan. It also showed that 38.46% used the police to go after those who may have delayed to force them to pay. More so, 26.92% of the banks used collateral as a strategy to avert default. This is consistent with the findings of (Okerenta, 2009)

#### 4.9 The major constraints affecting microfinance banks lending performance to agriculture.

The distribution of the respondents according to the constraints affecting them is presented in Table 4.25.

**Table 4.25: Distribution of microfinance banks by the constraints affecting their lending performance to agriculture.**

<b>Constraints</b>	<b>Frequency*</b>	<b>Percentage</b>
Repayment	6	23.08
Poor loan supervision due to cost	12	46.15
Illiteracy	9	34.61
Seasonality of agriculture	20	76.9
Loan diversion	15	57.69

\*Multiple responses were recorded  
Field data, 2013.

The result in table 4.25 indicated that 76.9% of the banks had problems in granting loan for agricultural purposes due to the seasonality of agriculture. This could be attributed to the fact that microfinance banks are established to grant micro loans for a limited duration but most aspects of agricultural production are long term thus discouraging them from granting loan for such purposes.

Loan diversion accounted for 57.69% of the constraints. This problem results when beneficiaries use the loans given them to solve domestic needs instead of using them for the purpose for which they were given. The loan diversion could also be due to the time taken to process the loan and the time taken to obtain it. The other 46.15% complained that the cost of supervising loans granted for agricultural purposes eats into the little profit made from it, thereby discouraging them from supervising. This often

leads to the beneficiaries defaulting thus discouraging the banks from granting loans to those who want to borrow loans for agriculture.

#### **4.10 Test of Hypotheses**

##### **4.10.1 Test of Hypothesis One**

To test if microfinance banks are inefficient in their lending to agriculture, the values obtained from the efficiency index are utilized.

The result showed a mean efficiency index of 0.06. This implies that for every one thousand naira recovered as debt, the banks spent 60 naira as the cost of recovering the loan. The decision rule states that if the efficiency index of the microfinance banks is less than the prevailing interest rate, the banks are efficient in their lending to agriculture, inefficient if otherwise and at break-even point if the index is equal to the prevailing interest rate.

Therefore, the efficiency index of 6% is less than the prevailing interest rate of 31.78%. The conclusion is that the microfinance banks are efficient in their lending to agriculture in the study area. This implies that the microfinance banks in the study area spent a small fraction of their profit in recovering their loans. The study also revealed that 25.78% of the interest charged by these banks was intact.

##### **4.10.2 Test of Hypothesis two**

To test if the socioeconomic characteristics of the farmers like age, educational level do not significantly influence their loan repayment, the  $t$ -values are utilized.

**Table 4.26: Distribution of the factors influencing loan repayment.**

<b>Explanatory Variables</b>	<b>Co-efficient</b>	<b>t-value</b>	<b>P&gt; /t/</b>
Age (X <sub>1</sub> )	-0.006594*	-2.03	0.0461
Sex (X <sub>2</sub> )	- 0.0053731	- 0.09	0.932
Average Farm Income (X <sub>3</sub> )	-5.13e-07	-1.57	0.119
Interest Rate (X <sub>4</sub> )	- 0.0009108	1.947	0.076
Application cost (X <sub>5</sub> )	- 0.0000138	-0.93	0.335
Grace period (X <sub>6</sub> )	0.0528706**	3.89	0.000
Distance (X <sub>7</sub> )	0.0057912	0.14	0.889
Farming Experience (X <sub>8</sub> )	0.0003758	0.04	0.970
Education (X <sub>9</sub> )	-0.0036998*	-2.261	0.021
Dependency Ratio (X <sub>10</sub> )	-0.0633458**	-2.2764	0.0098
Loan Period/Tenure (X <sub>11</sub> )	-0.0120505	-1.12	0.263
Collateral (X <sub>12</sub> )	0.0098313*	-2.189	0.0341
Constant	0.754058*	2.041	0.0436
Sigma	0.3343514	13.92	
Log Likelihood	-167.81		
Chi Square (X <sup>2</sup> )	127.22		
Pseudo	0.5671		
No. of Observations	136		
Left censored observations at loan repayment≤0	21		
Uncensored Observation	108		
Right censored Observation≥1	7		

*Note:* \* = P 0.01; \*\* =P 0.05

**Source:** Field Data, 2013

The table shows that age, grace period, educational level, dependency ratio and collateral significantly influenced the repayment performance of the loan borrowed by the farmer.

