IMPLICATION OF CREDIT RISK MANAGEMENT PRACTICES ON PERFORMANCE OF MICROFINANCE INSTITUTIONS IN TANZANIA
IMPLICATION OF CREDIT RISK MANAGEMENT PRACTICES ON PERFORMANCE OF MICROFINANCE INSTITUTIONS IN TANZANIA

By

Danstun Baltazal Ngonyani

Thesis Submitted in Fulfillment of the Requirements for the Award of the Degree of Doctor of Philosophy (PhD) of the Mzumbe University

2019
CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by the Mzumbe University, a Thesis entitled “Implication of Credit Risk Management Practices on Performance of Microfinance Institutions in Tanzania” in fulfillment of the requirements for the Degree of Doctor of Philosophy in Business Management of Mzumbe University.

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Internal Examiner

Accepted for the Board of ________________________________

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DECLARATION

I, Danstun Baltazal Ngonyani, the undersigned, do hereby declare to the Senate of Mzumbe University that this Thesis for the Degree of Doctor of Philosophy in Business Management is my own original work and has not been submitted to any other University for a similar or any other award.

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DEDICATION

This work is dedicated to my wife Agnes Gama and to all my children Magdalena, Distar and Eunice.
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<th>Abbreviation</th>
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<tr>
<td>BAFIA</td>
<td>Banking and Financial Institutions Act</td>
</tr>
<tr>
<td>BOT</td>
<td>Bank of Tanzania</td>
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<tr>
<td>BRAC</td>
<td>Bangladesh Rural Advancement Committee</td>
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<tr>
<td>CGAP</td>
<td>Consultative Group to Assist the Poor</td>
</tr>
<tr>
<td>CRDB</td>
<td>Cooperative and Rural Development Bank</td>
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<tr>
<td>CRM</td>
<td>Credit Risk Management</td>
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<tr>
<td>GTZ</td>
<td>German Agency for Technical Cooperation</td>
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<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
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<tr>
<td>KII</td>
<td>Key Informants Interviews</td>
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<td>MDG</td>
<td>Millennium Development Goals</td>
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<tr>
<td>MEDIA</td>
<td>Micro Enterprise Development International Agency</td>
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<tr>
<td>MFF</td>
<td>Microfinance firms</td>
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<tr>
<td>MFI</td>
<td>Microfinance Institutions</td>
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<tr>
<td>MIT</td>
<td>Ministry of Industry and Trade</td>
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<tr>
<td>MKUKUTA</td>
<td>Mpango wa Kukuza Uchumi na Kupunguza Umaskini Tanzania</td>
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<tr>
<td>MKURABITA</td>
<td>Mpango wa Kukuza na Kurasimisha Biashara Tanzania</td>
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<tr>
<td>NGO</td>
<td>Non-Governmental Organisations</td>
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<tr>
<td>NMP</td>
<td>National Microfinance Policy</td>
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<tr>
<td>NPL</td>
<td>Non – Performing Loans</td>
</tr>
<tr>
<td>PAR</td>
<td>Portfolio at risk</td>
</tr>
<tr>
<td>PQA</td>
<td>Portfolio quality Analysis</td>
</tr>
<tr>
<td>PRIDE</td>
<td>Promotion of Rural Initiative and Development Enterprise</td>
</tr>
<tr>
<td>PTF</td>
<td>Presidential Trust Fund</td>
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<tr>
<td>ROA</td>
<td>Return on Assets</td>
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<td>ROE</td>
<td>Return on Equity</td>
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<tr>
<td>RoR</td>
<td>Rate of recovery</td>
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<tr>
<td>SACCOS</td>
<td>Savings Associations and Credit Cooperatives</td>
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<tr>
<td>SEDA</td>
<td>Small Enterprise Development Agency</td>
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<tr>
<td>SHG</td>
<td>Self- Help Group</td>
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<tr>
<td>SME</td>
<td>Small and Medium Enterprises</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for Social Science</td>
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<tr>
<td>TAMFI</td>
<td>Tanzania Association of Microfinance Institutions</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
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<tr>
<td>URT</td>
<td>United Republic of Tanzania</td>
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<tr>
<td>VIF</td>
<td>Variation Inflation Factor</td>
</tr>
<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
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<tr>
<td>OLS</td>
<td>Ordinary Least Square</td>
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ABSTRACT

Poor access to credit has been a barrier to the poor households around the world who desire to improve their livelihood. The emergence of microfinance institutions has proven to be an appropriate, effective and powerful tool for enhancing access to credit and poverty reduction. Microfinance institutions have shown capacity to extend micro financial services especially credit to the low-income individuals. However, microfinance institutions face high default rate from their clients leading to high risk in loan portfolios. Existing studies give mixed findings on the relationship between credit risk management and portfolio performance of microfinance institutions.

This study attempted to establish the influence of socio-economic characteristics of borrowers and microfinance risk management practices on portfolio performance of microfinance institutions; specifically on the effects of socio-economic characteristics, credit application appraisal, credit supervision practices and credit collection policy on portfolio performance of non-member-based microfinance institutions in Tanzania.

A Cross-sectional survey data from 219 non-member-based microfinance institutions in three regions of Dar es Salaam, Morogoro and Dodoma were used. Both quantitative and qualitative data were collected through questionnaires and key informants’ interviews. OLS linear regression model was used in order to examine the combined effect of all predictor variables of this study. Results shows that portfolio performance of microfinance institutions is related to some socio-economic characteristics of clients. Variable such as gender, family size, age and business experience are significantly related to portfolio performance of microfinance institutions. On the other hand, credit application appraisal variables such as membership duration of borrowers, income of borrowers, capital of borrowers and social capital are observed to be significantly related to loan portfolio performance. Similarly, credit supervision practices variables of timely loan release, borrowers per loan officer, operational cost per borrower and training to borrowers are significantly related to portfolio performance of microfinance. Finally, credit collection policy variables such as interest rates, grace period and loan size are also found related significantly to portfolio performance of non-member-based microfinance institutions. The study recommends to microfinance entities to create strategic intervention on managing socio-economic characteristics of clients and credit risk management practices that threaten the portfolio performance of microfinance institutions in Tanzania.
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CHAPTER ONE
INTRODUCTION

1.0 Chapter overview
This chapter covers the background information to the study on credit risk management and performance of microfinance institutions in Tanzania. In addition, the chapter covers approaches to microfinance operations, problem statement, research objectives, research questions, significance and scope of this study.

1.1 Background information
The effects and growth of microfinance institutions world wide started in 1970s due to emergence of institutions that offered loans, savings and advisory services to individuals and groups. The provision of such services had positive influence on improved social well being to the respective served individuals (Lidgerwood, 2000; Meyer, 2013). These institutions among others included Bank Rakyat Indonesia and Grameen Bank of Bangladesh (World Bank, 2003; Randhawa & Gallardo, 2003). The influence of their activities resulted in a growing number of microfinance institutions providing a range of micro, small and medium financial services to low income individuals for enhancing their living conditions (Mapesa, 2012; Arthur et al., 2016). Microfinance institutions (MFIs) intend to uplift people of low-incomes including those lowly paid salaried and self-employed individuals. They engage innovative techniques of delivering services such as group lending, progressive lending, regular repayment schedules and collateral substitutes in provision of loan services (Kimando et al., 2012).

Microfinance institutions need to be financially sustainable in order to extend effective financial services and contribute to the wellbeing of the disadvantaged communities (Schreiner et al., 2000; Nyamsogoro, 2010). However, studies conducted by Gatimu and Frederick (2014); Dahir (2006) revealed that microfinance institutions have been facing a problem of financial unsustainability. Consequently, they have been unable continue, offering financial services particularly credits to the low-income individuals efficiently. This is a great challenge to these institutions due
to their role as instrument for poverty reduction among individuals and groups excluded from traditional financial institutions.

The emergence of microfinance institutions in Tanzania began in the 1990s. Financial non-governmental organisations (NGOs) and saving and credit cooperatives (SACCOs) were among the microfinance institutions that emerged for provision of micro loan services to low income earners (Brouwers et al., 2014; Malua, 2013). This process of increasing operations of MFIs in this country was a result of several government reforms in the financial sector aiming at enhancing liberalisation of this industry. In this process the Banking and Financial Institutions Act, 1991 and state-owned banks were restructured. Following these financial restructuring, by mid 1990s, the government established community banks and allowed the operations of microfinance institutions in Tanzania (Rubambey, 2005). The growth of the microfinance institutions (MFIs) industry necessitated for the establishment of the Microfinance policy to provide guidance and a framework for the relationship among the key participants.

The National Microfinance Policy (NMP) in Tanzania was developed in the late 1990s and enacted in May, 2000. The policy intended to set a basis for growth of vibrant microfinance system in the country to serve the disadvantaged segment of the community for socio-economic development (Girabi et al., 2013). Majority of low income individuals have been excluded from main stream of financial services in Tanzania. This challenge to accessing microfinance services is much higher to women and disabled including individuals living in rural areas (Dahir, 2006; Chijoriga et al., 2009). Therefore, the aim of microfinance policy was to harmonize and facilitate the growth of the microfinance sector. Also, encourage the needy individuals manage their limited resources, access microcredit services and safeguard against various risks in the use of financial services (Kessy & Urio, 2006).

The establishment of the National Microfinance Policy went in line with the financial services liberalisation processes in the 1990s and 2000s. Prior to the existence of the microfinance policy, microfinance services were slow in progress. This was mainly due to lack of institutional sustainability, absence of shared regulatory structure
including nonexistence of a framework governing operation of the industry (Facet, 2011; Brouwers et al., 2014). The National Microfinance Policy (NMP) enabled microfinance practitioners to accommodate existed prevailing inflexible conditions for the growth of the microfinance sector in Tanzania. Therefore, the presence of the National Microfinance Policy has been the principal document in setting the framework for the growth of microfinance industry in Tanzania.

