ASSESSMENT OF THE ICT UTILIZATION ON MICROFINANCE INSTITUTIONS PERFORMANCE IN TANZANIA: A CASE STUDY OF OPPORTUNITY MICROFINANCE TANZANIA LIMITED

Masters of Information Technology in Project Management (IT-Project Management)

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ASSESSMENT OF THE ICT UTILIZATION ON MICROFINANCE INSTITUTIONS PERFORMANCE IN TANZANIA: A CASE STUDY OF OPPORTUNITY MICROFINANCE TANZANIA LIMITED

BAKISI MUSAVI MATHIAS

A Dissertation Submitted in Partial Fulfilment of the Requirements for the Award of Masters of Information Technology in Project Management (IT-Project Management) of College of Business Education

Dar es Salaam
2019
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I, Bakisi Musavi Mathias, declare that this dissertation/thesis is my own original work and that it has not been presented and will not be presented to any other higher learning Institution for a similar or any other academic award.

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CERTIFICATION

The undersigned certifies that he/she has read and hereby recommend for acceptance by the College of Business Education a Dissertation /Thesis/Research project titled “Assessment of the ICT Utilization on Microfinance Institutions performance in Tanzania: A Case Study of Opportunity Microfinance Tanzania Limited:” in partial fulfilment of the requirements for the award of a Masters degree in Information Technology in Project Management (IT-Project Management) of College of Business Education.

__________________________________
(Supervisor`s Name)

__________________________________
(Supervisor`s Signature)

Date: ______________________________
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<th>Description</th>
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<tbody>
<tr>
<td>ATM</td>
<td>Automatic Teller Machine</td>
</tr>
<tr>
<td>BOT</td>
<td>Bank of Tanzania</td>
</tr>
<tr>
<td>CCR</td>
<td>Counterpart Credit Risk Model</td>
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<tr>
<td>DEA</td>
<td>Data Envelopment Analysis</td>
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<tr>
<td>FSS</td>
<td>Financial Self Sufficiency</td>
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<td>IB</td>
<td>Internet Banking</td>
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<tr>
<td>ICT</td>
<td>Information Communication Technology</td>
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<tr>
<td>IT</td>
<td>Information Technology</td>
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<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
</tr>
<tr>
<td>MIC</td>
<td>Millicom International Cellular</td>
</tr>
<tr>
<td>MFI</td>
<td>Monetary Financial Institutions</td>
</tr>
<tr>
<td>MIS</td>
<td>Management Information System</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
</tr>
<tr>
<td>NBFI</td>
<td>Non-Bank Financial Institutions</td>
</tr>
<tr>
<td>OSS</td>
<td>Operating Self Sufficiency</td>
</tr>
<tr>
<td>POS</td>
<td>Point of Sale</td>
</tr>
<tr>
<td>ROA</td>
<td>Return on Asset</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistics Package for Social Science</td>
</tr>
<tr>
<td>SACCOS</td>
<td>Saving and Credit Cooperative Society</td>
</tr>
<tr>
<td>SDI</td>
<td>Subsidy Dependency Index</td>
</tr>
<tr>
<td>VoIP</td>
<td>Voice over Internet Protocol</td>
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<td>WB</td>
<td>World Bank</td>
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ABSTRACT

Due to development of Information and Communication Technology (ICT), microfinance industry in Tanzania has experienced rapid growth over the years in an attempt to meet the large demand of clients lacking access to financial services. Despite of the challenges, there has been a tremendous growth of ICT utilization in MFIs, different applications and technologies have been adopted by some MFIs to enhance business processes, control costs, create efficiency and effectiveness in their operations, improve productivity, and increase outreach to the poor.

The specific focus of this study was on assessing the ICT utilization on microfinance institutions performance in Tanzania. With the specific objectives of examining the performance of current ICTs usage level on Microfinance institutions, Determining the ICT contributions to microfinance institution performance, Examine the challenges facing ICT on microfinance institution performance. The study was conducted at Opportunity Microfinance Tanzania Limited in Mbagala, Chanika, Manzese and Kiluvya wards in Dar Es Salaam City-Tanzania. The population of 73 respondents which included IT officers, Operations Managers, Head of Department, Sales Officers, Clients and Tellers were selected from four branches of Opportunity Microfinance Tanzania Ltd and 73 questionnaires distributed and thus were collected respectively, purposive sampling was used and the data collected was analyzed using SPSS and chi-square test.
The finding indicates and established that ICT utilization has direct relationship with microfinance institution performance in Tanzania. ICT help microfinance to improve the efficiency and effectiveness of services offered to customers, enhances business processes, improve managerial decision making, better online and offline support of customers and strengthens particular microfinance competitive positions in the market.

There are however, many microfinance institutions in Tanzania where ICTs have not fully adopted and utilized to all functional areas. Therefore, this study recommended that MFIs should get specialized, independent consultant, this is due to the fact that sometimes MFIs choose technologies that may not be right for the MFI at a given time, also MFIs might fail to choose systems that will support business over long time. Due to that specialized, independent consultants can bring an objective perspective and help MFIs set strategic priorities, assess technology requirements, and manage technology vendors. Choosing a proper MIS does not mean just looking at the IT system but it means looking at the organisation as a whole and identifying the strengths and weaknesses of the structure.

The study also recommends that internal ICTs challenge to be resolved through proper training, i.e. the provision of ICT related training to employees with respect to the strategic and operational management of the microfinance and also recruit external specialized consultants.
CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter introduces the study. It comprises the background of the study, statement of the problem, the research objectives, research questions, significance of the study as well as scope of the study and study limitations.

1.2 Background

Recently, microfinance has garnered attention as a tool to improve the work possibilities for those who are considered “un-bankable”, such as people who do not have access to commercial banks and therefore cannot ask for a loan to finance their businesses. As a result, microfinance is seen as a tool to boost entrepreneurship around the world particularly Tanzania. With the evolution of microfinance and the drive for financial inclusion, microfinance has come to the desire and aspiration by MFIs to use ICTs in their day to day business. This is unsurprising because almost all aspects of life have been impacted by the use of ICTs as a result ICTs are viewed as panaceas to improve the lives of many in the society. According to Pytkowska and Korynski (2017), the most useful Fintech or financial services technology in financial sector are those related to the automation of loan application and management of the related documentation.

As a way of improving efficiency and sustainability, Microfinance performance around the world has adopted different advanced operational methodologies together with Information and Communication Technology (ICT) in order to facilitate its operations, reduction of cost, increasing staff productivity and improved
communication and coordination (Bada, 2012). Policy reform, especially in the mid-1990s, resulted in the liberalization of the global ICT market (ibid). The rationale for this is that, ICT provides opportunities for increased penetration of services, increased competition which should have positive effects on pricing, improved quality of service, a plethora of services, and the utilization of these services to enhance good governance and social-economic development. Adeoti (2011) notices that, ICTs has continued to change the ways banks and their corporate relations are organized globally and a variety of innovative tools are available to boost speed and quality of their service delivery.

The performance of Microfinance adopts ICT so as to facilitate customers’ communication within the organization for sake of reducing cost of preparations in the process of decision making to improve efficiency with all necessary information. Therefore, ICT sophisticates’ technologies to help quality of service and reduces the cost of providing financial services to the Microfinance Institution in Tanzania (Jepra, 2011). Most of Microfinance institutions in Tanzania have established websites, which ease the interaction with their clients; they have also increased internal use of internet within organizations while others have adopted different accounting packages to help them manage business transaction (ESRF, 2008). Although there have been increasing in the use of ICT among small and large Microfinance institutions in Tanzania, most of them have not been able to reduce their operating costs and improve their revenue generation, this makes them dependent on donors and hence unsustainable (Kipesha, 2012).
Tanzania has one of the fastest growing ICT markets in Africa. The benefits of investing in ICT for banking service is not only limited to the cost reduction; but also found to have significant contribution to giving customers service access outside the branch and create opportunities for effective cross-selling. For instance, the use of debit cards allows customer to transact with other banks through the ATM. This improves efficiency and increases sales and hence improves microfinance performance. With changing business environment in microfinance sector, most of the Microfinance institutions have adopted Information and Communication Technology (ICT) in their business operations (Tubaro, 2011).

This development provides opportunities for increased penetration of ICT services, increased competition that should have positive effects on pricing, improved quality of service, a plethora of services, and the utilization of these to enhance good governance in the country. However, Timore (2013) argues that ICT investments bring real beneficial performance to the microfinance institution. ICT adoption in the financial sector for example internet banking allows customers to access financial services conveniently, this reduces cost of transaction to improve efficiency and in turn leads to a positive impact on financial performance. According to Gregory (2012) who studied the impact of computer automation on the banking services in Lagos and discovered that, electronic banking has tremendously improved the services of some banks to their customers in Lagos. He made a comparative analysis between the old and new generation banks and discovered the variation in the rate of adoption of the automated devices between automated banks and those that failed to automate their services.
Investment in ICT allows customers to access their bank accounts to make cash withdrawals, credit card cash advances, and check their account balances as well as purchase prepaid cell phone credit. This improves convenience, since customers can withdraw money from their point of reach without necessarily reaching the bank. This increases ICT efficiency and mitigates the costs of transactions leading to financial performance (Abor, 2004). This is in line with a study conducted by Jackline (2015) who investigated the contribution of automated teller machines on financial performance. The results revealed that, investment in ATMs led to an increase in both volume and value of deposit accounts, this led to reduced banking transaction costs, reduced number of staff and the number of branches and consequently bank’s profitability.

The national ICT policy URT (2016) provides a framework within which the Tanzania ICT industry will contribute to the achievement of government’s ICT policy vision of improving the quality of life to the Tanzanians. This significantly, enrich their social, economic and cultural well-being through the rapid development and modernization of the economy and society, using information and communication technologies as the main engine for accelerated and sustainable economic and social development.

The use of ICT concepts, techniques, polices and an implementation strategy to microfinance and banking services has become important in serving the growing needs of customers. Adeoti (2011) notices that, ICT investment directly affects how managers decide and plan on what products and services are offered in the banking industry. It has continued to change the ways banks and their corporate relationships
are organized globally and a variety of innovative tools available to boost speed and quality of their service delivery.

1.2.1 Microfinance Institutions in Tanzania

Tanzania Microfinance industry started in 1990’s as NGO’s and SACCOS (Savings and Credit Cooperative Organizations). Beginning 1995 it was mainly linked to women and poverty alleviation. However, after National Microfinance Policy (NMP) implemented in 2001 it took the present shape and it was officially recognized as a tool for poverty eradication and start expanding across entire Tanzania (Apalu, 2011).

Tanzania has developed a network of microfinance institutions that extends loans to small farms, business and entrepreneurs. Tanzania Association of Microfinance Institutions (TAMFI) was formed to serve the interests of these institutions by creating an enabling environment for microfinance. Sharing best practices and creating business connections between various regional firms. Tanzania Association of Microfinance Institutions (TAMFI) serves as an umbrella to 88 microfinance institutions. Major players in the sector just to mention few, include Opportunity Tanzania Limited, Tujijenge Microfinance, Pride Ltd, Yetu Microfinance Ltd, and Foundation for International Community Assistance Tanzania (FINCA), Micro Trust Finance Ltd, Jiajiri Microfinance, Hakika Microfinance, K – Finance, Platinum Microcredit, Faulu and Fanikiwa Microfinance (www.tamfi.com)
The penetration of ICT in the Microfinance and Financial institutions performance over the recent years has not gone unnoticed. Over the last few years, with rapid changes brought by ICT’s, microfinance has been evolving, and MFIs is expanding services in an innovative way through applying ICT in providing services (TAMFI 2014). A case point is the delivery of microfinance products using Mobile financial services (MFS) which used to access banking services and execute financial transactions. MFIs are leveraging this dramatic penetration of mobile financial service technology and mobile loans repayments to improve delivery of microfinance services and products to their clients. This is being utilized in improving risk assessment and management; reduce transaction cost, details analyzing portfolio statistics and branch networking (Majumdar et al, 2010). Therefore, mobile money, e-banking and electronic fund transfer has acted as a gateway to more sophisticated financial products and services to MFI in both rural and urban Tanzania.