Age, education and collateral were significant at 5% while grace period and dependency ratio were significant at 1% critical level. Therefore, the null hypothesis of

no significance is rejected and the alternative hypothesis of significance is accepted. This concludes that the variables are very important factors influencing repayment performance in the study area.

The variables of age ( $X_1$ ), education ( $X_9$ ) and dependency ratio ( $X_{10}$ ) were significant at different levels but negative while the coefficient of grace period and collateral were significant and positive at 5% level. The coefficients of the variable education ( $X_9$ ) went contrary to a priori expectations but an important factor affecting repayment performance. Variables such as age ( $X_1$ ), grace period ( $X_6$ ), dependency ratio ( $X_{10}$ ) and collateral ( $X_{12}$ ) were in line with a priori expectations.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Summary

This study was an evaluation of microfinance banks' lending to agriculture in Imo State. It was meant to analyze the institutional factors of the banks, analyze the socioeconomic characteristics of the loan beneficiaries, determine the amount of credit supply by microfinance banks to farmers and their repayment performance, determine the factors influencing credit supply by microfinance banks to farmers, determine factors influencing credit repayment by farmer beneficiaries of microfinance banks loans, determine the efficiency of microfinance banks loans to agriculture in the study area, determine their deposit portfolio, analyze strategies employed by microfinance banks to guard against loan default by farmers and analyze the major constraints affecting the performance of microfinance banks in lending to agriculture in the study area. The hypotheses of the study were that microfinance banks are inefficient in their lending to agriculture and that the socioeconomic characteristics of the farmers do not significantly influence their loan repayment.

Data for this study were collected by the use of two sets of structured questionnaire which were administered to the respondents, 136 loan beneficiaries and 26 Microfinance banks. Analytical tools including percentages, frequency distribution, means, ordinary least square-multiple regression and tobit regression were used in the analysis of the field data. The result of the institutional features affecting the microfinance banks in the study area showed that most of the microfinance banks in the study area were less than 10 years. It further showed that ownership/control and funding, leadership, human resource management, geographic location, management

information systems, internal control system and Audit were important features considered in evaluating microfinance banks in the study area.

The results of the socioeconomic characteristics of the loan beneficiaries showed that the respondents had a mean age of 44.62 years thus reflecting an active group of farmers with the energy to do tedious farm work. About 62% of the respondents were males while 90.44% of them were married. It is believed by a generality of researchers that married people are more stable than the single ones but some other researchers found this result rather contrary to their findings. The mean household size was observed to be five persons per household. The respondents were found to be educated having between seven to 12 years of education. About 49.27% of them engaged in Agro processing which is a less risky enterprise as compared with other enterprise types. The mean annual farm income of the farmers was ₦201,602.00

The result of the amount of credit supply by microfinance banks to farmers and their repayment performance showed that a mean amount of ₦163,212.50 was borrowed by the farmers in the study area, while the mean amount repaid by the same farmers was ₦109,668.80 resulting to a repayment performance of 67.21%. This result is encouraging since repayment is an on going process thus full recovery may be realized at the end of the loan period.

The results of the factors influencing credit supply by the microfinance banks to the farmers showed that the variables of sex( $X_6$ ), annual farm income ( $X_4$ ), loan period ( $X_6$ ), and distance ( $X_7$ ) were significant at different levels. The coefficients of age, household size, and annual farm income and loan period were positive and significant while gender, distance and farming experience were negative and significant. Also, 56.5% of the variations in the amount of the microfinance banks agricultural credit is jointly accounted for by the independent variables investigated in the study.

The result of the tobit regression analysis of the factors influencing loan repayment performance by farmer beneficiaries revealed that the variables such as age, education and collateral were significant at 5% while grace period and dependency ratio were significant at 1%. These variables are all related to the loan repayment performance.

The study also showed a mean efficiency index of 0.06. This implied that over 94% of the interests were intact while 6% of the interests to be paid were spent as cost of recovering the loan.

The research also showed that microfinance banks in the study area had a deposit portfolio of N121, 653,840.00 and lent only N163, 212.50 to farmers which was grossly inadequate for improved productivity.