1.1.1 Regulations beside National Microfinance Policy in Tanzania

Apart from existing National Microfinance Policy, there have been other regulatory instruments and institutional reforms to guide operation of microfinance institutions in Tanzania. These instruments among others include Business Licensing Act, No. 25 of 1972, NGOs Act of 2002, Cooperatives Act of 2013, Local Government Laws, the Banking and Financial Institution Act of 2006, Bank of Tanzania Act of 2006, Companies Act (Cap 212) and Micro Insurance Regulations of 2013 under Insurance Act, (Cap. 394).

The Banking and Financial Institutions Act, 2006 (BAFIA) provides the foundations for the licensing, regulation and supervision by the Bank of Tanzania to different deposit taking institutions such as banks, microfinance entities and financial associations. BAFIA intergrate microfinance companies into the entire system of national financial institutions. Moreover, the BAFIA and the Bank of Tanzania Act 2006, provides recognition to non-bank formal financial institutions hence the microfinance institution. The microfinance institutions were recognised as legal business and an integral part of the national financial system in Tanzania (Rubambey, 2005; Nyamsogoro, 2010; NMP, 2000; NMP, 2017; URT, 2017).

The efforts by the government to set an enabling environment on the prospering of MFIs, lead to the introduction of Government Notice No. 80 on Regulation of Microfinance Companies and Microcredit Activities, 2005. This Government Notice aimed at regulating Microfinance companies, Microcredit activities and financial cooperatives activities. The regulations among others required these institutions to adhere to reporting requirement on micro-loan portfolios including provision for loan classification (Brouwers et al., 2014). Moreover, the same regulation directed
microfinance institutions engaged in microcredit business to assign distinctive identification numbers to their borrowers, and to produce progress report on loan portfolio performance to the credit databank.

The Non-Governmental Organisation Act, 2002 on the other hand, intended to launch rules on establishment and registration of all NGOs operating in Tanzania, regardless of their social undertaking. Likewise, the Companies Act, 2002, establishes the framework on the condition and requirement related to the registration of all companies. The companies are incorporated as companies limited by guarantee or as companies limited by shares (Randhawa & Gallardo, 2003). In addition, the Trustees Incorporation Act, 2002 in its enactment allows the incorporated organisation to have legal mandate to engage in provision of micro credit services.

Apart from efforts of the government to establish MFIs as a tool to alleviate poverty; there have been other workable strategies toward poverty eradication in the country. Among them includes establishment of MKUKUTA – ‘Mkakati wa kukuza uchumi na kupunguza umaskini’ (The national strategy for growth and poverty reduction - 2005). This was one of the strategies initiated by the government aiming at raising income and reduction of poverty. Also, it intended to improve the quality of life and social well-being of its citizens. Not only that the other scheme that went hand in hand having similar focus to poverty reduction was the MKURABITA- the property and business formalisation programme. This policy intended to enable the use of land to get credit and develop capital which would help in effective use of resources to improve standard of living (Nyamsogoro, 2010; Kessy, 2010).

Therefore, these national wide policies among others intended to encourage various stakeholders to join their efforts for achieving broader sustainable development of Tanzanians (Kessy & Temu, 2010; Haji, 2013).

1.2 Approaches of Microfinance Operations
The operation of microfinance institutions is considered in two perspectives. The social mission perspective that focuses on poverty reduction and economic mission which insist on sustainable and market oriented financial services (Zerai & Rani, 2012; Makina & Malobola, 2004). The two observations of microfinance missions
coincide with a common focus for providing microcredit and saving services to low-income individuals. Similarly, to ensure that such micro financial services are offered in a sustainable manner.

1.2.1 Social mission approach of Microfinance Institutions

The social mission strategy of microfinance institutions spearheads on poverty reduction to their clients. Supporters of this view emphasise that the role of MFIs is to extend credit facilities to borrowers at reduced cost rates (Robinson, 2001). They argue that large numbers of beneficiaries of microfinance are deprived people. Therefore, if the cost of funds charged directed to them is very high interest rates, the objective of serving them and poverty reduction cannot be attained (Hartarska & Nadolnyak, 2007). MFIs should underscore financial inclusion to ensure neglected individuals access funds and use them into small and medium investment projects to raise their standard of living. Ayyagari et al. (2012) and Peer et al. (2013) added that there has been a financing gap to majority of low income earners. Inaccessibility of credit services from existing banks like commercial banks has deepened poverty levels of many rural and urban communities. Therefore, emergence of MFIs has made positive impact to SMEs by providing less costly, easily accessible financial services that accommodate small amounts savers. This means that efforts to reduce poverty among small households are likely to be achieved (Quaye et al., 2014).

Moreover, Mapesa (2012) noted that contributions of MFIs into poverty reduction among the poor households in the community. His findings recorded that access to MFIs by low-income individuals improved financial saving of farm household activities and enhanced asset accumulation. Also, it enabled household members’ into direct use of micro-credit on both productive and non-productive investments. In addition, Bali et al. (2007) and Muthon (2016) observed MFIs that extend credits to women, helps increase economic equality and improve standard of living the households. On the other hand, Kessy and Uri (2006) considered the positive impacts of MFIs involved availability of small loans to low income people with little or no collateral. In so doing, household access to education, health and stabilized production activities has been effectively enhanced. Therefore, existence and operation of microfinance institutions principally intends to involve the deprived
people in remedying poverty by engaging them in various socio-economic activities. The micro loans offered to the young entrepreneurs, small businesses and low-income individuals has contributed to income generation and reduction of poverty (Biosca et al., 2011).

1.2.2 Financial Sustainability of Microfinance Institutions
This is the second perspective of microfinance operation (also referred to as economic mission of MFIs). The proponents of this approach focus on financial sustainability of MFIs. They argue that the main concern of microfinance is to facilitate credit and servings to low-income individuals in a sustainable way. Kinde (2012) commented that without financial intermediation to the poor, alarming poverty among communities would not be reduced hence economic empowerment is unlikely to be achieved. However, the proponents are in view that provision of microcredit to the poor while depending on donor funds would render the services to be unsustainable. Consequently, they are in favour of extending loan services to the poor at market rate in order to cover transaction costs involved. Furthermore, the Institutionalists charge high interest rates on loans to enable increase revenue generation for expanding microfinance services to majority of poor households. In addition, Schriener (2000:425) point out “unsustainable microfinance might help the poor now, but they will not help the poor in the future because they will be gone”. This indicates microfinance providers need to ensure financial sustainability is the main focus in provision of credits to the poor households. Failure of that would result to cease their operations and widen the gap of financial exclusion to majority poor households (Nyamsogoro, 2010; Tucker & Miles, 2004).

Marwa and Aziakpono (2015) added that delivering credits at subsidized rate to low-income earners is costly, difficulty and with high risky. Thus there is need for microfinance institutions to reach majority of individuals and groups in need of microloans. In this regard, microfinance institutions should not only deal with very poor individuals, but also focus to relatively wealthier category of clients through provision of large loan sizes. In this way, would enable microcredit companies charge necessary cost to make loan services delivery sustainable. The concern to
engage into financial sustainability than social mission arises because most MFIs that operated focusing on welfare perspective have been underperforming and gradually run out of operation (Nyamsogoro, 2010; Bassem, 2008). Emphasis to financial sustainability would enable generation of more funds from markets, thereby increase in size and deepen outreach services to the needy and disadvantaged clients. However, despite an existing argument on the two approaches, microfinance service providers need to compromise between social and commercial mission in their operations and ensure sustainability of their services (Zerail & Rani, 2012).

Morduch (1999) considered sustainability of MFIs in two levels; Firstly, operational sustainability which involves the ability of a microfinance institution to recover its operational costs. Secondly, financial sustainability of MFIs that deals with ability to operate without reliance on donor assistance and achieve expected objectives. Hollis and Sweetman (1998) pointed out that financial sustainability of microfinance institutions is a corner stone towards stable institutional sustainability. Most microfinance institutions that are currently operating have put emphasis on delivery of credit facilities and ensure profit maximization than subsidized delivery of programmes (Mersland & Strom, 2010).

According to Armendariz and Szafarz (2011) most MFIs that focus on credit distribution among poor people extend large loan sizes in the process of scaling-up. Such MFIs need to increase loan size in order to achieve high profits (commercial mission) and not for poverty reduction. Consequently, MFIs have found themselves deviating from the original goal for the purpose of obtaining more financial resources (Ghosh & Van Tassel, 2008). Thus, financial sustainability of microfinance institutions remains to be necessary for serving clients in long term.

This study was in line with institutionist perspectives in which MFIs need to be commercially viable and financially sustainable. In so doing they would be able to work towards extending credits to poor households’ communities. Financial sustainability consideration to provision of credits has become necessary since if credit is delivered at subsidized rate, the lending institutes is unlikely to capitalize and reach majority excluded from traditional financial institutions. However, most
microloans extended to potential borrowers who are extremely poor have unreliable income sources. As a result, delinquency can quickly spread from a handful of loans to a significant portion of the portfolio (Chijoriga, 1997; Boateng and Agyei, 2013). It is imperative for microfinance institutions to deal with credit risk that influences their financial performance. Credit risk has been the main risk that seriously affects financial viability of microfinance institutions (Polio & Obuobie, 2010).

Serving the very poor clients and attaining financial sustainability is a challenge to the microfinance industry (Joseph, 2013). MFIs need to actively monitor their borrowers in order to recover for the given credit. Greater attention has to be on credit risk management in order to ensure sustainable service delivery. The rise of concern on credit risk management is due to losses faced by lending institutions upon extension of loans to non-deserving clients (Fight, 2004). Mismanagement of credit risk may result in loss of interest and principal, leading to decreased cash flows to the firm. Thus, microfinance entities should have effective and well-formulated policies for governance of credit risk for the sake of guaranteeing regular recoveries from customers (Nguta & Huka, 2013).