This study is worth taking because it assesses the ICT utilization on Microfinance Institutions performance in Tanzania. The study outlines the current ICTs usage level on Microfinance institutions, determine the ICT contributions to microfinance institution performance and examine the challenges facing ICT on microfinance institution performance. The findings will act as a benchmark for Microfinance institutions in Tanzania, which have not full adopted ICT in their daily business operations. It will also act as a push factor for policy making regarding ICT in Microfinance Institutions to enable utilization of the benefits associated by ICT uses. Considering Opportunity Microfinance Tanzania Limited as case study by focusing in it especially on the ICT utilization on loan disbursement and loan repayment,
customers outreach, profitability and financial sustainability of MFIs, this research examines how assesses the ICT utilization on Microfinance Institutions performance in Tanzania, how by its utilization many clients are satisfied for the services

1.3 Statement of the problem

Microfinance sector in Tanzania is dominated by SACCOS which is small in size and rural oriented, Non-governmental organizations (NGOs), microfinance companies, nonbank financial institutions (NBFIs) and few commercial banks offering microfinance services. Most of these institutions are characterized by poor performance with high inefficiency and low financial sustainability which together has hindered their outreach to the poor and low income households (Marry & Tubaro, 2011). According to Nyamsogoro (2010) who dealt with financial sector utilization in Tanzania, only 12.4% of the country population is served by formal financial sectors. The 4.3% is saved by semi-formal sector, mainly being Microfinance institutions while 27.3% and 56% of the population was reported to be informally included and totally excluded from financial services respectively. Microfinance institutions have not been able to reach most of poor population especially in rural areas, which account for about 70% of the total population of the country. Most of the Microfinance institutions were reported to operate at high costs and low productivity, which in turn results into high losses as well as low outreach to the poor which is the primary objective of these institutions.

Although there are numbers of studies that have been done on technical and administrative aspects of ICT utilization, but they have not revealed the ICT
utilization on Microfinance performance in Tanzania. There have been complaints raised on ICT usage in microfinance performance on loans service delivery to the clients, despite of the existing barriers of ICT usage efforts nationwide. Reports have shown the effectiveness of ICT usage on microfinance performance to some extent remains unknown and also has not answered the needs of the people.

In addition to that, despite the fact that microfinance activity has recently increased considerably, the significant growth is lacking and microfinance institutions are still far from reaching a significant portion of the population that lacks access to formal financial services. There are still reports on several occasions of wrongly allocation of loan, poor outreach, frauds, and misappropriation of loan services in Tanzania. Therefore, this study intends to assess the ICT utilization on microfinance institutions performance in Tanzania and bridge the gaps.

1.4 Objectives

1.4.1 General objective

The overall objective of this study is to assess the ICT utilization on microfinance institutions performance in Tanzania

1.4.2 Specific objectives

i) To examine the performance of current ICTs usage level on Microfinance institutions

ii) To determine the ICT contributions to microfinance institution performance
iii) To examine the challenges facing ICT on microfinance institution performance

iv) To propose a model describing the performance of current ICTs usage level, determine ICT contribution, and examine the challenges facing ICT on microfinance institution performance.

1.5 Research questions

The following research questions will be addressed by this study:

i) What is the performance of current ICTs usage level on Microfinance institutions?

ii) What are the ICT contributions to microfinance institution performance?

iii) What are the challenges facing ICT on microfinance institution performance?

iv) Which model best describes the performance of current ICTs usage level, ICT contributions and examine the challenges facing ICT on microfinance institution performance?

1.6 Scope of the Study

This study aims to identify the utilization of Information and Communication Technology (ICT) in the study area. Purposely, Microfinance institutions which focus on providing loan to the poor who have no access to commercial banks. This study was 9 months from September 2018 to June 2019. The study was undertaken in Dar es Salam where four wards were used as a case study and therefore the sample size was drawn from the study areas.
This study seeks to examine the utilization of Information and Communication Technology (ICT) on Microfinance Institution performance in Tanzania specifically Opportunity Tanzania Limited. The Opportunity Tanzania Limited Microfinance is qualified for the study due to its different branch locations and its wide spread branch network with its high adoption in information technology practices. The study is therefore concerned with how the staff and customers of the financial institutions are responding to the ICT development.

1.7 Significance of the Study

The significance of the study lies on the knowledge contribution, policy contribution, managerial contribution as well as personal benefits. On the side of knowledge contribution, the study basically could improve awareness of the challenges facing ICTs usage in their applications in microfinance institutions. Thus, ICTs discipline could get more exposed in its weaknesses and challenges and how to tackle them for effective ICTs usage in Microfinance institutions. This could further act as a cornerstone of future research.

With respect to policy implication, the findings of this study are significant to policy makers, since the study has revealed the real and actual condition of ICTs utilization in microfinance performance. In fact, the proposed measures to rectify or review the current policy may be put into use.

With regard to managerial contribution, the study findings would be important to managers of ICTs departments as it portrays major challenges that could be facing their organizations. Also, ICTs organization could improve their effectiveness and efficiency by implementing best practices and improving relationships with
management. The management of ICT departments could also use the study findings to help detect weakness and strength of their internal and external controls. Based on that, other firms whether government or private based might perform the best business practice and services.
CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction
This chapter discusses the theoretical review, definitions of different terms used in the study and empirical review together with conceptual framework in assessing the ICT utilization on Microfinance institutions performance in Tanzania.

2.1 Definition of Key Concept
2.1.1 ICT
Information and Communications Technology (ICT) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distant learning. ICT has three components: information technology equipment (computers and related hardware), communications equipment, and software. Software includes acquisition of pre-packaged software, customized software and software developed in-house. Information and Communication Technology (ICT) is the technology involving the development, maintenance, and use of computer systems, software, and networks for the processing and distribution of data. ICT is the broad subject concerned with all aspects of managing and processing information, especially within a large organization or company (Regina 2015).
According to Apalu (2011) ICT is an essential tool for the efficiency administration of organization, and for better delivery of services to clients. Majumdar et al, (2010) added that, ICT also improves the supply of information and reduce the cost of production due to better access of market information and facilitating organizational flexibility, which results into improved product quality.

2.1.2 Microfinance

Microfinance refers to an array of financial services, including loans, savings and insurance, available to poor entrepreneurs and small business owners who have no collateral and would not otherwise qualify for a standard bank loan. Microfinance institution performance operates at very high transaction costs as a result of high administration costs, financing costs and information costs. Unlike in commercial banks with larger loan and long maturity, most of the poor people served by Micro finance require small loans with shorter maturity (Sol, 2012).

2.1.3 Microfinance performance

Microfinance performance is a subjective measure of how well a MFI can use assets to attain its objective (Ortega, 2010). Performance can be broken down into two sub concepts, effectiveness and efficiency. The microfinance sector faces a dual objective usually referred to as the micro finance schism, that is, how to reach the maximum number of poor (social performance) while remaining financially sustainable (financial performance).
2.2 Theoretical Review

2.2.1 Resource Based Theory

This theory examines the association between IT capability/utilization and institution performance. Institution specific IT resources are classified as IT infrastructure, human IT resources, and IT-enabled intangibles.

Resource-based theory, according to Ortega (2010) the possession of strategic resources provides an organization with a golden opportunity to develop competitive advantages over its rivals. This is what makes MFI’s business unique like strong financial position, well managed process, innovative idea and global presence. A resource is valuable to the extent that it helps a firm creates strategies that capitalize on opportunities and diminish threats. A resource is non-substitutable when alternative ways to gain the benefits the resource provides is impossible to get. A rare resource provides strategic advantages to the company which owns it. Competitors find it hard to duplicate resources that are difficult to imitate. Some of these are protected by various legal means, including trademarks, patents, and copyrights.

Using Resource Based Theory MFI’s management often must ask them like what makes us distinctive or unique? Why do some and no other customers buy from us? What are the Key Success Factors in our business? The typical answer to some of the questions above could be, excellent service, Technical know-how, teamwork and Responsiveness to market needs.
According to Ortega (2010), organizations aim to achieve two key objectives namely: control over resources in order to reduce dependence on other firms and gain control over resources that enhance dependence of other firms on themselves. Therefore, firms align their resources, skills and expertise into core competence to gain a competitive edge against their competitors.

2.2.2 Technology Acceptance Model

This is an information systems theory that model how users come to accept the technology and how they use that technology. Technology acceptance model (TAM) was originally proposed by Davies in 1986. This model was designed to forecast the user’s acceptance of information technology and usage in an organizational setting. Cracknell (2004) posits that firms are adopting technology to cope with the dynamics of the external environment. This model has been tailored in a manner that can accommodate changes for improved costs reduction and efficiency. Technology Acceptance Model deals with perceptions as opposed to real usage, the model suggest that users, the key factors that influence their decision on how, where and when they will use it (Davis, 1989). The factors to consider are: Perceived usefulness (PU). According to Davis, it is the degree to which a person believes that using a particular system will lead to improved 10 performances. Perceived ease-of-use (PEoU) is explained as the degree to which a person believes that using a particular system would results to improved productivity.

The TAM was proposed by Davis et al. (1989), this model expounds on the attitude behind the objective to use technology or a service. This theory is relevant to this study since it explains user's acceptance of information technology and usage in an
organizational context. Acceptance is the first process in technology use and has a bipolar implication. Acceptance firstly, is a precursor to adoption and hence this theory complements the preceding theories. Secondly, acceptance dictates the attitude and perception of the users which eventually affects efficiency of use and hence performance. The supporters of this theory; Britton and McGonegal (2007), argue that strategic adoption as well as operational efficiency and hence productivity of systems are a function of acceptance of the technology. It is thus plausible to conclude that without acceptance, the rest of the theories would be redundant and invalid. Though acceptance is an initial phase, it is also an attitude shaping facet that influences adoption and effectiveness of use.

2.3.1 The level of ICTs usage on Microfinance institutions performance

The ICT usage in development of several microfinance institutions performance have succeeded in reaching the poorest of the poor, and have invented new ground-breaking strategies with time for the fulfillment of their vision. ICTs have created a “global village”, in which people can communicate in real time with others in different countries using technologies such as instant messaging, Voice over IP (VoIP), video-conferencing, Social Networking like Facebook. While the use of information and communication technologies remains concentrated largely in the developed world, ICT diffusion is beginning to reach developing countries, including poor ICTs (Fredrick et al., 2014).

ICTs are assigned such importance in the development context addresses several pressing questions surrounding ICTs. How do ICTs affect economic development in low-income countries, how do they affect poor people in these countries and in rural
areas in particular, what policies and programs facilitate their potential to enhance development and the inclusion of poor constituents. According to Hume, (2011) ICT infrastructure offers economies of scale that stimulate network building and enable interactive communication unhindered by distance, volume, medium, or time. It promotes greater inclusion of individuals within networks and increases the diversity of participants by overcoming the barriers of physical distance and social change of human activities (Ibid).