The strategies employed by the banks to avert loan default included additional guarantors, collaterals proper loan appraisal and constant monitoring. Major constraints to the effect of seasonality in agriculture, loan diversion, poor loan supervision and illiteracy were encountered by the microfinance banks as some of the factors that affected the flow of credit to agriculture in the study area.

## 5.2 **Conclusion**

From the findings of this study, the following major conclusions are drawn thus; that the microfinance banks are efficient in their lending to agriculture in the study area and they spend only a small percentage of their interest to recover their loans.

Factors such as annual farm income, loan period, sex and distance are important factors that affect the supply of credit by microfinance banks to agriculture but the amount of credit flowing to agriculture is altogether small and discouraging for improved farm productivity.

### 5.3 Recommendations

Based on the findings of this study, the following policy implications are drawn and recommended.

- (1) From the study, the amount of credit supplied to farmer beneficiaries and that repaid showed an encouraging repayment performance. The banks should review their policy as it affects the amount disbursed to make it adequate and timely so that farmers may not be cut short of funds when the need them most.
- (2) Since better farm income, collateral, dependency ratio, grace period, education and others are keys issue in the study, these factors should be emphasized in designing loan schemes as it affects farmer beneficiaries. Microfinance banks should observe these strictly to enable them recover their loans.
- (3) Since microfinance banks are efficient in their lending to agriculture in terms of loan recovery, there is need for these microfinance banks to review their policies on agric lending and therefore increase access to farmer beneficiaries.
- (4) It was observed that crop and some livestock farming were not favourably disposed to some of the loan conditions and methodology of microfinance banks on account of gestation period. Efforts should be made to work out alternative arrangements tailored to their peculiarities.
- (5) The geographic spread of microfinance banks in Imo State was tilted towards the Orlu Agricultural Zone. Okigwe Agricultural zone had the lowest spread and this is detrimental to the economic growth of the area. It therefore becomes imperative for employment planners, microfinance promotion agencies, donor agencies and organizations to increase the number of microfinance banks in that area in order to extend credit facilitates to small scale farmers, improve

infrastructure and increase deposit mobilization. These three items have positive bearing on investment.

- (6) From the study conducted it was observed that microfinance banks which had sound software configuration performed well in terms of loan tracking, it is therefore recommended that other banks should make use of such opportunity in order to improve quality of service delivery.

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Double-Log Output

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*Regression Statistics*

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Multiple R	0.751676
R Square	0.565017
Adjusted R Square	0.542518
Standard Error	0.513997
Observations	136

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ANOVA

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	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	9	59.71177	6.634642	25.11282	2.85E-27
Residual	127	45.96965	0.264193		
Total	136	105.6814			

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	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	5.289963	1.094626	4.832666	2.94E-06	3.129508	7.450417	3.129508	7.450417
Ln X1	0.314507	0.186933	1.682462	0.094273	-0.05444	0.683454	-0.05444	0.683454
Ln X2	-0.12629	0.082787	-1.52548	0.128956	-0.28968	0.037106	-0.28968	0.037106
Ln X3	0.160035	0.09627	1.662357	0.098242	-0.02997	0.350042	-0.02997	0.350042
Ln X4	0.421095	0.071101	5.922487	1.65E-08	0.280763	0.561426	0.280763	0.561426
Ln X5	0.625821	0.100074	6.253585	3.01E-09	0.428306	0.823337	0.428306	0.823337
Ln X 6	-0.17092	0.082819	-2.06382	0.040519	-0.33438	-0.00746	-0.33438	-0.00746
Ln X 7	-0.35982	0.099548	-3.61456	0.000394	-0.5563	-0.16335	-0.5563	-0.16335
Ln X8	-0.10252	0.061298	-1.67252	0.096219	-0.22351	0.018461	-0.22351	0.018461
Ln 9	0.13049	0.080201	1.627045	0.105537	-0.0278	0.288781	-0.0278	0.288781

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Exponential Output

<i>Regression Statistics</i>	
Multiple R	0.751105
R Square	0.564159
Adjusted R Square	0.541615
Standard Error	0.514504
Observations	136