Loan portfolios constitute a large proportion of credit risks in microfinance business. Loan services need to be well formed to cater the interests of the customers in a very transparent manner. Lagat et al. (2013) argued that loans should be provided on the basis of customer’s wishes, providers’s ability and risks governance necessities. In addition, Ledgerwood (2013) pointed out that loan products have to consider the key elements of a loan which include lending methodology, repayment criteria, size, pricing and security. Thus, any financial institution is possibly challenged by several problems if there is a insignificant worsening in the eminence of its loan products.

1.3 Microfinance Institutions Loan Portfolio Quality

Microfinance loan portfolio quality determines portion of the loan portfolio contaminated by arrears as a percentage of the total portfolio of respective microfinance entity. It is considered to be the largest asset that generates revenue of lending financial institutions (MFIs). Loan portfolio holds most important attention and driving force toward sustainable microcredit service to low-income clients.
(Quayes, 2012). Similarly, it provides information regarding existence of a portion of institutions’ loan assets that renders weak return to the firm compared to extent of risk therein. Microfinance institution that has poor portfolio quality or it is inefficiency, reflects reduced profitability and inability to continue serving its clients in the long run (Obed, 2015).

Githinj (2010) identifies three performance measurements of portfolio quality of microfinance institutions (MFIs) include, portfolio at risk, repayment rates and loans written off ratio.

This study focuses on portfolio at risk of microfinance institution. It is an outstanding balance of all loans that have an amount overdue. Portfolio at risk is different from arrears because it considers the amount in arrears plus the remaining outstanding balance of the loan (Ledgerwood, 1999). It reflects a true risk of delinquency problem of microfinance institution. The lending institutes that periodically determine its portfolio at risk rate can identify whether institutions’ delinquency of loan portfolio asset is improving or not. Thus, enabling key stakeholders such as donors, practitioners and consultants determine the efficiency, viability and outreach of MFI operations (Jansson, 2002).

Microfinance institutions (MFIs) rest on effective liquidity position of its healthy loan portfolio quality. This means that its actions are not causing increased risk on credit provision and threaten operational efficiency (Koch & MacDonald, 2000). Effective microfinance management of credit risk requires identification of potential risk areas and determines its consequences before it gets out of hand. Therefore, MFIs need to invite different tools in order to drive down the effect of risks from their operations. Among the instruments to facilitate the control of credit risk as suggested by Kealhofer and Bohn (2001) include use of loan syndication, collateral and credit rationing. It has also been observed that high-quality staff with depth of knowledge and judgment needed contribute to successfully management of credit risk in MFIs.
1.4 Problem Statement

Sustainability of microfinance institutions depends mostly on their capability to recover loans from their clients. This means that in order for the lending institutes to be financially stable, they must warrant high quality portfolio management (Simone, 2011). Though, there has been a debate among the microfinance entities concerning high degree of delinquency/default by their clients. Issuing credit to deprived people is challenged by high credit risk. Credit risk may give rise to loan losses of high level, as the results collapse of the financial entities (Richard et al., 2008; & Dahir, 2006).

Microfinance loan portfolio constitutes a largest asset and main source of revenue generation. Raising of default rates in loan portfolios reveals that microfinance entities are not obtaining the worldwide recognized standard portfolio at risk of three (3%) (Muthoni, 2016). Additionally, MIX (2010) published that in Sub-Saharan Africa, MFIs had portfolio at risk of greater than 5%. This is an issue of concern because it pulls back the commitment of creating microfinance entities and guaranteeing financial inclusion of deprived people. Colquitt (2007) and Schmittlen (2010) opined that poor credit risk management obstructs business sustainability and subsequently the failure of financial institutions. Ineffective management of credit risk has been impacting deeply into the operation of MFIs. Thus, credit risk management is regarded as pre-requisite cornerstone for the performance of microfinance entities as well as ensuring loan’s safety.

Several studies have been conducted on determinants of financial sustainability of MFIs and have reported contradictory results. Few of the determinants are considered to be imperative while others not. Likewise, some determinants are significant to a set of MFIs. Most of these studies have focused on socioeconomic, firm and risk management factors. Empirical findings reporting on socioeconomic factors for sustainable microfinance credit management include those by Al-Azzam et al. (2012); Angaine & Waari (2014); Shu-Teng et al. (2015); Feroze et al. (2011); D'Espallier et al (n.d); Reta (2011); Tundui and Tundui (2013); Okurut (2006); Bhatt & Tang (2002) and Berhanu (2005). Evidences from the findings by Tundui and
Tundui (2013); Clamara et al. (2014); Kacem and Zouari (2013); Mwangi and Kihiu (2012); Janda and Turbat (2013); Pasha and Negese (2014); and Papias and Ganesan (2009) show that old age borrowers, size of household, married borrower, female borrowers and borrower business experience positively influence repayment performance and sustainability of microfinance institution. This is contrary to the findings obtained by Zeller (1994); Folefack and Teguia (2016); Bhatt and Tang (2002); Eze and Ibeke (2007); and Okurut (2006) who indicated that these factors were negatively associated to repayment and against loan portfolio performance.

At the other end, there are studies on firm level factors. These studies include Kipesha (2013); Bogan et al. (2008); Rahman and Mazlan (2014); Javid and Abrar (n.d); Cull et al. (2007); Onyeagocha et al. (2012) and Pascal (2012). Results from these studies show that firm age, firm size, manager experience and education relate to portfolio performance of microfinance institutions. However, empirical evidence on the same factors by other studies reports contradictory conclusions. For instance, studies by Magali (2013); Hartarska (2005); Tripsas and Gavetti (2000); Diaz and Sanchez (2008); Nieto et al. (2009); Rahman and Mazlan (2014) and Robinson (2001) show that firm size, firm age and education of microfinance institutions’ manager do not influence portfolio performance.

Similarly, there are mixed results on risk management variables. Janda and Turbat (2013); Silwal (2003); Clamara et al. (2014); Setargie (2013); Crabb and Keller (2006); Abebe (2012); Muthoni (2016); Korankye (2014); Pasha and Negese (2014); Nyamsogoro (2010); Kar and Swain (2014); Kinde (2012); Anduanbessa (2009) and Zohair (2013) found that loan duration, loan size, interest rates, repayment schedules, loan monitoring, number of borrowers, capital of borrower and group loans lead to sustainable credit management and enhance microfinance financial performance; while results by Mokhtar (2011); Folefack and Teguia (2016); Magali (2013); Polio and Obuobie (2010); Abreham (2002); Nyamsogoro (2010); Tundui and Tundui (2013); Berhanu (2005); Cull et al. (2007); Shu-Teng et al. (2015); Setargie (2013) and Roslan and Karim (2009) observed inconsistent conclusion on the influence of the identified factors.
Despite the remarkable contributions by previous empirical studies, many of past researches give mixed findings. This provided for a need for more research to discover more on factors threatening sustainability of lending institutes. Previous research dealt with member-based microfinance entities while other research based on specific microfinance initiative. It is likely that the factors for effective management of credit risk on loan portfolios are yet to be fully recognized. As the result, the factors resulting to effective credit risk management of microfinance organizations in Tanzania not yet established. This study was comprehensive in coverage and focused on non-member based microfinance institutions. Moreover, the study involved mixed research approach. Therefore, this study intended to fill that gap by providing further insight and information on credit risk management and performance of portfolio of MFIs in Tanzania.

1.4.1 The general research objective
To assess the effectiveness of credit risk management practices on performance of microfinance institutions in Tanzania.

1.4.2 The specific objectives
This study was guided by the following specific objectives:

(i) To determine the effect of socio-economic factors on portfolio performance of microfinance institutions in Tanzania.

(ii) To determine the effect of loan application appraisal on portfolio performance of microfinance institutions in Tanzania.

(iii) To establish the effect of credit supervision practice on portfolio performance of microfinance institutions in Tanzania.

(iv) To determine the effect of credit collection policy on portfolio performance of microfinance institutions in Tanzania.
1.4.3 Research Questions

To accomplish the above specific objectives, the study was guided by the following research questions:

(i) What are the effects of socio-economic factors on portfolio performance of microfinance institutions in Tanzania?

(ii) What are the effects of loan application appraisal on portfolio performance of microfinance institutions in Tanzania?

(iii) What are the effects of credit supervision practices on portfolio performance of microfinance institutions in Tanzania?

(iv) What are the effects of credit collection policy on portfolio performance of microfinance institutions in Tanzania?

1.5 Significance of the study

The study has both theoretical and practical significance, which has been categorized as: the contribution to the body of knowledge, the contribution to policy making, the contribution to microfinance institutions and the contribution to the theories used in the study.

1.5.1 Contribution to the body of knowledge

The study contributes the body of knowledge in the following ways: while various strategies of microfinance credit risk management across countries have been contributed by several studies, little has been known about the credit risk management of non-member-based microfinance institutions in Tanzania. This study has broadened our understanding and contributed to the body of knowledge on the determinants of credit risk management of non-member–based microfinance institutions in Tanzania.

The study has revealed that variables such as timely loan release, ratio of borrowers to loan officer, frequency of training sessions and operational cost per borrower as credit supervision practices determine sustainability of microfinance portfolio performance of non-member-based microfinance institutions.
Moreover, the study has established that non-member-based microfinance portfolio performance are influenced by socio-economic factors including - matured borrowers, gender, married borrowers, borrower business experience and borrower number of dependents.