Most clients are ICT ignorant and cannot utilize most of ICT developments like online services hence requiring physical interaction with loan officers of Microfinance institution (Heshigsuren, 2010). ICT adoption and usage in the performance of Microfinance institution have also been constrained by policy and regulatory framework. Most of the developing countries lack enabling environment, with well-developed infrastructure and full support from central banks. They also lack good communication infrastructure, regulation and supervision which could bring about positive policy impact on the adoption and use of ICT in Microfinance institution performance. Most of the microfinance institution are not regulated and are restricted from mobilizing deposits from clients which causes low volume of transactions undertaken by the institution performance as compared to banks and other financial institution hence high unit operating costs (Kipesha, 2012). With such low volume of activities, the benefits of ICT adoption and usage is likely to be outweighed by the associated costs.
2.3.2 The ICT contributions to microfinance institution

The Information Communication Technology (ICT) have emerged and become powerful in improving microfinance institution in wide perspectives. However, it emerged as a powerful tool to reduce operating costs, making it viable for financial institutions to expand into rural and low-income areas. ICT innovations such as a personal computer connected to the internet, a mobile phone, an automated teller machine (ATM) or a point-of-sale (POS) device located at a retail or postal outlet which therefore become convenient and useful to customers and institutions itself (Brandt et al, 2010).

ICT tends to provide transactions which take place with less time or with no time required from a teller. The store’s account at the financial institution would be debited by an amount equivalent to the cash deposit, and the customers would be credited. Since the transaction is electronic, from the institution’s perspective, it is less costly to process (Rogers, 2011). Therefore, over cash to a teller deposit or loan repayment, a customer to give cash to a store clerk, swipe a debit card through a POS card reader, and input an identification number to authorize the transaction

ICT offers various benefits to clients and microfinance in various countries. The benefits to clients have been identified as access to microfinance institutions, more convenient services, faster loan processing, less time in queues and for the MFI's as reduced transaction costs, less fraud, improved quality of financial information, increased outreach, reduction in operational costs, and increase in customer satisfaction and loyalty. ICT has been used to create “branchless banks” through
mobile banking, automated teller machines (ATM), and point-of-sale (PoS) networks among others where clients can access various financial services. Rogers (2011) examined the role of ICT and in particular mobile phones in the delivery of financial services in five countries and summarized it as follows.

In Bolivia, ATMs capable of speaking in local languages are being used to provide financial services including depositing and withdrawing funds without filling forms, and to facilitate funds transfer. However, in Philippines, more than 2 million people are using their phones as mobile wallets to receive and send payments, pay utility bills among other services. In India, rural farmers and MFIs are using mobile phones to do bookkeeping, receive and send payments and to pay utility bills. In addition, handheld devices and smart card technology are used to automate loan processing and tracking. Biometric ATMs with smart cards are used for financial transactions without the need for personal identification (Rogers, 2011).

Information Technology has tremendously contributed to the expansion of the banking networks and range of the offered services during recent years. The efficiencies gained through better information management and the redesign of products and services frees up resources for MFIs to use elsewhere. They can pass the efficiency benefits onto clients through lower prices, which would make their services more affordable to poorer customers. They can open new offices or access points to reach a larger number of customers or geographic regions. Alternatively, they can use the frees up resources to develop new products or new delivery mechanisms that enable the institution to serve people or places that it could not
serve before. Information Technology or Information and communication (ICT) is the combination of computer, electronics and telecommunication equipment (Parikh, 2015). Therefore, information observed that some payments are now being automated and absolute volume of cash transactions have declined under the electronic transaction brought about by the adoption of ICT to the payment system especially in the developed countries which had positive effects on micro finance institution performance.

The growing rate of ICT particularly the internet has influenced at an exponential rate, online interaction and communication among the generality of the populace. Therefore, technology can help find practical solutions to making partnerships work. On the one hand, it can help solve the technical problems of connecting different individuals and institutions, system compatibility, security, meeting regulatory requirements, and designing applications that enable the sharing of relevant, timely information (Washington 2010). The proper application of mainstream IT solutions can increase confidence in a partner’s ability to share information, lend credibility to the quality of data that will be shared, convey an image of organization, sophistication approach to operations, and generate confidence in the partner’s ability to manage risk and delivery and financing of solutions which meet micro finance institution performance (ibid.). The increase in emerging Information Technology has made banking services become more and more automated and less paper work than in the past. For example, the Central Bank of Nigeria reports statistical bulletins and other literature on banking and finance. On the other hand, it can make the idea of integration more attractive (Washington, 2010).
Therefore, Information and Communications Technologies (ICT) play an increasingly important role for development in modern economies. The rapid spread of ICT and its pervasive penetration into all sectors of the economy makes it a candidate for further scrutiny of how it could be better deployed to cause growth that is poverty reducing, to be shared more broadly and capable of transforming the economy of Tanzania (Bada, 2012). The Government of Tanzania (GoT) already recognizes the central role of ICT in enhancing and sustaining national socioeconomic development and poverty reduction strategies and programs.

2.3.3 The challenges of the ICT in Microfinance Industry in Tanzania

Many microfinances do not invest in technology hence limit their ability to grow and respond to the demand of microfinance market. Also, there are some challenges in adopting ICT in Microfinance industry in Tanzania, among of the challenges are unreliable ICT infrastructure whereby in some remote area of Tanzania there is neither internet nor phone connections. Therefore, this becomes difficult for the microfinance to penetrate and provide service to the people. According to Melville et al, (2014) some of Microfinance clients do not know how to use electronic gadget like mobile phone and computer therefore it becomes challengeable for them to make electronic repayment. This forces them to relay on bank teller and make their repayment which ultimately risk and increase the cost of microfinance because the MFI need to employ bank tellers to handle such kind of situation.

There is a higher cost involving implementation and investing in Microfinance ICT. These costs associated with implementation of ICT are installations costs whereby the organization must have all equipment such as server, computers and software
such as T24, bankers ream (BR.net) which help to store client information also there is a staff training costs and equipment service costs together with, software upgrade and software annual renewal.

2.4.1 Microfinance and ICT

The continuous and growing penetration and implication of information and communication technologies (ICT) into the financial services industry during these last decades are a well-documented and undisputable reality. Nevertheless, different categories of financial service providers have obtained very distinctive results concerning the expected increase in productivity and in business performance due to large investments in ICT. In one side of the spectrum, institutions like investment banks and insurance companies have successfully capitalized over their ICT expenditures contrasting with retail banks that have not fared so well. Microfinance performance around the world have adopted different advanced operational methodologies together with information and communication technology (ICT) in order to facilitate their operations, reduction of cost, increasing staff productivity and improved communication as well as coordination (Bada, 2012).

Financial services organizations should aim their IT investments at supporting product differentiation and at producing ease of search for their customers and prospects. Without disregarding the differences between microfinance and traditional financial services providers, the previously presented conclusions are totally transposable to the microfinance universe. Defined by Brigit Helms as “meso level”, the well-functioning financial infrastructure or architecture and a network of other
service providers necessary to the operation of Microfinance Institutions is possibly the least understood component of the financial system within the microfinance community (Nyamsogoro, 2011). We examine three economic efficiency concepts—cost, standard profits, efficiencies. Each corresponds to how well a firm performs relative to a different and alternative profit economic optimization program. Each may provide different insights about firm efficiency. Consistent with this expectation, we find that measurement of each of the efficiency concepts adds some independent informational value (*Ibid*). Therefore, the measures of profit efficiency are not positively correlated with cost efficiency, even though all three efficiency measures are positively related to some raw-data measures of performance. As well, a number of the potential correlates had different relationships with the three different efficiency measures, again suggesting that each is measuring a different type of optimization.

These results suggest that, future researchers might consider measuring all three concepts to be sure that any conclusions about which firms are most efficient or which potential correlates succeed in “explaining” efficiency are robust with respect to all three economic efficiency concepts (Nyamsogoro, 2012).

The effects of different efficiency measurement methods on each of the three efficiency concepts made measurement technique, fictional form, and other variables usually make very little difference in terms of either average industry efficiency or the rankings of individual firms in our data set. An exception is the treatment of equity capital. Failure to account for the equity position of a bank seems to yield a
strong scale bias, making large banks appear to be more efficient than microfinance institutions performance by virtue of the equity they have built up over time (ibid).

2.4.2 ICT Adoption in Tanzania

Yu (2010), added that changing business environment in microfinance sector in Tanzania and around the global, most of the Microfinance institutions have adopted Information and Communication Technology (ICT) in their business operations. They adopt ICT to facilitate communication in the organization and reduce the cost of operations which improves efficiency and aid management in decision making with all necessary information for decision making. Most of Microfinance institutions in Tanzania have established websites, which enables them interact easy with their clients; also increased internal use of internet within organizations while others have adopted different accounting packages to help them manage business transaction (ESRF, 2008). Although, there have been increasing in use of ICT among small and large Microfinance institutions in Tanzania, most of them have not been able to reduce their operating costs and improve their revenue generation which make them dependent on donors hence unsustainable (Marry & Tubaro, 2011).

Although ICT adoption among Microfinance institutions has recently increased, still studies on its performance have not been undertaken. The need for evidences on the ICT adoption and usage in Microfinance performance in Tanzania is still high. The evidences on ICT adoption and usage will act as a benchmark for Microfinance institutions, which have not adopted ICT in their business operations (Krishnaveni & Meenakumari, 2010). The evidences will also act as a push factor for policy making
regarding ICT in Microfinance institutions to enable utilization of the benefits associated by ICT uses.

2.4.3 The effects of ICT

Among the main alternatives for cost reduction in an organization, is the adoption and usage of information and communication technology. The adoption of ICT in any business firm has proved to be beneficial to both firms and customers as well. ICT plays a significant role in reduction of operational inefficiency in an organization as well as improvement in decision making. ICT is an essential tool for the efficiency administration of organization, and for better delivery of services to clients. ICT also improves the supply of information and reduces the cost of production due to better access of market information and facilitating organizational flexibility, resulting into improved product quality (Apulu & Lathan, 2011).

ICT adoption and use have also proved to be beneficial to the management of organizations as it increases the supply of information for decision making, facilitate easy dissemination of information within the organization which in turn reduces the time constraints in accessing the required information and monitoring activities. Spanos et al., (2002), ICT adoption results into increase in organization capability and improved performance as a result of low operating costs, improved coordination, decreased inefficiency and uncertainty. To customers, ICT adoption is beneficial as it improves information accessibility and provides effective means of customer service delivery (Hengst & Sol, 2012). With improved ICT uses in organization, customers can easily acquire goods and services online and access information pertaining
services and product, communicate with an organization which in turn brings customer satisfaction on services offered by the organization. Melville et al, (2014)

2.4.4 The ICT Model Usage on the performance of microfinance institutions

According to Washington (2011) in order to measure the model on the uses of ICT in Microfinance institutions performance, four criteria should be adhered; the level of E-business measured by the number of online transactions per total transaction, the level of online reporting, the level of customer and staff online interaction and the level of ICT adoption in internal business process such as procedures and processes automation.

A Likert scale with 5 points (0-4) was used in the measurement of the level of ICT usage in Microfinance institutions. The respondents were asked to give their views in each of the measurement criteria in the questionnaire. Basing on their answers the researcher ranked the questionnaire using the Likert scale. The Likert scale value of 0 represented absence/unavailability of particular variable, 1 represented high level / performance in particular variable and 4 represented low level/performance of criteria. All criteria were measured using Likert scale except level of E-business; number computers in relation to staffs and ICT cost to the total cost which were computed using secondary data obtained from the respective micro finance institutions. The performance level of each of the three dimensions was computed as,

\[ Py = n \sum n = 1 wyi*xyi \] (4)
Where is the ICT performance of dimension \( y \), is the weight of the variable \( i \) in dimension (All \( Pywi \) variables of the dimension had equal weight) \( y \), is the value of independent variables \( i \) in performance \( xyi \) dimension \( y \). \( y \) represents the three ICT dimension used (Infrastructure, knowledge and skills and uses), \( i \) represent variables evaluated on each dimension. The ICT usage index was measured as the weighted sum of all three ICT performance dimension as follows

\[
ICTU_{ij} = n \sum_{n=1}^{\alpha yj} Pyi \tag{5}
\]

Where is the ICT usage index for Microfinance institution \( j \), is the weight of performance \( ICTU_{ij}Py_{ayj} \) dimension \( y \) in Microfinance institution \( j \) (All dimensions have equal weight), is the performance \( Pyi \) value of dimension \( y \) in Microfinance institution, \( n \) is the number of performance dimensions of ICT usage.