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	9	59.62112	6.624569	25.02535	3.36E-27
Residual	127	46.0603	0.264714		
Total	136	105.6814			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	10.85334	0.304709	35.61867	7.73E-82	10.25194	11.45475	10.25194	11.45475
X 1	0.005306	0.004835	1.097442	0.273965	-0.00424	0.014848	-0.00424	0.014848
X 2	-0.00408	0.010551	-0.38656	0.699557	-0.0249	0.016746	-0.0249	0.016746
X 3	0.021285	0.018962	1.12247	0.263209	-0.01614	0.05871	-0.01614	0.05871
X 4	1.94E-06	3.53E-07	5.49097	1.4E-07	1.24E-06	2.63E-06	1.24E-06	2.63E-06
X 5	0.084069	0.013448	6.251364	3.05E-09	0.057526	0.110611	0.057526	0.110611
X 6	-0.19519	0.08268	-2.36078	0.019344	-0.35838	-0.032	-0.35838	-0.032
X 7	-0.04532	0.01051	-4.31221	2.7E-05	-0.06606	-0.02458	-0.06606	-0.02458
X 8	-0.00611	0.005711	-1.07061	0.285828	-0.01739	0.005157	-0.01739	0.005157
X 9	0.176048	0.081283	2.165858	0.031683	0.01562	0.336477	0.01562	0.336477

Semi-log output

<i>Regression Statistics</i>	
Multiple R	0.677123
R Square	0.458496
Adjusted R Square	0.430487
Standard Error	101154.8
Observations	136

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	9	1.51E+12	1.67E+11	16.36969	2.63E-19
Residual	127	1.78E+12	1.02E+10		
Total	136	3.29E+12			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>
Intercept	-1018298	215422.7	-4.72698	4.68E-06	-1443476	-593120	-1443476
Ln X1	57046.49	36788.39	1.550665	0.122799	-15562.4	129655.4	-15562.4
LnX2	-32583.4	16292.46	-1.99991	0.047066	-64739.7	-427.091	-64739.7
LnX3	22410.12	18945.92	1.182847	0.238484	-14983.3	59803.51	-14983.3
LnX4	80774.44	13992.69	5.772617	3.51E-08	53157.19	108391.7	53157.19
LnX5	92442.14	19694.59	4.693783	5.41E-06	53571.1	131313.2	53571.1
LnX 6	-20390.4	16298.9	-1.25103	0.212603	-52559.4	11778.6	-52559.4
LnX 7	-37798.7	19591.03	-1.92939	0.05531	-76465.3	867.9657	-76465.3
LnX8	-30491.8	12063.47	-2.52761	0.012375	-54301.4	-6682.21	-54301.4
Ln 9	20195.22	15783.51	1.279514	0.20242	-10956.5	51346.99	-10956.5

Dependent Variable Credit Supply

Linear Output  
SUMMARY OUTPUT

<i>Regression Statistics</i>								
Multiple R	0.678837587							
R Square	0.46082047							
Adjusted R Square	0.432931873							
Standard Error	100937.4853							
Observations	136							
<i>ANOVA</i>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	9	1.51514E+12	1.68349E+11	16.52361644	1.84061E-19			
Residual	127	1.77278E+12	10188375929					
Total	136	3.28792E+12						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	13537.94541	59779.13973	0.226466046	0.821104787	6286	131523.5194	-104447.6286	131523.5194
X Variable 1	1367.306296	948.4775972	1.441579959	0.151218237	-504.6957809	3239.308372	-504.6957809	3239.308372
X Variable 2	-2145.225401	2069.919731	-1.036380962	0.301462595	-6230.608172	1940.15737	-6230.608172	1940.15737
X Variable 3	1829.402888	3720.106911	0.491760837	0.623508221	-5512.94013	9171.745906	-5512.94013	9171.745906
X Variable 4	0.385112142	0.069245149	5.561575758	9.9224E-08	0.248443587	0.521780698	0.248443587	0.521780698
X Variable 5	12333.98083	2638.294424	4.674982715	5.872E-06	7126.801812	17541.15984	7126.801812	17541.15984
X Variable 6	-26874.27567	16220.59359	-1.656799766	0.099362039	-58888.72174	5140.170401	-58888.72174	5140.170401
X Variable 7	-4737.839962	2061.840395	-2.297869406	0.0227593	-8807.276617	-668.403307	-8807.276617	-668.403307
X Variable 8	-2479.654206	1120.377146	-2.213231691	0.028182255	-4690.932945	-268.3754679	-4690.932945	-268.3754679
X Variable 9	25899.98566	15946.50701	1.624179241	0.106147694	-5573.498098	57373.46941	-5573.498098	57373.46941



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