In addition, the study provides empirical evidence that grace period of loans, loan sizes and interest rates policy of non-member - based microfinance entities determine portfolio performance and long term operation of the lending institutes in Tanzania.

1.5.2 Methodological contribution
On methodological approach, this study used fruitfully a mixed method research approach. This has guided to provide exclusive results by focusing on the main research problem. Most past studies employed single research approach while others have not been comprehensive in coverage. This study besides the mixed approach used, it has been comprehensive involving three regions of Tanzania. Moreover, this study has been unique since it dealt with non-member-based microfinance institutions as opposed to most past studies which involved member-based and others engaged with one microfinance programme. The use of OLS linear regression model for quantitative data and thematic content analysis for qualitative information has enabled testing of the hypotheses and drawing of reliable and valid conclusions from research findings that can be generalised.

1.5.3 Contribution to the theories used in this study
The findings of this study can be used to expand the understanding of asymmetric information and transaction cost theories by testing their relevance and implication; in relation to financial sustainability of credit management practices in microfinance institutions. This study has provided more insight on the way asymmetric information between participating members in business may result in financial underperformance. Moreover, the study has added understanding on the transaction cost theory that despite encouraging business owners, they have to be informed of the explicity and implicity costs involved to enable profitable business operation. The study has added to the theory on the need to consider effective credit supervision in lending to low-income clients. This study has gained from the theory that despite
balancing costs associated with business transaction to be undertaken, microfinance managers need to ensure that their business products are satisfactory to clients for effective and sustainable business operations. Therefore, the findings of this study are expected to provide valuable inputs to the theories to enable effective management of credit risk for continued microfinance sector development.

1.5.4 Contribution to policy making
This study contributes insight into the determinants of loan portfolio at risk of non-member-based microfinance institutions in Tanzania. The empirical evidence of this study will help to guide policymakers of the impact of some indicators of microfinance credit risk management and the manner in which policy should be established, to minimize the consequences of ineffective credit management. Also, the study has provided insightful reasons to advise the government to regulate the operations of non-member based microfinance institutions, to design policy interventions that are research based in evidence, thus striving towards making decisions that will be beneficial to the microfinance sector in the country.

1.5.5 Contribution to the microfinance institutions
The findings of this study provide an understanding to non-member-based microfinance institutions to improve their credit risk management practices. Also, it helps to set basis for developing effective and sustainable loan portfolios that can accommodate provision of credits to majority of clients. In so doing, MFIs may widen financial inclusion by serving low income individuals and enable them to engage into various sectors of economy for improved living standard. Therefore, results of this study are used as the guiding tool to microfinance entities for ensuring better financial performance of the industry.

1.6 Limitations of the Study
This portion of the thesis attempts to acknowledge some challenges that faced this study. As it has always been with most academic activities, this research was not without limitations. Some of the challenges encountered during the entire research period are pointed out as follows:
The first challenge was difficulty in accessing offices of microfinance institution during the process of distribution of questionnaire instruments for data collection. Some MFIs changed their office locations into other areas without communicating to their licensing authority or their association, Tanzania Association of Microfinance Institutions (TAMFI). The researcher had to take time tracing the new locations through their telephone communications including individuals around the former office premises.

Secondly, several questionnaires were not filled as expected by study participants due to lack of enough time to act as requested. The limitation was handled by effective screening and rechecking each and every returned questionnaire and any observed discrepancy due to incomplete information in the filled questionnaire had to be dropped. This aimed to ensure that the output from findings become reliable and valid for generalisations.

Moreover, some respondents were not willing to disclose information about their microfinance operations. They were hesitant as they feared that the information might be used with bad intention and impair business reputation of their microfinance institution. This study managed to address the challenge by informing clearly on the objective of the study and assuring secrecy of information. Also, through the introduction letter from the University, respondents were then cooperative and provided information as required.

Also, some respondents were unable to complete the questionnaire timely, due to several other responsibilities in their offices. However, this challenge was handled by constant reminders through phone calls and at times revisiting them physically into their offices reminding them to fill the questionnaires.

Similarly, in methodological side (perspective) this study has involved OLS regression model and thematic content analysis through the data collected from 219 respondents and 15 interviewee (study participants). As such the findings may be applicable in Tanzania and other areas having similar microfinance working environment.
Lastly, this study has engaged non-bank formal microfinance institutions focusing on challenges to effective credit risk management. Other studies may be conducted to involve informal microfinance institutions and their effects on microcredit delivery and poverty reduction in Tanzania. Also involving other types of risks upsetting microfinance industry in Tanzania

1.7 The scope of the study
The study was conducted in the regions of Dar es Salaam, Morogoro and Dodoma targeting non-member based microfinance institutions which have been in operation within the areas. The study falls in the area of Microfinance Institutions (MFI's) industry, hence would have some implications on investment, economic growth and social development.

Similarly, the study considered non-member-based microfinance institutions, specifically Financial NGOs and Microcredit companies, as one category of non-bank formal financial service providers in Tanzania. As such the study did not involve institutions such as SACCOS and Micro-Insurance Banks offering individual microcredit services.

This study involved two theories, which are asymmetric information theory and transaction cost theory. The conclusion noted from these theories including literature reviews has enabled, to come up with four factors; socio-economic, credit application appraisal, credit supervision practices and credit collection policy with their associated variables.

In addition, this study employed cross-sectional data gathered from the identified study areas. The data were collected through mixed research approach. Hence, quantitative data were gathered by questionnaires while qualitative data were gathered through key informants’ interviews and analysed accordingly.
CHAPTER TWO
LITERATURE REVIEW

2.0 Chapter Overview
This chapter provides a review of related literature of the subject under study. It explains the general understanding on various concepts as applied in the study, including presentation of theories that guided the study and empirical literature review on variables of the study. The knowledge gap is then highlighted and the conceptual framework which shows the relationship between the predictors and dependent variables is then explained.

2.1 Definition of key terms and concepts
2.1.1 Credit
Joseph (2013) considered credit as a transaction involving several parties. One part in this transaction is the lender or creditor who supplies goods and services, money and securities. The other part is debtor or borrower who borrows money or services for repayment in the future. Such transactions normally include the payment of interest to the lender. The significance of credit cannot be overstated since individuals, businesses including governments have been involved with credit to finance their immediate and/or long-term plans (Wagner, 2008). However, the parties involved with credit transactions are reported to be highly constrained by inability to actively meet the obligation of refinancing cost of loan on time. This happened when individuals or households were poorly allocated the borrowed source of fund or due to other external factors leading to incapacity to service the loans timely (Casu et al., 2006). Therefore, it is imperative for the lenders to have sound knowledge of credit management to enable exactly know the financial ability of their clients. It helps to assess the extent of credit to be allowed and accordingly monitor repayment to ensure sustainable loan service delivery (Edwards, 2004).

2.1.2 Credit Risk
Credit risk arises from the lender being exposed to loss resulting from the counterparty who ceases to respect their debt obligation (Bouteille & PushnerCoogan, 2013; Colquitt, 2007). This is one of the main risks that seriously
affect micro financial institutions’ viability (Steinwand, 2000). Credit risk can be looked into two ways; as a single borrower/obligor exposure which leads to obligor credit risk. Secondly, portfolio credit risk which involves exposure to a group of borrowers (Brealey et al., 2007; Edwards, 2004). The necessity to broaden understanding on credit risk among microfinance participants increases with time. This is to enable the target clients realise they can improve their standard of living by accessing credits from MFIs.

Lending has been the main business of MFIs. Therefore, an understanding of the impacts of credit risk will enable minimize the chances of loss from their clients. It encourages lenders employ effective appraisal procedures to ensure recovery of the disbursed funds from their clients (Joseph, 2013). However, studies by Fight (2004) revealed that there are several situations where credit had become a source of financial suffering (incapacity) to both lenders and borrowers. Thus, instead of credit to be the source of economic prosperity, it has at times become cradle for draining out even that socioeconomic progress attained.

2.1.3 Credit Risk Management
Brown and Moles (2011) define Credit risk management as the activities dealing with controlling the probable implications of credit risk. It is associated with standard risk governance structure, identification, evaluation and governance. The process involves the identification of the causes of risk, the evaluation of the risks and the decision of managing the identified risk. MFIs efforts towards credit risk management need to be detailed and systematic, so as to drive down all challenges associated with credit risk (Brealey et al., 2007). Various attempts to eliminate credit risk by the organisation may have little effect unless credit forms an integral part of the economy (Mishkin & Eakins, 2006). The organisation should manage credit risk in a manner that it does not spread out of organisation control. This will enable the lending institute monitor all receivables from clients and maintain sustainability in its operation.
Credit risk management policy is a powerful tool for managing credit risk. It provides guidance to employees for making decisions and taking actions (Oguntoyinmbo, 2011). The basis of sound credit risk management is the identification of existing and potential risks inherent in lending activities. Measures to counteract these risks have to be clearly defined for implementation. The credit policies therefore set out a framework for the management of credit risk and contribute to performance of the institution. Lagat et al. (2013) reported a sound system for managing credit risk is the solution to problem of loan loss that threatens profitability of the MFIs. Also, the manner in which a credit portfolio is being managed and lastly how loans are originated, appraised, supervised and collected (Mensah, 2013).

The effective management of credit risk has been a major concern of banks and non-banks financial institutions (Isern et al., 2008). Lenders have taken a proactive approach in dealing with individual and credit portfolio transactions (Joseph, 2013). Credit risk analysis has been implemented to minimize the impact of credit risk to a microfinance institution. It entails an investigation undertaken by the lending institute to their borrowers to ensure supplied loan is repaid timely (Saunders & Allen, 2010). Credit risk analysis is relevant for decision making purposes. MFIs which have strong credit risk analysis procedures need to be aware of the ability of its clients to recover the borrowed amount. Such analysis will make the lender informed on other factors likely to impact performance of the firm upon disbursing fund to undeserved customers (Simone, 2011).