### 2.5 Empirical Literature

Empirical studies on utilization of ICT and Microfinance institutions performance, present good news especially in firms which have invested more on it. The evidences form Uganda on the extent to which Microfinance institutions use ICT to deliver business services, report a fair use of ICT in business process automation which ultimately increased staff productivity, reduced transaction costs and growth (Bada, 2012). The study employed a case study design and a sample of 250 respondents. In terms of sampling procedure, simple random sampling and purposive sampling were used. Simple random sampling was adopted to select respondents. Data from questionnaires and interviews was analyzed both quantitatively and qualitatively.
The findings of the study show low usage of ICT in most microfinance institutions in Uganda, which was contrary to (Ssewanyama, 2009). The latter study reported increased uses of ICT in Microfinance institutions by adoption of different technologies, which has enabled them to control cost, create efficiency, improve operations efficiency, effectiveness and productivity and increased outreach to the poor.

Jawadi et al, (2010), assessed the impact of ICT adoption and its uses on Microfinance institutions, when examining the evolution, commercialization and performance of Microfinance institutions in Europe. The data used in analysis was based on stratified probability sample of 453 respondents interviewed in 2010 from Masinde Muliro University of Science and Technology. Qualitative and qualitative data was analyzed using descriptive statistics. The study findings shows that, ICT adoption has contributed to the expansion of the most microfinance services among the citizens; improved access to microfinance services and has enhanced performance of microfinance institutions through cost reduction and better services to clients. Evidences from America are much similar to those from Europe; the findings by Washington (2010) survey on the impact of ICT adoption on microfinance institutions operations reported a positive impact of ICT uses.

The study by Fu & Polzin (2008), present evidences from India on ICT adoption at various levels among rural microfinance cooperative banks. Qualitative content analysis was conducted on 23 in-depth interviews to describe the perceptions of key professionals and their experiences of handling the utilization of ICT and
Microfinance institutions performance, in addition, eight in-depth interviews with parents to capture their experiences of ICT to facilitate communication in the organization and reduce the cost of operations which improves efficiency and aid management in decision making with all necessary information for decision making. Resource Based Theory was used to analyze 13 focus group discussions held with ICT users to explore the ICT contributions to microfinance institution. Findings from these exploratory sub-studies paved the way for a school survey among 1359 students from 23 randomly selected secondary schools. Using descriptive statistics and multivariate regression analyses study reveals that, ICT have enhanced efficiency and productivity of rural credit institutions. The study indicates that, still a lot need to be done to improve ICT skills among the employees as well as clients of Microfinance institutions to benefit more from ICT utilization. The evidence on traditional microfinance institutions in India has provided different results on ICT utilization and its performance.

Andrianaivo & Kpodar (2010) conducted a study on the ICT usage in development of microfinance organization in loan services Uganda. The study employed a case study design and a sample of 100 respondents In terms of sampling procedure, simple random sampling and purposive sampling were used. Simple random sampling was adopted to select older people who visited public hospitals while purposive sampling was used to get respondents. Data from questionnaires and interviews was analyzed both quantitatively and qualitatively. Quantitative data were extracted while qualitative data were subjected to content analysis, while, classified and computed using SPSS. Therefore, study findings show that micro financial
institutions are faced with challenges in providing loan services. Study reveals that some of these challenges include processing delivery of large loan applications accurately on time, efficient loan portfolio tracking and outreach. The constructed conceptual framework is based on the literature review that, ICT usage in an organization leads to increase overall performance. The framework presents the relationship of ICT usage in provision of loan services which are loan delivery, monitoring and outreach services and their performance of Micro financial institutions. The performance explores the needs, problems and opportunities as a basis for defining the goals, priorities and judging the significance of outcomes. In this study, the conceptual framework assumed a direct interdependence between good performance, delivery, monitoring and outreach services.

It was assumed that, proper ICT infrastructure and good administration, an improved education and economic growth can directly influence people to ICT usage. Results show that there is a need to have good institutional arrangement and policies and laws that will ensure proper ICT usage management, administration and distribution in the entire community. Determining out if usage in ICT has organizations performance has been a major concern for information systems to researchers.

In Tanzania, although studies on ICT adoption in Microfinance institutions have not been undertaken, the study was cross-sectional in design. A multi-stage sampling technique was adopted and 1217 ICT users were randomly selected. The ICT utilization was operational zed as respondents selected. Data were analysed using descriptive statistics and binary logistic regression. Therefore, results show that, the
increases in the number of clients using ICT related financial services like mobile payment services and mobile banking from 4mil in 2009 to 10 million in 2010 (BOT, 2010). The evidences form microfinance clients show that most of them have the feeling that ICT could enhance their livelihood through reduction of information and transport costs as well as easy accessibility to micro finance services (ibid).

According to Statistics provided in 2016 from the Bank of Tanzania (BOT), the BOT’s Director of National Payment Systems Bernard Dadi says that the number of registered active mobile transaction users reached 14.2 million out of 38.8 million registered accounts. Official records show that there are more than 25 million subscribers with access to mobile money transfer technology which is accommodated by all mobile phone companies operating in the country such as MIC Tanzania Ltd via TigoPesa, Vodacom Company via M-Pesa, Bhati Ltd via Airtel Money and Zantel via Ezy-Pesa respectively of which nine million are active users of the accounts undertaking at least a transaction per month.

In just four years, from 2009 to 2013, the use of non-banking formal financial services, mainly mobile financial services, increased from just under 7 percent to almost 44 percent, bringing the rate of financial inclusion from around 16 percent to close to 58 percent as per Financial Sector Deepening Trust.

Kotoroi (2015) conducted the study on Information Technology (IT) in banking innovations. A cross-sectional design was adopted in the study. Quantitative data were collected using a structured questionnaire involving 240 elderly. Qualitative
data were collected through in-depth interviews, focus group discussions, and key informant interviews. Quantitative data were analyzed using IBM Statistical Package for Social Sciences (SPSS) Statistics software by computing descriptive statistics including frequencies, percentages, averages, minimum and maximum values of individual variables. Qualitative data were analysed through content analysis and categorised based on the research objectives. The study finding shows that, innovation is broadly seen as an essential component of competitiveness, embedded in the organizational structures, processes, products, and services within a firm.

Summary of Empirical Literature Review users formulate a positive attitude towards the useful technology. When users perceive a specific technology as useful, they will believe in a positive use-performance relationship to the users and the technology. Since effort is a finite resource, a user is likely to accept an application when perceives it simpler than others. Further, any use of technology in an organization is likely to have an ICT in the development on financial performance on microfinance in Tanzania.

The user’s uses tools and technology that enables them complete their assigned task efficiently with great benefit. Every new technology needs to be adopted by individuals in the organization. Potential adopters of such technology progress over a time through stages till they achieve full diffusion process. Diffusion takes place over time with innovations going through a slow, gradual and rapid growth, gradual stabilization and finally a decline. It implies that, the rate at which a person adopts a
certain technology increases with time as that technology is exposed to that person. 
The same applies to organizations’ adoption of a certain technological innovation.

As shown from Empirical Literature above most studies globally and locally showed that there is a positive relationship between ICT utilization and microfinance performance. Despite the ICT challenges microfinance facing in adopting ICT, it has shown that the ICT utilization has impacts on costs reduction, increased sales, client outreach and profitability enhanced efficiency and sustainability. This also supports the assumptions held by the above theories on the importance of ICT in enhancing Microfinance performance. However, among the extensive researches done on ICT usage and microfinance performance little focus has been placed within the context of microfinance institutions in Tanzania. Thus, this justifies the need to assess the ICT utilization on microfinance institutions performance in Tanzania
2.6 Conceptual Framework

Figure 2.1 Conceptual Framework

Source: Researcher conceptualize 2019

It considers that, if people (men and women) participate equally in the entire activities of Microfinance institutions services, their standard of living will be improved. The research aims at finding out the ICT usage on performance of micro finance in Tanzania. (Goodhue & Thomson, 1995). The constructed conceptual
framework is based on the literature review that, ICT usage in an organization leads to increase in overall performance.

The framework presents the relationship of ICT usage in performance of Micro financial services for improving the standard of living. The performance explores the needs, problems and opportunities as a basis for defining the goals, priorities and judging the significance of outcomes. In this study, the conceptual framework assumed a direct interdependence between the performance, delivery, monitoring and outreach services.

ICT managements and administration, an improved education and economic status can directly influence people in rural and urban areas for ICT usage. There is a need to have good institutional arrangement and policies that will ensure proper ICT usage management, administration and distribution in the entire community (*Ibid*). The aim of this framework is to show how ICT usage on performance of Microfinance institutions works in Tanzania, by using group lending methodology for reducing poverty and how it affects the standard of living (income, saving etc.) of the poor people in Tanzania.

The Information and Communication Technology usage in development of Micro finance services in Tanzania is now being considered as one of the most important and effective mechanism for poverty alleviation. From the ICT usage in Micro financial institutions has the positive effects on the life style of the poor people. It
has not only helped the poor people to come over the poverty line, but has also helped them to empower themselves.

2.7 Knowledge gap

Moving to the above empirical studies, it is evident that extensive studies have been done on the ICT utilization on microfinance institution performance in Tanzania. However, there is no published study on ICT use on performance of microfinance institution specifically on the study area.

Therefore, this study will cover some of the missing literature. Additionally, the literature gap on the ICT utilization on microfinance institution will therefore explore how ICTs usage plays a role of ICTs performance in Microfinance institutions in Tanzania specifically in Mbagala, Chanika, Manzese and Kiluvya. This showed the gap of knowledge that this study intended to fill. It is on that basis where this study was actualized within Tanzanian Municipal council to investigate the ICTs utilization in performance of Microfinance institutions and will intuitively be added into the existing literature.

2.8 Logistic Regression model.

Because the variables involved are categorical in nature, the logistic regression was used to analyze the variables quantitatively.

Let us define a binary random variable as: -
\[ Y = \begin{cases} 1 & \text{if ICT Utilization on Microfinance exist.} \\ 0 & \text{if ICT Utilization on Microfinance NOT exist.} \end{cases} \]

with \( Z = \Pr(Y = 1) \) and \( 1 - Z = \Pr(Y = 0) \)

\[ Z = \frac{e^{(x^T \beta)}}{1 + e^{(x^T \beta)}} \]

\[ \logit(pr) = \log pr \left( \frac{p_i}{1-p_i} \right) = \ln \left( \frac{p_i}{1-p_i} \right) \]

Now including variable mention above:

\[ Y = \ln \left( \frac{p_i}{1-p_i} \right) = \beta_0 + \beta_1 G + \beta_2 D + \beta_3 E + \xi_i \]

Where:

‘\( Y \)’ measures if ICT Utilization on Microfinance exists or not and it is a dependent variable.

‘\( \beta_0 \)’ is a constant term; \( \beta_1, \beta_2, \beta_3 \) are the coefficients of variables measuring the probability likelihood of the Utilization on Microfinance to exist and \( G, D, \) and \( E \) are the independent variables as defined above and \( \xi_i \) is error term.

Table 2.1: Summary of Dependent Variables

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>ICT usage level</td>
</tr>
<tr>
<td>D</td>
<td>ICT challenges</td>
</tr>
<tr>
<td>E</td>
<td>ICT contribution</td>
</tr>
</tbody>
</table>

Source, Author 2019
CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents research methodology and design. The research methodology helps in giving explanation on how the study has been done and how the research problem has been defined. Not only that but also it helps in explaining what data have been collected and which methods have been used and why the technique of analyzing the data has been selected. Kothari (2004) suggested the contents of research methodology to contain: the research design, area of study (coverage), sample and sampling techniques, methods for data collection and techniques for data analysis. In view of this, this study adopted the above outline as a framework for the presentation of this chapter.