2.1.4 Risk Management
Risk management entails the process of balancing risk-taking and capital against a well-designed control environment. It necessitates identification, prioritizing and selecting responses to risk (Mbeba, 2007). Effective risk management of MFIs reduces the likelihood that a loss may occur and negatively impact institutional performance. Cendrowski and Mair (2009) added that risk management requires avoidance of possible errors before actual problems happens. Financial institutions which have quality risk management framework will enable early detection of
potential threats facing their organisation. Required actions can be taken to counteract such risk before getting out of control and threaten fiscal performance of an entity (Moti et al., 2012). Therefore, financial institutions are demanded to create a system that oversees the governance of overall risks occurring institutions. This system could involve committee, section or risk manager relying on the complexity or size of the entity (Palladini and Golgberg, 2010; BoT, 2010).

**Types of Risks**

There are various kinds of risks that individuals and business units need to be aware. These may have direct or indirect influence into their operations. Such risks include operational risks stemming from day-to-day activities in an institution. Market risks owing its origin from the context where institutions exist, particularly fluctuations in portfolio value due to adverse movements in market variables. Moreover, legal risks arising from legally binding contract or contractual agreement grounded by the country’s (Steinwand, 2000). Additionally, system or computer risks emerging as the results of advancement in science and information technology. Furthermore, reputation risks arising emerge from the ingredients that reduce the reputation of the entity to the public and affect the entity progress. Improper balance sheet structure and liquidity risks are among of the financial risks affecting the financial entities. Interest rate risk happens resulting from mismatches of the maturities of assets and liabilities facing the business/financial entity.

Foreign exchange risk emerges from the altering in the domestic currency value of assets and liabilities to the changes in the exchange rates. Insolvency risk occurs as the results of lack of sufficient capital to balance the values of the assets and its liabilities. Lastly, credit risk which occurs as the results of the failures of other part to fulfill its obligations. As such this risk is usually linked to various factors such as performance of the borrower’s business, performance of the economy, industry and management of a specific business (Joseph, 2013; Vivek & Asthana 2014; Edwards, 2004).
2.1.5 Microfinance

Microfinance has been considered as the provision of financial services such as deposits, loans, payment services, money transfer and insurance to poor and low-income households and their micro enterprises (Ledgerwood, 1999; Okiocredit, 2005). Moreover, microfinance entail an efforts of enhancing accessibility to financial services or loans to deprived people (Schreiner & Colombet, 2001). The services extended by microfinance do not only cover financial services but also non-financial assistance such as training and business advice. Kyereboah-Coleman (2007) adds that Microfinance in developing countries has been a driving development tool for the disadvantaged individuals who lack access to formal markets, and involved in small and/or micro-scale activities. On the other hand, Mokhtar (2011) maintains that microfinance entails minimal financial services to deprived household and micro enterprises. Therefore, the concept of microfinance can generally be considered as providers of small loans (micro credit) to the financially excluded and disadvantaged communities including non-financial services for the purpose of improving their social economic well-being.

The rationale for offering microfinance services to the poor households arises to enable them use short-term loans to build their microenterprises. Similarly, to provide secure savings options and improve their living standard (Munene & Guyo, 2013). In addition, Mersland and Strøm (2010) point out that access to capital by low-income earners can enable decrease in household’s exposure to external difficulties. Individual loan recipient may invest productively and generate profit to smooth their consupptions. Micro-loans offered to individuals are of several intensions. The range of products and services offered to individuals, households and enterprises indicates the fact that such financial needs can help them improve their living standard with time.

2.1.6 Characteristics of Microfinance

The presence of microfinance is a result of the fact that disadvantaged and poor households are bankable micro-entrepreneurs. They can repay beyond doubt both, the principal and interest to microfinance institutions. Also, they are capable of
making savings provided the financial services products are tailored in line with their required needs. Microfinance as a discipline has enabled low-income households’ access financial products and services and so become clients of services offered. The characteristics of microfinance as pointed out by Mahjabeen (2008) and Wydick (2001) include: little amounts of loans and savings, short - terms loan (usually up to the term of one year), installments made up from both principal and interest, higher interest rates on credit, and easy entrance to the microfinance intermediary that saves the time and money of the client. Moreover, these microfinance institutions do not necessarily require traditional collateral when accessing credit, instead social collateral is encouraged.

2.1.7 Microcredit
Microcredit is considered as provision of small loan to poor households to enable them become self-employed and capable of smoothing their consumption patterns. Microcredit services intend to foster income generating activities to the poor individuals for improving their living standards (Dahir, 2006). Similarly, the concept of Microcredits entails the provision of loans to low-income households and disadvantaged individuals without requiring traditional collateral (Meyer, 2013; Morduch, 1999). Therefore, the two concepts - microcredit and microfinance are related, however, microcredit is basically dealing with just a minimal loans provided to deprived people to invest in their business-raising income whereas microfinance includes wide financial services created to cater the need of the deprived people not only for income creation but also for other benefits.

Microcredit companies employ variet of strategies such as regular repayment schemes, dynamic incentives and collateral substitutes to ensure high repayment rates. It is argued that access of business loans from formal financial institutions in most countries is less than 15% of the population (Morduch, 1999). Similarly, in Tanzania access of financial services from formal banking institutions has been still very low. The Finscope (2013) reported that only 13% of Tanzanians are reached by banking services. This means majority of individuals and SMEs lack necessary financial services to enable them enhance their economy. Consequently, more
efforts are needed to ensure financial inclusion to poor households for poverty reduction. The growth of microcredit globally was noted in 2005 when the United Nations (UN) acknowledged the year 2005 as the international year of microcredit. As such it helped spearhead the growth and development of the provisions of microcredit activities in many countries worldwide.

The microcredits offered to low-income earners are characterized by being, short-term credit (a year or less), no traditional collateral required, usually weekly repayment, mostly directed to women since are not qualified from conventional bank loans. Moreover, loans are attached to high interest rates because of the high cost in running microcredit programmes (Ledgerwood, 2000). The features of the loan service offered by microcredit companies and microfinance institutions presuppose similarities between the two concepts. However, microfinance adds other services to their customers (Okiocredit, 2005). This study focused on credit services offered by these institutions than other kinds of services extended by MFIs. Credits extension is the mainstay of the MFI’s activities. It influences financial returns and therefore growth and outreach of lending institutes.

**The Need for Microfinance**

Microfinance institutions play quite a significant role in the course of development process. The necessity for microfinance is currently increasing in many developing countries. Pande et al. (2010) added that where there is enabling operating environment, microfinance is capable of accomplishing many functions, such as MFIs serves as financer of people’s economic choices, also diversifying household income. Not only that, microfinance institutions also facilitate in making poor household less susceptible to downturn in the economy by smoothing income flows of the household. Also, microfinance strengthens the economic position of women to enable them participate in governance process in their daily affairs. Additionally, microfinance enhances assets constructions to deprived people. According to Zeller and Meyer (2002) Microfinance activate the advancement livelihood in the community by altering the prevailing condition of deprived people through numerous services which are imperative for remedying poverty.
2.1.8 Microfinance Institutions

These are organisations intended to provide micro financial services to the poor including the self-employed (Mapesa, 2012; Morduch, 2000; CGAP, 2003). Financial services being offered include among others, savings and credit. In addition to the mentioned financial services, many MFIs offer social services such as group formation, training in basic investment skills and group management, insurance. These institutions provide financial tools to vulnerable groups of individuals. It is expected that beneficiaries will unchain from vicious circle of poverty and improve their economic well-being. These organisations aim at transforming their clients into advanced socioeconomic status and improve livelihood of people as demonstrated by Grameen Bank of Bangladesh, Bank Rakyat Indonesia (Koveas & Randhawa, 2004).

2.1.8.1 Microfinance Lending Methodology

The methods of credit delivery by the mentioned microfinance institutions are basically categorised into two broad types. These include individual and group lending methodologies.

(a) Individual Lending Methodology

This involves provision of loans to individual based on their ability to provide the MFI with assurances of repayment with required level of security guaranteed. The approach enables members who have not formed groups to access loans from the lending institution. However, an institution considers taking collateral such as fixed assets, land and building or household appliances are taken as deemed necessary (Agene, 2011; Ledgerwood, 1999). Among the characteristics of individual lending methodology include: Assurance of loans by some form of collateral or a cosigner where there is inspection of potential clients by credit checks and character references. Similarly, there is tailoring of the loan size and term to business needs. Increase of loan size and term requires frequent and close contact with individual clients. Microfinance institutions usually offer loans for business purposes. However, consideration of loans for other purposes such as education, consumptions and emergences are extended (Ghatak, 1999).
(b) Group Lending Methodology

Group-based lending involves the formation of groups of people who have similar purpose of accessing financial services. This type of lending methodology usually builds on existing informal lending and savings groups that have been operating in their environment (Armendariz & Morduch, 2000). In this Group-based approach, loans are made available to groups, where either to individuals who are members of a group or to groups, then sub loan are given to their members respectively (Janda & Turbat, 2013; Maata, 2004).

Conditions for effective use of groups

The groups are more effective if they are small and homogeneous. Similarly, by imposing group penalties and incentives helps improving loan portfolio performance. Loan sizes that increase consecutively allow groups to screen out bad risks (Idama et al., 2014). Advantages of group lending technique include mitigation of information asymmetry related to potential borrowers. Also, reduction of moral hazard risks due to group monitoring and peer pressure. Moreover, this approach allows substitution of joint liability for individual collateral and finally, improved loan collection especially if group penalties and incentives are incorporated in the loan terms (Ledgerwood, 1999; Crabb, 2006). MFIs also employ several mechanisms to hasten groups with commitment on borrowed funds. This includes use of standard repayment system, provision of non-monetary services and the application of non-refinancing menaces (Armendariz & Morduch, 2000; Ibtissem & Bouri, 2013). Therefore, it is imperative for the lending institutes ensure that groups that access loans are screened and monitored for effective repayments.

2.1.8.2 Microfinance and its impact in development

Microfinance institutions have been extending credits to the unbankable and to near bankable individuals. This has enabled initiate investment projects that otherwise would have not been established, resulting in improved income generation and reduction of poverty among them (Biosca et al., 2011). Similarly, the marginalised people have also been empowered to mobilise their savings for increasing the capital base in business.
Moreover, by providing small loans to low income individuals and ensure effective utilisation. It helps the household with access to education, health and stabilised their production and minimize the extent of hardship hence breaking the vicious circle of poverty (Kessy & Urio, 2006).

Crabb (2008) commented microfinance helps the very poor households meet basic needs and other contingencies. Similarly, MFIs are associated with improvements in household economic welfare by empowering women in economic projects. Apart from that also they enable promotion of gender equality and general well-being of community economic development at large. Therefore, Microfinance has a very important role to play in the improving living standard of the neglected and economically disadivantaged individuals.

2.2 Performance of Microfinance Institutions
Performing microfinance institution involves ability of an institution to cover costs and continue its operations without resorting to gifts, subsidies and debt relief including maintaining acceptable financial liquidity of the firm (Crombrugghe et al., 2007; Lafourcade et al., 2005). According to Robinson (2001) performance of MFIs is divided into broadly two aspects. Firstly, the capacity of MFIs to obtain loan repayments on time from the borrowers; the priority for microfinance institutions is to stretch the highest possible repayment rates. High repayment rate is important for organisations survival and sustainability. Secondly, performance of microfinance institutions involves financial self-sustainability (operation self-sustainability) which requires the firm to have enough interest revenue, ensure effective cost control and efficient use of firm resources.

2.2.1 Performance Measurement of Microfinance Institutions.
Microfinance institutions require periodic analysis of their performance. It requires the firm to evaluate the extent and direction in provision of services to its target clients. Ligerwood (2013) points out various performance indicators used by microfinance institutions which include: portfolio quality, production and efficiency, financial viability, profitability, leverage and capital adequacy and scale, outreach.
and growth. However, Ghatak (1999) considered performance measurements of microfinance institutions involve four essential areas: these are outreach to the poor, repayment rates, sustainability and efficiency. On the other hand, Natilson and Bruett (2001); and Sa-Dhan (2003) underscored common performance indicators of microfinance institutions to include: profitability and sustainability, efficiency and productivity, portfolio quality, growth and outreach and financial structure. Each of these performance indicators is useful in managing microfinance institutions since they provide information about different areas of microfinance operations.

2.2.1.1 Profitability and Sustainability Performance Measures of MFIs
The profitability and sustainability performance indicators reflect the ability of the MFI to continue operating in the future. The need for achieving this goal does not depend on whether respective microfinance institution is nonprofit or for-profit. All reputable MFIs are striving to be sustainable in their operation. There are five basic profitability/sustainability performance ratios involved; these include return on assets (ROA), return on equity (ROE), operational self-sufficiency, financial sustainability and profit margin (Natilson and Bruett, 2001).

2.2.1.2 Efficiency and Productivity Performance Indicators of MFIs
Efficiency and productivity indicators are measures which provide information about the rate at which microfinance institution can generate revenue to cover their expenses. Through these ratios, MFIs can determine whether they are maximizing their use of resources. The five efficiency and productivity indicators considered are cost per unit of financial resources lent, cost per borrowers, operating expense ratio, retention of customers and employee’s performance ratios (Stauffenberg et al., 2003).

2.2.1.3 Growth and Outreach Indicators of microfinance performance
The growth and outreach measures are areas that need monitoring by the firm. It entails about the presence of new clients into the firm as the bases for revenue and asset growth. Most microfinance institutions that strive to grow and reach new geographical areas need to be conscious on this indicator. This measure does positively influence the lives of microfinance service beneficiaries. The key areas of
growth that MFIs need to be concerned include: Loan portfolio growth, Growth in borrowers, Growth in equity and Depth of portfolio (Stauffenberg et al., 2003).

2.2.1.4 Financial Structure Indicators
This includes the equity of MFI and a portion of its liabilities including its debt obligation. It is about the ability to manage firm assets and liabilities (Ledgerwood, 1999). Microfinance Institutions need to manage their assets and liabilities at various levels. Among the areas that need most attention include: Interest rate management, Asset management, Liquidity management together with Leverage.

2.2.2 Portfolio Quality Performance of Microfinance Institutions
This study dealt with portfolio quality performance indicator of microfinance institutions. It provides information on percentage of the nonearning assets which decrease of revenue and liquidity of the lending institutes. Portfolio quality is an important area of analysis since it is the largest source of risk for any financial institution (Natilson & Bruett, 2001). However, the quality of portfolio asset and the risk it poses for the institution can be quite difficult to be measured. Loan portfolio is the driving force to enable microfinance institution into financial sustainability. It requires MFIs ensure that it receives revenue immediately after loan disbursement. Any delay in revenue collection from clients would amount to expected loss to the firm (CGAP, 2009). MFIs must continue to worry about quality long after the provision of its loan service to client. High loan portfolio quality means low delinquency. Therefore, if the quality of microfinance loan portfolio is poor, institution can hardly continue to sustainably operate in the long term (Lidgerwood, 1999).

The Portfolio Quality Analysis (PQA) tool is a written analysis of the significant trend of total loan portfolio. It is a credit risk management tool which identifies events that affect microfinance loan portfolio. It reveals the causes and consequences including appropriate recommendations on the status of loan portfolio (Kyereboah-Coleman, 2007). The observed feedback of portfolio quality analysis is determined by both the risk team and the commercial team. The PQA provides management with objective updates on credit risk and enables them to implement appropriate actions.
and track their effectiveness. These portfolio quality reports are crucial documents to enable institution undertake ultimate actions as credit risk management tools of the firm. According to Rosenberg (2009) the lending institutes need to consider portfolio quality reports as an important credit risk management tool in the firm. In this regard, PQA should be prepared on a regular basis and used as input for a discussion between institution’s management team. Therefore, MFIs have to consider this report a vital document which covers multiple segments of loan portfolio including credit management process within a firm (Cull et al., 2007; Anduanbessa, 2009).

2.2.2.1 Measurement of Portfolio Quality in Microfinance institutions

The most widely used measure of portfolio quality in the microfinance industry is Portfolio at Risk (PaR). It measures portion of the loan portfolio contaminated by arrears as a percentage of the total portfolio. There have been other varieties of approaches to measuring portfolio quality. However, portfolio at risk has been considered as the reliable instrument of measurement. It is easily understandable, does not understate risk and it is a kind of measure that is comparable across institutions. As such a microfinance institution is typically considered to be at risk if a payment is more than 30 days late (Sa-Dhan, 2003).

Moreover, portfolio at risk measure is said to be free from much of subjective interpretations compared to other portfolio quality indicators like repayment rate. Also, portfolio at risk is perceived to be inherent traditional assess of the organizational risk because both, the numerator and the denominator include the outstanding balance. Therefore, it determines overall risk and not only the instant threat (Field and Pande, 2008).

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\text{The portfolio at risk (PAR)} = \frac{\text{Outstanding balance of loans with payment past due 90 days}}{\text{Portfolio outstanding (including amount past due)}}
\]
The gross loan portfolio of microfinance institution is the largest asset that generates income (interest and fees). It is the main product of the business required by clients and more importantly it is the reason for microfinance existence (Narwal & Yadav, 2015). The portfolio at risk answers the question how much the lending institute likely to lose if all late borrowers default? On the other hand, portfolio aging separates more information about the risk loans from less risky ones. The longer the loan goes unpaid, the higher the risk that it will never be paid (Sa-Dhan, 2003).

Portfolio at risk can be determined on the basis of microfinance institution as a whole, for a branch, a credit officer, by sector or a region. If the loan maturities are short and payments are frequent (weekly or bi-weekly). It means a loan past due 30 days could mean two to four payments are late which is obviously very serious. Therefore, it is crucial that top management members be informed on details of the quality of the portfolio. If the PAR tends to migrate from 30 days past due to 180 days past due; it is obvious that microfinance management is deficient in pursuing delinquent clients (Petersen & Rajan, 1994).

Most MFIs in Africa face challenges in their business. This follows very high operating and financial expenses incurred. At the same time, revenues remain lower than in other global regions (Wrenn, 2005). Moreover, CGAP (2003) estimates that only about 5% of MFIs worldwide are financially sustainable while the IMF (2005) considers only 1% of the world’s MFIs are financially viable. Thus, financial performance of the microfinance sector is yet an alarming issue. To achieve financial sustainability, Rutherford (2000) commented that MFIs must cover cost of funds, inflation and operating costs with the income it receives from fees and interest. MFIs that have become self-sustainable tend to be larger and more efficient in delivering their services to majority of needy individuals. As such while MFIs expect financial revenue from loans and other financial services in the form of interest fees, penalties and commissions; it is obvious that these MFI’s financial undertakings also create various expenses including general operating expenses, cost of borrowing and loss from defaulted loans (Rosenberg, 2009; Nyamsogoro, 2010).
Therefore, it is necessary to assess portfolio quality performance of MFIs. Financial sustainability is equally very important from clients’ perspectives. Borrowers place high value on continued access to credit from MFIs. If they feel that MFI is unlikely to survive in the future, they reduce their incentive to repay loans. This action has negative consequences to the financial sustainability of the firm in the long run. It may result in high portfolio at risk hence become financially incapable to continue extending loan services to low-income individuals (Ghatak and Guinnane, 1999; Rutherford, 2000).