3.2 Research Design.

This case study employs both qualitative and quantitative forms with 73 respondents. The choice of the two-research design is based on the fact that these two approaches vary in strength and weakness. Therefore, the study uses both of them for complementary purposes. The explanatory research design, for instance uses open ended and probing questions which gives participants the opportunity to respond in their own words rather than forcing them to choose from fixed responses. Creswell (2009) defines, mixed method research as “an approach to inquiry that combines or associates both qualitative and quantitative forms”. This study adopts qualitative design to a large extent and quantitative design to a lesser extent. This is especially
because the study is exploratory by nature. This method is used to capture frequencies of respondents and the average level of responses.

3.3 Study Area
The study was conducted at the Opportunity Microfinance L.t.d. in Mbagala, Chanika, Manzese and Kiluvya. The rationale for selecting these areas is due to the availability of collecting the required data that allow intensive observation, easy to access information and to minimize cost. In addition to that, based on the 2012 Tanzania Population and Housing Census shows that three areas (Mbagala, Chanika, and Manzese) had a total population of 167,001 whereby Manzese ward had the highest population with 70,507 followed by Mbagala Ward with 52,582 and finally Chanika Ward with 43,912 inhabitants (Tanzania census, 2012)

3.4 Study Population.
Population refers to all members, groups, or elements that the researcher wants to gain information from, represent and draw conclusion for the study (Vans 1990). Due to the nature of this study, the study population includes IT officers, Head of Department, client and teller in the financial institutions because they are the key informants.

3.5 Study Sample.
According to Webster (1985), a sample is defined as a finite part of a statistical population whose properties are studied for the purpose of gaining information about the whole. It can also be defined as a set of respondents or people selected from a
larger population for the purpose of a survey. When it is possible, the researcher would prefer to study the whole population in which he/she is interested. However, it is difficult to do so in this study because the population of interest is large, diverse, and scattered over a large geographic area as well as time consuming and expensive.

A sample size is the unit of inquiry selected from the target population. The researcher used the proportionate stratification approach in which the sample size of stratum is proportionate to the population size of the stratum. Strata sample sizes are determined by the following equation:

$$n_i = n \frac{N_i}{N}$$

Where,

- $n_i$ = sample size for stratum $i$, $i = 1, 2...4$
- $N_i$ = Population size for stratum, $i = 1, 2...4$
- $N$ = Total population size of strata
- $n$ = Total sample size

Using this formula, a sample size of 73 respondents were selected as shown on the table below.
Table 3.1: Category of Respondents and Tools of Data Collection

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Number of respondents</th>
<th>Type of Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT officers</td>
<td>3</td>
<td>Questionnaires</td>
</tr>
<tr>
<td>Operation Managers</td>
<td>8</td>
<td>Questionnaires</td>
</tr>
<tr>
<td>Clients</td>
<td>26</td>
<td>Interview</td>
</tr>
<tr>
<td>Tellers</td>
<td>10</td>
<td>Questionnaires</td>
</tr>
<tr>
<td>Sales officers</td>
<td>19</td>
<td>Questionnaires</td>
</tr>
<tr>
<td>Head of Departments</td>
<td>7</td>
<td>Questionnaires</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>73</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field report 2019

Based on table 3.1, the study consisted different groups of respondents namely:
Head of Departments, Clients and IT officers, Tellers, Sales Officers and Operations Manager

3.6 Sampling Procedure

The researcher used purposive sampling to select 73 respondents who were obtained from the studied the Opportunity Microfinance Tanzania Ltd in Mbagala, Chanika, Manzese and Kiluvya. Purposive sampling technique is selected due to the fact that it is less expensive and quick for selecting a sample. Through this sampling technique, the researcher got the respondents who were able to deliver the required data. However, the major weakness of this method is bias, because the researcher selected only the sample, he believed enriched with the needed information.

3.7 Methods and Procedures in Data Collection.

This study involved the collection of both primary and secondary data. Primary data collection methods included the use of structured questionnaire, in-depth interviews and observation. Collection of qualitative data (in-depth interview) was guided by a
pre-defined set of steps and instruments of defining events and observation, for instance, check-lists for key questions and observations to be recorded. The qualitative data collection aimed at complementing and validating the data collected using questionnaire survey.

Collections of primary data were complemented by collecting secondary data from various sources such as reports as well as papers published in peer referred journals. Important data to be collected in this category was the ICT utilization on microfinance institutions performance.

3.7.1 Primary Data

Kothari (2004) defined primary data as those collected afresh and for the first time and therefore happen to be original in character. A research can be conducted without secondary data; however a research based on only secondary data is not much reliable and may have biases because it has already been manipulated by human beings. In this proposed study the primary data was expected to be derived from the answers of respondents given in in-depth interview and researcher’s administered questionnaires.

3.7.2 In-Depth Interview.

In-depth interview is a qualitative research method which involves conducting intensive individual interviews with a small number of informants to explore their perspectives on a particular idea, program, or situation (Boyce and Neale, 2006). The main reason for the researcher to adopt an in-depth interview method is that it provides a much more detailed information than other data collection methods, such
as surveys. Also, the choice of interview method in this study is based on its usefulness for getting the story behind informant’s experiences, its relevance to illiterate informants and the loophole for the researcher to probe deeper into the given situation.

In addition to that, in-depth interview provides more comfortable atmosphere for collecting information because people may feel more relaxed having a conversation with the researcher about the program as opposed to filling out a survey. The purpose of utilizing interviews as data collection instrument is basically because of its naturalness, spontaneity, flexibility and the control over the environment. This method will be employed in order to allow informants to freely express themselves and able explore in detail the topic under investigation.

3.7.3 Researcher-administered Questionnaire.

There are different types of questionnaires in research but under this study the researcher-administered questionnaire was adopted. All questions were closed ended and were administered by the researcher. Researcher-administered questionnaire was used because of its advantages, as it is covers large number of respondents in a short time, ensures the completion of questionnaires and is simple to analyze as compared with qualitative methods like in-depth interview. This argument concurs with Kothari (2008) who states that “structured questionnaires are simple to administer and relatively inexpensive to analyze”. Under this study the original questionnaire was designed in English and administered in Kiswahili before the answers being translated back to English for recording.
3.8 Review of Secondary Data

According to Kothari (2008), secondary data means data which is already available. It involves data which have already been collected and analyzed by someone else. The reason for using secondary data in this study are that they are cost-effective way of acquiring a broad understanding of research questions and useful in designing primary research as well as in providing a baseline with which to compare primary data results. Additionally, the reviewing of secondary data helps to set the background of the problem, formulation of problem statement, research questions and gap of knowledge. In this study secondary data was derived from the findings in published documents and literatures related to the research problem with ICT.

Furthermore, in this proposed study, review of secondary data was applied as a supplementary data collection method and it includes previous researches related to the study topic. Therefore, these documents are intended to supplement the information obtained from the primary sources. Neuman, (2000) and Mouton (2001) noted that the importance of undertaking desk review in any research study is that it is based on the assumption that researchers learn from existing knowledge and build on what other researchers have already done on a similar or related problem.
3.9 Data Analysis.

Statistics package for social science (SPSS) computer program was used to analyze data that collected through questionnaires preliminary analysis of information was soughed through in-depth interviews that were done during the fieldwork. Such preliminary analysis has been suggested to be useful for improving questions during the fieldwork (Gibbs, 2002). However, the large part, of analysis was done after the field work. Interpretation of qualitative data involved organizing information into units, synthesizing, and searched for meaningful patterns and finally gained an understanding. Frequencies and percentages were used to summarize the collected data. In the process of analysis, relationships or differences supporting or conflicting with original or new hypotheses is to be subjected to the statistical tests of significance to determine validity that data can be said to indicate in any conclusion (Kothari, 2004). Summary statistics including tables was used to present findings.

3.10 Model for Data Analysis

The model for data analysis is helping to acquire knowledge from the collected data. The Model makes it possible to identify relationships between variables and understands how variables, working on their own and influences an overall system and examine each component of data provided.

Depending upon the number of independent and dependent variables, the researcher could perform different statistical techniques. For our case, the model used to analyze data collected is logistic regression model.
Let us define a binary random variable as:

\[ Y = \begin{cases} 
1 & \text{if ICT Utilization on Microfinance exist.} \\
0 & \text{if ICT Utilization on Microfinance NOT exist.} 
\end{cases} \]

with \( Z = \Pr(Y = 1) \) and \( 1 - Z = \Pr(Y = 0) \)

\[ Z = \frac{e^{x'\beta}}{1 + e^{x'\beta}} \]

\[ \logit(pr) = \log pr \left( \frac{p_i}{1-p_i} \right) = \ln \left( \frac{p_i}{1-p_i} \right) \ldots \ldots \ldots \ldots 1 \]

Now including variable mentioned above:

\[ Y = \ln \left( \frac{p_i}{1-p_i} \right) = \beta_0 + \beta_1 G + \beta_2 D + \beta_3 E + \epsilon_i \ldots \ldots \ldots \ldots 2 \]

Where:

‘\( Y \)’ measure if ICT Utilization on Microfinance exist or not

\( \beta_0 \) Is a constant term; \( \beta_1, \beta_2, \beta_3 \) are the coefficients of variables measuring the probability of the likelihood of the ICT Utilization on Microfinance to exist or not and \( G,D, and E \) are the independent variables as defined above and \( \epsilon_i \) is error term.

**Table 3.2: Summary of Independent Variables**

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>ICT usage level</td>
</tr>
<tr>
<td>D</td>
<td>ICT challenges</td>
</tr>
<tr>
<td>E</td>
<td>ICT contribution</td>
</tr>
</tbody>
</table>

Source, Author 2019
Table 3.3: Summary of Dependent Variables

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>ICT utilization on microfinance to exist or not</td>
</tr>
</tbody>
</table>

Source, Author 2019

3.11 Ethical Consideration

Ethical consideration of social research ethics was ensured according to regulations of research. Researcher ensured the respondents that all the information that they gave remained confidential and was only be used for this study. Researcher was also respecting the culture and traditional ways of living of informants/ respondents in general, so there was no interference of their social cultural practices. However, the study did not take any sides/ biasness represented what has been observed or what researcher has been told. This was done so as to deliver what have been intended for the research.
3.12. Measurement of Objectives

Table 3.4: Measurements of Objectives

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Variables</th>
<th>Definition of variable/measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) To assess the ICT usage level on the performance of microfinance institutions.</td>
<td>ICT usage level</td>
<td>Software usage, hardware usage and internet connectivity technology. Researcher used Likert scale to measure ICT usage.</td>
</tr>
<tr>
<td>(ii) To assess the effects of ICT contribution on the performance of microfinance institutions.</td>
<td>ICT contribution</td>
<td>ICT enables wider networking, reduction of fraud levels and improve risk management and improve operations. Researcher used Likert scale to measure ICT contributions.</td>
</tr>
<tr>
<td>(iii) To access ICT challenges on the performance of microfinance institution.</td>
<td>ICT challenges</td>
<td>These involved high cost of implementing ICT solution, inadequate ICT staff, and increased competition from banks. Researcher used Likert scale to measure ICT challenges.</td>
</tr>
<tr>
<td>(iv) To propose a model describing the effects of ICT usage level, ICT contribution and ICT challenges on the performance of microfinance institution.</td>
<td>Binary Logistic Regression Modeling</td>
<td>Analysis and binary logic modeling in SPSS</td>
</tr>
</tbody>
</table>

Source: Author (2019)
CHAPTER FOUR
RESULTS, FINDINGS AND DISCUSSION

4.0. Chapter Overview

The aim of this study was to examine the effects of IT utilization on microfinance institution performance in Tanzania. The chapter covers presentation, analysis and interpretation of both primary and secondary data.

Here, data refers to the information collected from questions laid out in the questionnaires distributed to the respondents and the secondary data collected from microfinance institutions. All questions in the questionnaire were analyzed through the Statistical Package for Social Sciences (SPSS) and later on the results were interpreted.

The chapter is organized under the following sections:

Rate of the response of the respondents; results based on the effects of ICT utilization to the performance of microfinance institution; contribution of ICT that exists in the management system of microfinance institutions and challenges associated by ICT Utilization in microfinance institution.

4.1. Rate of response by respondents

All 73 questionnaires were returned from the respondents as shown in Table 3. This gives a response of 100%. This was a good result as no questionnaire was lost; this proves that all respondents were aware of the importance of this study in improving the performances of the Microfinance Institutions in Tanzania.
Table 4.1: Rate of Response by Respondents

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>valid percent</th>
<th>cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Managers</td>
<td>8</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Tellers</td>
<td>10</td>
<td>13.7</td>
<td>13.7</td>
<td>24.7</td>
</tr>
<tr>
<td>Customers</td>
<td>26</td>
<td>35.6</td>
<td>35.6</td>
<td>60.3</td>
</tr>
<tr>
<td>Sales Officers</td>
<td>19</td>
<td>26</td>
<td>26</td>
<td>86.3</td>
</tr>
<tr>
<td>IT Officers</td>
<td>3</td>
<td>4.1</td>
<td>4.1</td>
<td>90.4</td>
</tr>
<tr>
<td>Head of Department</td>
<td>7</td>
<td>9.6</td>
<td>9.6</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>73</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Report 2019

Table 4.1 shows that, a total number of 73 questionnaires were distributed to different departments and successfully returned by the respondents. Based on this result a valid conclusion could be drawn from this research.

4.2 The level of ICTs usage on Microfinance institutions performance

Concerning the effects of ICT usage to the performance of Microfinance institutions, 25 respondents chose that, ICT usage is ‘high’ by increasing software usage; while 25 chose ‘moderate’, 15 chose ‘low’ and 8 respondents were very low. On the other hand, 25 respondents were also ‘high’ on how hardware stimulates ICT usage on the performance of microfinance institution whereby 26 respondents were ‘moderate’, 18 chose ‘low’ and 4 chose ‘very low’. Lastly, 28 respondents said that internet connectivity indicate the high ICTs usage in microfinance institutions, 20 respondents showed ‘moderate’, 16 respondents showed ‘low’ and 9 respondents was ‘very low’. Figure 4.1 shows the results in detail.
Figure 4.1: ICTs usage on the performance of Microfinance institutions.

![Bar chart showing ICTs usage]

Measured results for the ICTs usage on Microfinance institutions performance

<table>
<thead>
<tr>
<th>statement</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software uses</td>
<td>7.35</td>
<td>2.29</td>
</tr>
<tr>
<td>Hardware uses</td>
<td>5.23</td>
<td>3.21</td>
</tr>
<tr>
<td>Internet connectivity</td>
<td>6.04</td>
<td>1.98</td>
</tr>
</tbody>
</table>

The study sought to find the effects of ICTs usage on Microfinance performance. Specifically, the study intended to find out how the increase in ICT usage, indicate and influence Microfinance institutions performance.

As shown in Table 4.2, findings indicated that, the increase in ICT usage affected the performance of Microfinance institutions. This indicated through the mean response of 7.35 which implies that the majority of the respondents were highly using ICT specifically software. Respondents also argued that hardware was moderately used by the majority and this seemed to be a sensitive factor in ICT usage as indicated by
a mean of 5.23 and standard deviation of 3.21. Majority of respondents appreciated that, the internet connection with a mean of 6.04 and standard deviation of 1.98 was a major contribution of microfinance institution performance.

In relation to the study conducted by Jewadi et al, (2010) found that there is positive correlation between in microfinance institutions performance with ICT usage whereby all positive with coefficients of correlation (r) of 0.058 and 0.216 for efficiency and sustainability respective. Study reveals that the ICT usage has positive coefficient as directed by the two variables though the strength of relationship was found to be low. Therefore, the coefficient of determination results was 0.0038 for efficiency and 0.4668 for financial sustainability, indicating that most of variations on efficiency and financial sustainability were not explained by variations in ICT usage hence were the results of other factors. This is directly supported by result drawn from the study concern the usage of ICT level in the use of microfinance institutions. Therefore, the study found that, ICT adoption has contributed to the expansion of most microfinance services among the citizens, have improved access to microfinance institution

4.3 ICT Contribution on MFI's Performance.

On checking the effects of ICT contribution in microfinance performance, 40 respondents strongly agreed that there are wider networking enablers that exist in microfinance institutions, 23 respondents agreed, 8 disagreed while 2 were strongly disagreed. On the other hand, 25 respondents strongly agreed that there is a reduction of fraud levels and improve risk management in institutions environment, 39 agreed, 8 disagreed while 1 strongly disagreed. Finally, 35 respondents strongly agreed that
there are improvements in operations that occur in the microfinance institution, 24 agreed, 12 disagreed and 2 respondents strongly disagreed.

**Figure 4.2: The effect of ICT Contribution on MFIs Performance.**

Measured results for ICT contribution on the performance of microfinance institutions

The following are the ICT contributions that exist in the performance of microfinance institutions in Tanzania.

**Table 4.3: Measured result of ICT contribution on the performance of microfinance institutions.**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable wider networking</td>
<td>4.73</td>
<td>2.08</td>
</tr>
<tr>
<td>Reduction of fraud levels and Improve risk management</td>
<td>6.87</td>
<td>1.07</td>
</tr>
<tr>
<td>Improve operations</td>
<td>5.35</td>
<td>1.24</td>
</tr>
</tbody>
</table>

The study sought to find whether ICT contributions affected the performance of microfinance institution. Specifically, the study intended to find out how ICT enables
wider networking, reduction of fraud levels and improve risk management as well as improve operations relating to the performance of microfinance institutions.

The findings as in Table 4.3 indicated that, performance of microfinance institutions is highly influenced by the reduction of fraud levels and improve risk management measures. This was indicated by the mean response of 6.87 which implies that, the majority of the respondents agreed with the statement. Respondents also averagely agreed with the statement that wider networking is a contribution for microfinance institutions as indicated through the mean response of 4.73 and a standard deviation of 2.08. The high mean of 6.87 indicated that an overwhelmingly majority of the respondents agreed that ‘reduction of fraud levels and improve risk management’ are affecting the performance of microfinance institutions.

In relations to the study conducted by Hishigsuren, (2006) concerning the effect of ICT Contribution on MFIs Performance, study found statistical evidence on the increases in ICT contribution results into increases in financial institution performance, due to insignificant regression coefficients. Therefore, regression analysis shows the presences of significant cause and effect between ICT contribution and financial institutional performance. Regressions coefficients were both positive 0.0163 and 0.1381 for ICT usage in relation to ICT and financial sustainability respectively. The positive coefficients indicate that both ICT contribution and sustainability move in the same direction with microfinance institutions performance.
4.4 The challenges of the ICT in Microfinance Institution in Tanzania

The micro finance institutions across the country are embracing ICT technologies and using it as part of business strategy for business expansion. These include; poor administration and management, failure to meet MFIs and other financial institutions conditions due to lack of collaterals which enable them to seek loan from borrowers.

When respondents asked ‘is there any challenges of the ICT in Micro-finance industry in Tanzania?’ about 51 of respondents said ‘Yes’ due to the presence of high cost of implementing ICT solutions while 22 of respondents said ‘No’. Otherwise, 49 respondents said ‘Yes’ about inadequate of ICT staff is also a challenge for microfinance performance while 24 said ‘No’. Lastly, 55 respondents said ‘Yes’ about an increased competition from banks contributes to the ICT challenges on the microfinance institution and 18 said ‘No’. Figure 4.3 shows the results in detail.

Figure 4.3: The effect of the challenges of the ICT in Microfinance Institution in Tanzania
Measured results for ICTs challenges on the performance of microfinance institutions

Table 4.4: Measured result for ICTs challenges on the performance of microfinance institutions.

<table>
<thead>
<tr>
<th>Statements</th>
<th>Mean</th>
<th>Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>High cost of implementing ICT solution</td>
<td>6.53</td>
<td>1.58</td>
</tr>
<tr>
<td>Inadequate ICT staff</td>
<td>4.94</td>
<td>0.95</td>
</tr>
<tr>
<td>Increased competition from banks</td>
<td>6.67</td>
<td>2.01</td>
</tr>
</tbody>
</table>

The study sought to find the effects of ICTs challenges on the performance of microfinance institutions. Specifically, the study intended to find out how high cost of implementing ICT solution, inadequate ICT staff, and increased competition from banks relate to the performance of microfinance institutions.

The findings as indicated in Table 4.4 show that performance of microfinance institution is highly influenced by increased competition from banks. This was indicated by the mean response of 6.67 implying that, the majority of the respondents agreed with the statement. Respondents also agreed with the presence of inadequate ICTs staff by the mean response of 4.94 and a standard deviation of 0.95. The mean of 6.53 indicated that majority of the respondents agreed that high cost of implementing ICT solution is affecting the performance of microfinance institutions.

These findings implied that ICT challenges affect the performance of microfinance institution as determined by high cost of implementing ICT solution, inadequate ICT staff and increased competition from banks.

Standard deviation was calculated to show how close the mean is close to the actual data. The Standard deviation tells us about distribution of the data; how close the
individual data values are from the mean value. The small standard deviation shows us that the mean is very close to the true value.

Table 4.5: Comparison of Standard Deviation and Mean

<table>
<thead>
<tr>
<th>Statement</th>
<th>No:</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software uses</td>
<td>73</td>
<td>7.35</td>
<td>2.29</td>
</tr>
<tr>
<td>Hardware uses</td>
<td>73</td>
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<td>3.21</td>
</tr>
<tr>
<td>Internet connectivity</td>
<td>73</td>
<td>6.04</td>
<td>1.98</td>
</tr>
<tr>
<td>Enable wider networking</td>
<td>73</td>
<td>4.73</td>
<td>2.08</td>
</tr>
<tr>
<td>Reduction of fraud levels and improve risk management</td>
<td>73</td>
<td>6.87</td>
<td>1.07</td>
</tr>
<tr>
<td>Improve operations</td>
<td>73</td>
<td>5.35</td>
<td>1.24</td>
</tr>
<tr>
<td>High cost of implementing ICT solution</td>
<td>73</td>
<td>6.53</td>
<td>1.58</td>
</tr>
<tr>
<td>Inadequate ICT staff</td>
<td>73</td>
<td>4.94</td>
<td>0.95</td>
</tr>
<tr>
<td>Increased competition from banks</td>
<td>73</td>
<td>6.67</td>
<td>2.01</td>
</tr>
</tbody>
</table>

The study above is related to the study conducted by Tomaides, (2014) on the challenges of the ICT in Microfinance Institution in Tanzania. The overall result shows that the majority of respondents 56.8% indicated high cost of implementing ICT solution and 40% indicated inadequate ICT staff and increased competition from banks. The remaining 3.2% respondents reported that the government and other financial organizations including NGOs provided support with very minimal to enable people to cope with challenges facing people’s lack of ICT Usage in performance of Microfinance institutions on Loans Services in Peri - Urban areas. These findings implied that ICT challenges affect the performance of microfinance institution as determined by high cost of implementing ICT solution as well as inadequate ICT staff and increased competition from banks. However, the findings indicate that 78.6% of the respondent’s response had poor knowledge on the ICT and not receiving support from any financial institutions compared to 21.7% respondents who do receive very little information and support from any financial institutions.
4.5. Validation of the proposed conceptual model

This section contains assessment of the proposed model and validation of the model by testing the research hypotheses. The study used Binary logistic regression modeling to validate the model. Correlation analysis was also conducted to establish relationships between independent and dependent variables. The study utilized Statistics Package for Social Science (SPSS) to carry out these statistical tests.