2.2.2.2 Performing Microfinance Loans

These are issued loans where payment of both principal and interest charges is up to date and in line with agreed terms and conditions between the lender and the borrower. Such loans are considered current loans since all its related payments are being charged timely. Therefore, performing loans constitutes a healthy asset portfolio of the firm (Philip, 2011). The concern on loan performance arises since credit facility involves contractual promise between the parties. The creditor is said to offer a total of money to a defaulter who assure to repay the agree amount to creditor by either at once or in pieces within the limited period of time. The contractual desires the payment of rental services on the money released to the borrower. The added payments in the category of processing charges, interest fees, monitoring and commission’s fees are essentially compensated in totaling to the prime total lent. These extra payments when made accordingly, constitute the interest income to the lender/creditor (Lafourcade et al., 2005).

Therefore, it is the responsibility of the lender to ensure good decisions relating to granting of loans to borrower. During the process of scrutinizing the potential loan applicants, lenders must assess risk associated with the lending process (Khandker et al., 1995). MFIs should therefore be capable to collect all relevant information that will assist in arriving at a sound credit decision taking into account possibility of non-repayment that may lead to non-performing loans. In view of that MFIs have adopted standard loan request procedures and requirements which are in line with credit
policy manual to guide loan officers and customers. In so doing would enable maximize loan repayment and enhance microfinance loan portfolios.

Some of the factors that need to be considered by MFIs before giving loans are; the aims of the loans, the capability of the borrowers to manage loans and its business effectively, repayment sources, behaviours of the borrower; the amount of loans requested, security of the loans given by an applicant, technical and financial viability of the business (Godquin, 2004).

2.2.2.3 Non-Performing Microfinance Loans (NPLs)

Firafis (2015) considered non-performing microfinance loans as the kind of issued loans which are unpaid in both interest and principal for a period of time. These loans are also considered as problem loans or impaired loans. There has been a varied clarification about the duration to be considered a loan as bad loan. Some include quantitative approach such as number of days the credit facility is overdue for judging status of loans not paid. Alternatively, other observation involves qualitative criteria such as information about the customers’ financial position and management (lenders) judgement. However, Kono and Takahashi (2010) described non-performing loans as loans that are ninety days or more past due or no longer accruing interest.

Microfinance institutions are required to be vigilant in dealing with problem loans of their institutions. Managers (and credit officers) need to devise effective ways to minimize prevalent of non -performing loans. Pagura (2003) suggested some strategies of dealing with non-performing loans (NPL) such as visits and interviews, audited and management accounts. In addition, other monitoring procedures include: ensuring utilisation of loan to intended purpose; identifying early warning signals of any problem relating to operations of business. Moreover, ensuring compliance with covenants of loan facility and affording the lender the opportunity to discuss the problems and prospects of the borrower’s business.
2.2.2.4 Effects of Delinquency on Profitability of Microfinance Loan portfolios

Profitability of microfinance institutions is highly affected when interest revenue is not received on delinquent loans. The most significant effect of delinquency on microfinance profitability occurs when the loan principal is not repaid. Oguntoyinmbo (2011) pointed out any loan that is not recovered requires several additional new loans to be made to generate enough revenue to replace the lost loan amount. This means the entire principal amount has to be compensated with a loan loss provision. This greatly affects loan portfolio performance of MFI including provision of non-financial services to their customers (Ledgerwood, 1999).

The concern on effective portfolio performance of MFIs is vital since delinquent loans play a critical role in MFI’s expenses, revenue and profitability. In order to reduce problem credit, efforts must be in place involving closer monitoring, frequent visits to borrowers including legal fees in dealing with chronic and severe delinquent borrowers (Tehulu, 2013). The lending institute therefore must commit enough resources into controlling delinquent borrowers. MFIs that takes less time to reach new borrowers indicates efficiency in collection of disbursed funds, improved financial sustainability and enable expand its operations (Schreiner, 2000). Performing MFIs are capable of becoming sustainable and effective in delivery of credit to majority of low-income individuals. Therefore, poor delinquency management can result in slower turnover of loan portfolio and inability to provide loans to other borrowers. Consequently, accelerates financial exclusion to groups and individuals in needy credits including deepen poverty levels among SMEs and disadvantaged individuals (Zeller & Meyer, 2002).

2.3 Microfinance Institutions in Tanzania

The delivery of microfinance institutions in Tanzania is not different from approaches used in other parts of the world. The need for microfinance lending entity to deprived people is increasing day to day. This means that microfinance institutions have significant role to play in facilitating provision of credit services to the needy clients. The microfinance sector in Tanzania grows in number of actors and coverage. It is divided into two broad types of financial service providers; the formal
microfinance service providers and secondly, informal microfinance institutions (Chijoriga et al., 2009; BOT, 2009). The formal microfinance institutions service providers include banks and financial institutions; Savings and Credit Cooperative Societies (SACCOS); microfinance companies, financial NGOs; Government Funds and Programmes and other related institutions. On the other hand, informal microfinance service providers are such as community-based organisation (CBOs), VICOBA, Village Savings and Loan Associations (VSLAs), Rotating Saving and Credit Associations (ROSCAs), Money lenders and other related financial service providers (FinScope, 2013; NMP, 2017; BOT, 2009). However, the formal microfinance institutions in Tanzania have been further categorized into two types. These include the bank formal financial institutions and non-bank formal financial institutions.

2.3.1 Non-Bank Formal Financial Institutions
These involve Financial NGOs, Microfinance companies, Micro-insurance companies, Micro-leasing companies, Collective investment schemes, Pension fund, Remittance companies, Mobile money, SACCOS and Government schemes. These entities are governed by numerous institutions under various laws such as Companies Act 2002 within the ambit of Business Registration and Licensing Authority; Society Ordinance Cap 337 of 1954 within the control of Ministry of Home Affairs under; NGO Act 2002 under Ministry of Community Development Gender and Children and under Incorporation Act 2002 (Cap 318) by Registration Insolvency and Trusteeship Agency. The institutions have internal monitoring and regulating procedures and are prohibited to collect funds from the public (FinScope, 2013; FinScope, 2017 & NMP, 2017).

2.3.2 Financial - Non-government organisations (NGOs) and Microcredit companies
The NGO- Microfinance institutions are noted to be pioneering micro-credit business in the country. They undertake micro financial services based on their acts of incorporation of their organisations. Also, these institutions have obtained general business licenses issued by the then Ministry of Industries and Trade with the
approval of the Bank of Tanzania to carry out microfinance services in various regions of Tanzania (BoT, 2009). However, these microfinance institutions are not allowed by law to mobilise savings. They include among others, Promotion of Rural Initiative and Development Enterprise (PRIDE); Bangladesh Rural Advancement Committee (BRAC); Small Enterprise Development Agency (SEDA) etc. Similarly, the Micro Credit Entities existing in the country are such as Maisha Financial Services Ltd, CDH Finance Company LTD, Koli Finance LTD, African Microfinance Limited and others (Chijoriga, et al., 2009; TAMFI, 2015 & BOT, 2010). Therefore, this study was concerned with this category of microfinance institutions which operate in various regions of Tanzania.

2.3.2.1 Non-member based microfinance institutions
The non-member-based microfinance institutions are the kind of microfinance lending institutes in which registration of its members is not a requirement for them to access credits and other non financial services from the respective institution. The non-member-based microfinance institutions does undertake micro lending business of minimal and medium loan sizes to deprived people, unemployed and lowly paid salaried individuals excluded from formal banking services.

2.4 Theoretical Perspectives
This part reviews theoretical perspectives that are linked to this study. Two theories were involved in developing the conceptual model and objectives that guided this study. The relevant theories include asymmetric information theory and the transaction cost theory.

2.4.1 Theory of Asymmetric Information
Asymmetric information relates to the unbalanced distribution of information among various economic entities. Withholding and meandering of information results into problems. This happens when one party often does not retain enough relevant information concerning the other party to enable making accurate decisions (Mishkin & Eakins, 1998; Edgcomb & Barton, 1998). The two parties (principal and the agent) act individually, having their own interest with a certain degree of opportunism.
Akerlof (1970) was the pioneer of the theory of asymmetric information. He used the example of expended automobile market referred to as the ‘lemons problem’ to advance the concept of asymmetric information. He argued that a potential buyer of a used car is often incapable to evaluate the quality of the car, and establish if that particular used car is a high-quality car that will function well or a ‘lemon’ that will regularly give him/her sorrow. This occurs as a result of asymmetric information between the two parties involved. In this regard, the price that the buyer pays must therefore reflect the acceptable quality of the cars in the market, that is anywhere between the low value of a good car and high value of a lemon car.

On the other hand, Mishkin (2001); Auronen (2003) added that the owner of the used car is more likely to be informed if the car is in good condition or a lemon. If it happens the car is a lemon, the owner is more than happy to sell it at a price the buyer is willing to pay, which is somewhere between the value of a lemon and a good car, that is greater than the lemon’s value. Nevertheless, if the car is a peach, the possessor is aware that the car is underrated at the price the buyer is willing to pay, and so the bearer may turn down to sell it.