4.5.1. Correlation Results

Table 4.6: Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>constant</th>
<th>Q6mean</th>
<th>Q5mean</th>
<th>Q7mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>constant</td>
<td>1.00</td>
<td>7.61</td>
<td>-0.96</td>
<td>-0.89</td>
</tr>
<tr>
<td>Q6mean</td>
<td>0.76</td>
<td>1.00</td>
<td>-0.68</td>
<td>-0.87</td>
</tr>
<tr>
<td>Q5mean</td>
<td>-0.96</td>
<td>-0.68</td>
<td>1.00</td>
<td>0.76</td>
</tr>
<tr>
<td>Q7mean</td>
<td>-0.890</td>
<td>-0.87</td>
<td>0.76</td>
<td>1.00</td>
</tr>
</tbody>
</table>

The correlation matrix for the independent variables in Table 4.6 shows Q6 Mean having high negative correlation with Q5 Mean and Q7 Mean of 0.68 and 0.87. Q5 Mean is positively correlated to Q7 Mean by 0.76.

4.6.1 Modeling results with ICT usage (Q5 Mean), ICT contributions (Q6 Mean) and ICT challenges (Q7Mean) responses in SPSS.

Table 4.7: Omnibus Tests of Model Coefficients.

<table>
<thead>
<tr>
<th></th>
<th>chi-square</th>
<th>df</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step</td>
<td>54.263</td>
<td>3</td>
<td>.00</td>
</tr>
<tr>
<td>step 1</td>
<td>Block</td>
<td>54.263</td>
<td>3</td>
</tr>
<tr>
<td>Model</td>
<td>54.263</td>
<td>3</td>
<td>.00</td>
</tr>
</tbody>
</table>
There are three independent variables in the model coded as Q5 Mean, Q6 Mean and Q7 Mean which represent mean responses for ICT usage, ICT contribution and ICT challenges. The addition of the three variables to the model reduced the -2 log likelihood by 54.263 with 3 degrees of freedom as seen in Table 4.7

Table 4.8: Model Summary

<table>
<thead>
<tr>
<th>step</th>
<th>-2log likelihood</th>
<th>Cox &amp; snell R square</th>
<th>Nagelkerk R square</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.000&lt;sub&gt;a&lt;/sub&gt;</td>
<td>0.789</td>
<td>1.000</td>
</tr>
</tbody>
</table>

As seen in Table 4.8 above, the three-variable model has a -2-log likelihood of 0 with 1 degree of freedom. The -2-log likelihood is a measure of how well the model explains variations in the outcome of interest. The -2-log likelihood (or deviance) has a chi squared distribution.

Table 4.9: Classification Table

<table>
<thead>
<tr>
<th>Observed</th>
<th>predicted performance</th>
<th>Percentage correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Perf_not affected</td>
<td></td>
</tr>
<tr>
<td>Perf_not affected</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Perf_affected</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Overall percentage</td>
<td></td>
<td>100.0</td>
</tr>
<tr>
<td>Perf_affected</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Perf_affected</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>Overall percentage</td>
<td></td>
<td>100.0</td>
</tr>
</tbody>
</table>

The number of observed outputs is shown in Table 4.9. The observation is such that Q5Mean (ICT usage), Q6Mean (ICT contribution) and Q7Mean (ICT challenges) affected performance in 63 outputs as compared to the 10 outputs in which performance was not affected by the variables.
Table 4.10: Variables in the Equation

<table>
<thead>
<tr>
<th>Step 1</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
<th>95% C.I. for EXP(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LOWER</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>UPPER</td>
</tr>
<tr>
<td>Q6mean</td>
<td>1.960</td>
<td>.700</td>
<td>8.080</td>
<td>1</td>
<td>.007</td>
<td>7.5653</td>
<td>1.734</td>
</tr>
<tr>
<td>Q5mean</td>
<td>3.45</td>
<td>1.538</td>
<td>5.678</td>
<td>1</td>
<td>.045</td>
<td>16.678</td>
<td>1.345</td>
</tr>
<tr>
<td>Constant</td>
<td>-19.738</td>
<td>8.234</td>
<td>9.003</td>
<td>1</td>
<td>.009</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As seen in Table 4.14, the result of omitting Q7Mean (ICT challenges mean response) from the 3-variable model, the p values for the result of Q5Mean and Q6Mean to the model are 0.045 and 0.037. P values of 0.045 and 0.037 are both less than the conventional significance level of 0.05. It can be concluded that, the reduction of the three independent variable results into a more fitting model than having the initial 3 variables.

All coefficients for variables in the model have exceptionally modest p-value less than the significance level of 0.05 which implies that they are statistically significant. In other words, the Q5Mean and Q6Mean variables result into a model that explains variations in effects of ICT usage, ICT contributions and ICT challenges on the performance of Microfinance institutions.

Table 4.12 gives the Cox & Snell R square as 0.432 and the Nagelkerke R Square as 0.642. This means that, the model explains between 43.2% and 64.2% of the variations in the effects of ICT usage, ICT contributions and ICT challenges on the performance of Microfinance institutions.

We see from the Table 4.14 above that the estimated model is:

Logit (Performance) = -19.738 + 1.960Q6Mean +3.453Q5Mean
Logit (Performance) = -19.738 + 1.960ICT contribution + 3.453ICT usage

ICT contribution coefficient is statistically significant. The Expo (B) for ICT-contribution is 7.5653, which means it is 7.5653 times more likely to affect the performance of Microfinance institution, within lower and upper boundaries of 1.734 and 27.234 times and having allowed for usage in the model.

Similarly, the Expo (B) for ICT usage is 16.678 meaning that, it is 16.678 times more likely to affect the performance of Microfinance institution, with lower and upper boundaries of 1.345 and 136.45, having allowed for ICT contribution in the model.

<table>
<thead>
<tr>
<th>Table 4.1: Correlation Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
</tr>
<tr>
<td>constant</td>
</tr>
<tr>
<td>Q6mean</td>
</tr>
<tr>
<td>Q5mean</td>
</tr>
</tbody>
</table>

The correlation matrix for the two independent variables shows Q5Mean positively correlating to Q6 Mean by 0.96, which is a low correlation measure.

4.6.3 Modeling results with ICT contribution (Q6Mean) ICT challenges (Q7Mean) responses

<table>
<thead>
<tr>
<th>Table 4.12: Omnibus Tests of Model Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>step</td>
</tr>
<tr>
<td>block</td>
</tr>
<tr>
<td>model</td>
</tr>
</tbody>
</table>
There are two independent variables in the model coded as Q7Mean and Q6Mean which represent mean responses for ICT challenges and ICT contribution.

The reduction of the independent variable Q5Mean (ICT usage) from the 3 variable models reduced the -2-log likelihood by 52.680 with 2 degrees of freedom.

Table 4.13: Model Summary

<table>
<thead>
<tr>
<th>step</th>
<th>-2log likelihood</th>
<th>Cox &amp;snell R square</th>
<th>Nagelkerke R square</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15.89a</td>
<td>0.589</td>
<td>0.9540</td>
</tr>
</tbody>
</table>

As seen in Table 4.17, the two variable models have a -2-log likelihood of 15.89a. The -2-log likelihood (or deviance) has a chi squared distribution and measures of how well the model explains variations in the performance of a microfinance institution.

Table 4.14: Classification Tablea

<table>
<thead>
<tr>
<th>Observed</th>
<th>Predicted performance</th>
<th>Percentage correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Perf_not affected</td>
<td>Perf_affected</td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perf_not affected</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Perf_affected</td>
<td>4</td>
<td>62</td>
</tr>
<tr>
<td>Overall percentage</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The number of observed outputs is shown in Table 4.18. The observation is such that Q7Mean (ICT challenges) and Q6Mean (ICT contribution) affected performance in 63 outputs in total as compared to the 12 outputs in total for which performance was not affected by the variables.
As seen in Table 4.19, a result of omitting the Q5Mean (ICT usage response) from the 3 variables model, the p values for the result of Q7Mean and Q6Mean to the model are 0.018 and 0.090. P values of 0.027 and 0.045 are both less than the conventional significance level of 0.05. It can be concluded that the reduction of the three independent variable results into a more fitting model than having the initial 3 variables. All coefficients for variables in the model have exceptionally modest p-value lesser the significance level of 0.05 which imply they are statistically significant. In other words, the Q7Mean and Q6Mean variables results into a model that explains variations in effects of ICT usage, ICT contribution and ICT challenges on the performance of microfinance institution.

Furthermore, Table 4.17 gives the Cox & Snell R Square as 0.489 and the Nagelkerke R Square as 0.9540. This means that, the model explains between 48.9% and 95.40% of the variations in the effects of ICT usage, ICT contribution and ICT challenges on the performance of microfinance institution.

We see from the Table 4.19 above that the estimated model is:

Logit (Performance) = -21.738 + 2.962Q7Mean + 4.452Q6Mean

OR

Logit (Performance) = -21.738 + 2.962ICT challenge + 4.452ICT contribution

Table 4.15: Variables in the Equation

<table>
<thead>
<tr>
<th>Step 1a</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
<th>95% C.I.for EXP(B)</th>
<th>LOWER</th>
<th>UPPER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q7mean</td>
<td>2.960</td>
<td>0.600</td>
<td>3.080</td>
<td>1</td>
<td>0.027</td>
<td>16.678</td>
<td>1.564</td>
<td>127.234</td>
<td></td>
</tr>
<tr>
<td>Q6mean</td>
<td>4.45</td>
<td>1.538</td>
<td>5.678</td>
<td>1</td>
<td>0.045</td>
<td>7.5653</td>
<td>0.345</td>
<td>1566.45</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-21.738</td>
<td>7.234</td>
<td>8.003</td>
<td>1</td>
<td>0.049</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The ICT challenge coefficient is statistically significant. The Exp (B) for ICT-Challenge is 16.678, which means it is 16.678 times more likely to affect the Performance of microfinance within lower and upper boundaries of 1.564 and 127.234 times and having allowed for ICT contribution in the model. Similarly, the Exp (B) for ICT usage is 13.357 which means that it is 13.357 times more likely to affect the performance of microfinance institution, with lower and upper boundaries of 0.665 and 268.344, having allowed for IT security problems in the model.

Table 4.16: Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>constant</th>
<th>Q6mean</th>
<th>Q7mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
<td>1.00</td>
<td>7.61</td>
<td>-0.89</td>
</tr>
<tr>
<td>Q6mean</td>
<td>0.76</td>
<td>1.00</td>
<td>0.87</td>
</tr>
<tr>
<td>Q7mean</td>
<td>-0.890</td>
<td>0.87</td>
<td>1.00</td>
</tr>
</tbody>
</table>

The correlation matrix for the two independent variables as seen in Table 4.20 shows Q7Mean positively correlate to Q6 Mean by 0.87, which is a low correlation measure.
CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Objective of this study was to assess the ICT utilization on microfinance institutions performance in Tanzania basing on Opportunity Microfinance Tanzania Limited. The study examined the level of ICT usage in microfinance whereby the component like hardware, software and internet connectivity technology was described. Dependent variable (ICT utilization on microfinance) and independent variables which are ICT usage level, ICT contribution and ICT challenges to the microfinance was described. The major strategic roles of ICT are development of business strategies, offering electronic services, provision of better customer services and efficiency in transformation of value chain. The key challenges faced by MFI's in the use of ICT are high costs structure in implementation of ICT, inadequate qualified IT staff to manage the microfinance system.

The population of seventy-three respondents, IT officers, operation managers head of department, sale officers, clients and tellers were selected from four branches of opportunity Microfinance Tanzania Ltd. From that, 73 questionnaires were distributed and then collected respectively, purpose sampling was used and the data collected was analyzed using SPSS, through the use of chi-square test.

47.9% was the majority number of respondents whose age ranged between 18 and 35. The researcher targeted respondents of this age group because utilization of ICT is mostly applied by youth compared to aged people. Therefore, it was very easy to
get feedback from this group because high numbers of people are conversant with development of ICT.

Purposive sampling technique was used to obtain study participants who are fluent and with special ICT knowledge of related banking industry technology. Data in this research was collected using questionnaire and interview. All data collected was analyzed using SPSS

5.2 Conclusion

When MFI’s have a clear utilization ICT strategy in place, ICT plays a major role in the operations of microfinance institutions as highlighted from the findings such as financial systems, expand outreach, credit system management and loans recovery system management. Therefore, since Information Communication Technology is an evolving technology especially in the developing countries, the technology keeps changing based on the demand in the world market. The experts must be ready to upgrade their skills to adopt these technologies; also once the new technology has been introduced to the particular Microfinance is the duty of management to see how they can disseminate knowledge to the clients so as to enable all clients to be conversant with the new technology. Also, microfinance should be able to find a new technology which is friendly to the customers. This is due to the fact that, there is an evidence from Opportunity Microfinance Tanzania Limited whereby they introduced technology of one pin technology when client want to make a loan repayment via Tigopesa the pin is sent to client phone in form of message and if not applied it expires within 30 seconds. The company invested much on this technology but ultimately no client was able to apply it.
5.3 Recommendations

The government should make sure that all microfinance institutes are regulated by the Bank of Tanzania (BOT). At the moment, only deposit taking Microfinances are the one regulated by BOT. Therefore, once regulated by BOT those Microfinance Bank complies with rule and regulation of the BOT so it is not easy to introduce and apply any technology which is not approved by BOT. But for the case of normal Microfinance like Opportunity Tanzania Limited which is not regulated by BOT can introduce any software technology which sometime does not meet customers’ requirements and make easier application to all clients.

MFIs should get specialized, independent consultant, this is due to the fact that sometimes MFIs choose technologies that may not be right for the MFI at a given time. Also, MFIs might fail to choose systems that will support business over long time. Due to that specialized, independent consultants can bring an objective perspective and help MFIs set strategic priorities, assess technology requirements, and manage technology vendors. Choosing a proper MIS does not mean that, just looking at the IT system but it means looking at the organization as a whole and identifying the strengths and weaknesses of the structure.

Governments must be encouraged to support software development and in particular the capacity development of skilled labors in the applications of ICT. Thereafter encourages financial institutions to adopt software applications in their operations which will reduce manual work. Government must promote awareness campaigns on the benefits associated with ICT and in particular financial institutions.
There is a need for microfinance to invest more resources in ICT technologies to help reduce fraud as well as provide more online banking products to reduce crowding in banks and improve banking solutions. The impact of adopting other individual technologies, profitability and performance issues should also be investigated to open up and clear the way for policy and business decisions.

5.4 Suggestions of Further Studies

Therefore, it is recommended that the research should be carried out to cover the whole country on the ICT awareness also must concentrate on customer ICT technology awareness as this is the initial stage of ICT adoption, they should not concentrate only on profitability issues.
REFERENCES


Apalu G. (2011). Sustainability of Farm Credit Delivery by Cooperatives and NGOs in Edo and Delta States Nigeria. Educational Research and Review, 1(8), 262-266.


Davis, F. Graziano, A.M., & Raulin, M.L., (1986), Sloan School of Management, Massachusetts Institute of Technology; Doctoral dissertation. A technology acceptance model for empirical testing new end user information system; Theory and results.


Kipesha, E. (2012). Efficiency of Microfinance institutions in East Africa: Data


QUESTIONNAIRE FOR IT OFFICERS, OPERATION, SALES OFFICER, TELLERS AND HEAD OF DEPARTMENT

I Bakisi, Mathias a student at CBE presenting questionnaire designed to facilitate the collection of data for the research about “to assess the effect of ICT utilization on microfinance institution performance in Tanzania”. Information will be collected is for academic purpose only and will remain strictly secret that cannot reach any other person. Therefore, I request your cooperation through contribution of your ideas.

SECTION A
CIRCLE ONLY ONE LETTER

Background of the respondents

Please put a tick/circle for your choices or write on provided blank spaces.

Part 1: Personal Information Please tick the correct answer

1. Age (in years)
   1: Below 18 and 35
   2: Between 36 and 45
   3: Between 46 and 55
   4: between 56 and 60

2. Sex
   1: Male
   2: Female
3. Level of Education
   1: Primary School
   2: Secondary School
   3: College
   4: University

4. Occupation of the respondent
   1. Operation manager
   2. Bank tellers
   3. Customers
   4. Sales Officer
   5. IT officers
   6. Head of department

SECTION B

GENERAL QUESTIONS

(Circle only one letter) Rating of the items

5. To what extent do the level of ICTs usage on Micro financial institutions performance
   1. High
   2. Moderate
   3. Low
   4. Very low
6. Do you agree with the level of ICTs usage on Micro financial institutions performance?
   1. Yes
   2. No

Do you agree with statement that there is ICT contribution on microfinance institution?
   1. Strongly agree
   2. Agree
   3. disagree
   4. strongly disagree

7. Is there any contribution of ICT on the microfinance institution performance?
   1. Yes
   2. No.

8. Do you agree with the use and development of some classes of ICT applications?
   1. Yes
   2. NO

9. To what extent automated teller machine (ATM); has improved microfinance performance in Tanzania?
   a. High
   b. Moderate
   c. Low
   d. Very low
10. Is there any local area network (LAN), on-line microfinance, enhance microfinance performance?
   1. Yes
   2. No

11. Do you agree with the benefits of utilizing information technology as a tool to enhance efficiency and cost reduction?
   1. Yes
   2. No

12. Are there any effects of adopting information technology as a tool to enhance efficiency?
   1. Yes
   2. No

13. To which extent ICT enhance the performance of microfinance operations
   a. High
   b. Moderate
   c. Low
   d. Very low

14. How does technological progress and its effects in the microfinance industry using data collected from the banking industry?
   a. High
b. Moderate

c. Low

d. Very low

15. Is there any increase in microfinance profitability enhances microfinance performance in Tanzania?
   1. Yes
   2. No

16. Do you agree with the factors that ICT enhance the operation of Microfinance industry?
   1. Yes
   2. No

17. How does the implications of internet banking system play very big role in performing the operations?
   a. High
   b. Moderate
   c. Low
   d. Very low

18. Do you agree with the technology on relationship marketing orientation (RMO) and business performance?
   1. Yes
   2. No
19. How investment in information and communication technology (ICT) does not improve performance in the Tanzanian microfinance?
   a. High
   b. Moderate
   c. Low
   d. Very low

20. Do you agree that there are challenges faces on the usage of Information Technology in Microfinance Industry in Tanzania?
   1. Yes
   2. No

21. Do you agree with electronic fund transfer and data processing (DP) applications on selected commercial banks performance is the challenge?
   1. Yes
   2. No

22. E-banking services show a positive influence on bank performance but it is not significantly.
   a. Yes
   b. No

23. To which extent the usage of ICT in microfinance enhances microfinance operations and efficient delivery?
   a. High
b. Moderate

c. Low

d. Very low

24. Do you agree that the usage of ICT in microfinance improves workers performance?

1. Yes

2. No

25. Do you think the usage of ICT in microfinance increases microfinance profit level?

1. Yes

2. No
QUESTIONNAIRE FOR HEAD OF DEPARTMENT

I Bakisi, Mathias a student at CBE presenting questionnaire designed to facilitate the collection of data for the research about “to assess the of ICT utilization on microfinance institution in Tanzania” Information will be collected is for academic purpose only and will remain strictly secret that cannot reach any other person. Therefore, I request your cooperation through contribution of your ideas.

SECTION A

CIRCLE ONLY ONE LETTER

Background of the respondents

Please put a tick/circle for your choices or write on provided blank spaces.

Part 1: Personal Information Please tick the correct answer

1. Age (in years)
   a) Below 18 and 35
   b) Between 36 and 45
   c) Between 46 and 55
   d) between 56 and 60

2. Sex
   a) Male
   b) Female

3. Level of Education
   a) Primary School
b) Secondary School

c) College

d) University

4. Occupation of the respondent
   a) Operation manager
   b) Bank tellers
   c) Customers
   d) Sales Officer
   e) IT officers
   f) Head of department

SECTION B

GENERAL QUESTIONS

(Circle only one letter) Rating of the items

The performance of current ICTs usage level on Micro financial institutions

5. To what extent do the level of ICTs usage on Micro financial institutions performance
   a) High
   b) Moderate
   c) Low
   d) Very low
6. Do you agree with the level of ICTs usage on Micro financial institutions performance?
   a) Yes
   b) No

7. IS there any level of ICT adoption on efficiency and financial sustainability of Microfinance Institutions in Tanzania?
   a) Yes
   b) No

8. To what extent microfinance institutions in Tanzania operate in losses due to high costs associated with operations and service delivery to the poor?
   a) High
   b) Moderate
   c) Low
   d) Very low

**The ICT Contribution on microfinance institution**

9. Do agree with statement the three is ICT contribution on microfinance institution?
   5. Strongly agree
   6. Agree
   7. disagree
   8. strongly disagree
10. Is there any contribution of ICT on the microfinance institution performance?

3. Yes
4. No.

11. Technologies (ICTs) has been found to promote the objectives of microfinance
a) High
b) Moderate
c) Low
d) Very low

12. ICT has the ability to continue operations of microfinance institutions
a) High
b) Moderate
c) Low
d) Very low

13. Do you think the available ICT policies such as tax exemption on computer hardware are not sufficient to achieve the desired growth of microfinance institutions?

a) Yes

b) No
14. How does the ICT utilization improve microfinance institution?

15. Is there any measures taken to improve ICT in the microfinance institution performance?
   a) Yes
   b) No.

16. Do you agree with the use and development of some classes of ICT applications?
   a) Yes
   b) No

17. To which extent ICT enhance the performance of banking operations
   a) High
   b) Moderate
   c) Low
   d) Very low

18. To which extent the usage of ICT in bank enhances banking operations and efficient delivery?
   a) High
   b) Moderate
   c) Low
   d) Very low
INTERVIEW GUIDE FOR CLIENTS /CUSTOMERS

I Bakisi, Mathias a student at CBE presenting interview guide designed to facilitate the collection of data for the research about “to assess the of ICT utilization on microfinance institution in Tanzania” Information will be collected is for academic purpose only and will remain strictly secret that cannot reach any other person. Therefore, I request your cooperation through contribution of your ideas.

Interview Guide

1. Do you know the application of ICT in your office is suitable n the microfinance institution?

2. How does it work microfinance institution performance?

3. How does a Microfinance institution have installed accounting packages or other ICT packages?

4. How does measures taken to improve the performance of ICT in the microfinance?

5. Is there any presence of workable website in the microfinance?

6. Do you think that the number of computers in relation to staff ratio of ICT cost to the total cost?

7. Is there any working internet infrastructure in the microfinance?

8. What is the measurement of knowledge and skills possessed?

9. What is the level of employee knowledge on ICT in the financial institutions?

10. What is the level of ICT trainings in enhancing microfinance?

11. Is the financial institution having IT department?

12. Do you use IT manager or subcontracts IT services?
13. How do you measure the uses of ICT in Microfinance institutions?
14. Do you think that the level of ICT measured by the number of online transactions per total transaction?
15. How do you measure the level of ICT reporting?
16. How does the level of customer use ICT in the microfinance institutions?
17. How does level of ICT adoption in internal business in the microfinance institutions?
18. Can you give your views concerning the measurement of microfinance institution?