This similar situation that happened in ‘lemon problem’ also arises in financial institutions and so in microfinance services. Mishkin (2001); Brouwer & Dijkema (2002) added that lenders may at times cannot distinguish between good and bad borrowers. The price given by lenders would reflect the position of possible borrowers. The indicated price will actually be in between the value of bad and good borrowers. If the borrower is good will then know that the cost of loan is higher than it would be and will therefore not want to borrow at the price revealed by the lender. Moreover, Mishkin and Eakins (2006); Sriram (2005) commented borrowers who are eager to borrow are likely to be the bad ones, since the cost of a loan is positive to them considering their extent of risk embedded. The existence of asymmetric information tricky leads to two types of informational problems which are adverse selection and moral hazard. These pose significant effects upon provision of micro financial services to the needy clients.
(a) **Adverse Selection**

The adverse selection is the consequence that happens when borrowers are unwilling to disclose private information about their personal behaviour including kind of projects they want to invest in. It therefore makes creditor lack necessary knowledge and required information in relation to the type of borrower (Schreiner *et al.*, 2000). This behaviour usually occurs before the credit relationship begins. Lenders may have general average characteristics of the pool of expected borrowers. However, they may not have full information on the characteristics of each borrower in terms of the extent of risk involved to each borrower. Consequently, some borrowers are likely to turn out to be uncommitted to repaying their loans after disbursement and increase risk of non-repayment. Such borrowers at times come forth actively seeking out loans and hardly become responsible when granted (Schreiner *et al.*, 2000). This will induce microfinance institutions set high interest rates to compensate for the risk of not knowing which borrower is “risky” and which one is “safe”. The high interest rate charged may drive the safe investors (borrowers) out of the credit market. In so doing, the ones left may be the riskiest investors resulting into high portfolio at risk on the part of the lenders (Armendariz & Morduch, 2004).

(b) **Moral Hazards**

Moral hazard involves the likelihood that individuals become less concerned about undesirable outcome of undertaking a risk due to having some form of protection. Such situation may arise when a person or institution does not alone bear the full risk of a transaction as a result, one may not act prudently hence threaten returns of the transaction (Berglind & Karimi, 2007). The concept of moral hazard in lending situations occurs when transaction entails lenders who cannot ascertain borrowers’ actions including understanding of project return.

The asymmetric information theory has a range of strengTsh. It helps to show that institutions may face complexity in identifying the safe from the bad borrowers (Derban *et al.*, 2005). Similarly, the theory recognises significance of information in determining the effectiveness of market participants. However, the theory is challenged of being too simplistic as it considers asymmetry only from one side that
is the borrowers’ side and is silent on the part of the lenders (Auronen, 2003; Mishkin and Eakins, 2006).

2.4.1.1 Implication of Asymmetric Information Theory in this study
The theory helps to put forth significance of information sharing between parties involved in business transaction. The theory recognises effective and reliable communication is vital for an institution intending to deal with other economic agents in order to smooth consumption and attain profit out of the transaction.

Microfinance institutions are engaged in lending business to low income and poor households. It is important for them to have enough information about borrower prior to actual loan disbursement. MFIs are informed of the cost of funds to be incurred to prospective loan applicants. In this case, lenders have to make sure that information collected from borrowers need to be reliable. This would aid for lenders to have accurate decision about their loan applicants. In addition, microfinance institutions need to have strategies to enable acquires some hidden information from the client. In so doing, borrowers who will be noted to have given false informations about their real behaviour are likely to be excluded from loan consideration (Auronen, 2003).

Furthermore, the theory is relevant in this study as it guides lenders not to have full expectation of repayment from their clients. This entails the possibility that some borrowers may have used the funds into very risky projects and hence failed to manage consistent loan repayment. It is again the responsibility of the lending institutes to ensure that the borrowed amount is invested to intended projects. There is possibility that some borrowers may be pressed to take unusual risks in desperate attempt to earn a profit before the contract is settled. This can result in increased risk of loan loss and influence institutional financial performance.

In addition, the theory has enabled to come up with variables on credit risk management practices in order to enhance institutional performance. The variables drawn from the theory include: the need for reliable information about borrower business income, collateral requirements of borrower and available capital of borrower. Moreover, the theory also guides to have an understanding on the age of
borrowers, business experience, sex and similar others for organisational performance. These may help lenders determine position of borrowers in relation to becoming rigorous to making regular loan repayments.

Moreover, the theory reminds MFIs the need to have effective credit supervision of loan services to borrowers. This requires respective microfinance institutions to have in place a system which ensures that loan applications are processed and released timely including the need for effective monitoring of repayments. Microfinance institutions that employ effective monitoring help to unearth hidden behaviour of borrowers threatening proper functioning of the microfinance institution. Therefore, the theory has considerable implication in understanding the way microfinance institutions operate in relation to provision of loan facilities sustainably to the poor households.

2.4.2 The Transaction Cost Theory

Coase (1937) was the pioneer of Transaction cost theory. The theory states that “In order to carry out a market transaction. It is necessary to discover who it is that one wishes to deal with, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on” (Coase, 1960; Haji, 2013). As such the theory explains about the cost of carrying out a transaction by means of an exchange on the open market. Similarly, Adams (1994) considered transaction costs to be involving total explicit and implicit costs of participants in financial transactions which involve both lenders and borrowers. Kigen (2011) identified three kinds of costs that a lending institution suffers when extending loans to their clients. These include: the cost of funds for lending; the cost of sensible financial practices, namely specification for loan defaults and the cost of transaction.

Natamba et al. (2013) added that transaction cost is incurred by both the borrower and the lender before, during and after the disbursement of loan. The overall expenses incurred by the lender in the transaction include: cost of funds for lending, cost of making credit contracts, cost of appraising and screening borrowers, assessing project viability, cost of examining loan application, cost of providing credit training
to staff and borrowers and the cost of monitoring and putting into effect loan contracts (Shankar, 2007; Haji, 2013). Similarly, borrowers are also involved in transaction cost economics in several ways. These include: costs associated in screening group member (group borrowing), cost involved in forming up a group, cost involved in bargaining with the lender and cost for settling up paper works. Similarly, other costs involved are costs of transportation to and from the financial institution, cost of time spent on project appraisal and cost of attending meetings (Bhatt & Tang, 2002). Therefore, the parties involved need to determine the transaction cost rate to enable reduction of risk in the process of undertaking business (Dehem & Hudon, 2013).

Gibbons and Kasim (1991) noted that cost of funds, default costs and transaction costs do significantly contribute to the total cost of lending in microfinance business. However, in microcredit lending industry, transaction costs have been considered as important contributor to lending costs. Its significance enables determination of transaction cost rates in facilitating financial credit delivery between parties. It also helps organisation make thorough evaluation of internal and external procedures for effective operation with their clients (Polski & Kearney, 2001).

Moreover, Montgomery and Weiss (2005) studied microcredit programme in India and established that intermediation of non-governmental organisations (NGOs) and self-help groups (SHGs) in the credit delivery system reduced the transaction costs of both lenders and borrowers. Likewise, Wydick (2001) found that group formation costs are influenced by number of groups handled by each field worker, transport costs and training costs. Whereas Karduck and Siebel (2004) studied transaction costs of borrowers and noted that weekly meeting schedules increases transaction costs by 34% as compared to monthly meeting. Therefore, microfinance institutions are faced with a challenge of determining appropriate factors that will help to reduce costs involved in lending to ensure sustainable service delivery.
2.4.2.1 Implication of Transaction cost theory in this study

The theory helps managers of microfinance institutions ways to manage costs associated with business interactions between parties. It underscores the need for lending institutes to be aware of behaviours and commitments of other part in order to smooth transaction. The theory also guides determination of overall costs embedded in the interaction with stakeholders for effective loan provision and repayments.

In addition, the theory guides lender to be informed on various costs for effective credit delivery. These includes cost of funds for lending, interviewing borrowers, cost of making credit contracts, cost of appraising, assessing project viability, cost of examining loan application, expenses of offering capacity building to staff and borrowers as well as expenses for ensuring loans contract and its monitoring (Shankar, 2007). The rate of interest to be charged to the customers has to be sustainable to enable continued loan service to poor households. On the other hand, the theory indicates that borrowers are equally prone to several costs, namely costs associated in screening group members, cost involved in forming up a group, cost involved in bargaining with the lender, cost for settling up paper work, costs of transportation to and from the financial institution, cost of time spent on project appraisal and cost of attending meetings (Bhatt & Tang, 2002).

Furthermore, the transaction costs theory aided to this study with variables for determining relationship between credit risk management practices on portfolio performance of microfinance institutions. The variables derived from the theory which are linked to this study include: cost of funds for lending, an understanding of operational costs of business and loan sizes for effective recovery. Moreover, other variables considered related to the study involved costs of training borrowers, cost to making follow up to borrowers and other variables related to the study. Therefore, through these theories, microfinance institutions are reminded to effectively determine costs in their operations to enable recover disbursed loans. Also, ensure that MFIs becomes financially sustainable for continued provision of services to reach clients in new geographical areas.
Therefore, highlighted theories in this study have aided toward understanding of the variables required in this research study. Through these study theories, it has come to attention of the researcher that the study has highly benefited from these theories. As such, there is need to effectively determine costs involved to both parties involved in transaction (lenders and borrowers). Microfinance institutions have to be sensitive to both costs and on reliability of information from borrowers. In so doing, would enable sustainable financial operation of services to clients. The knowledge from the theories have guided in developing conceptual framework including further analysis of the study objectives and discussion of the findings of research study.

2.5 Empirical Literature reviews
Microfinance institutions have significant contribution in developing countries including Tanzania. They have been facilitating microfinancial services to disadvantaged and poor households in society. However, these institutions have been challenged with high risk of their loans portfolios. Some microfinance borrowers have not been responsible in repayment of the borrowed funds from their lenders (Ayayi & Sene, 2010; Agarwal & Sinha, 2010). Various empirical studies have pointed out different factors that influence rate of portfolio at risk of microfinance institutions. The section that follows present empirical studies relating to factors influencing portfolio performance of microfinance institutions. Along with the presentation of the empirical studies on the study variables, proposed relationship of the respective variable is going to be hypothesised.

The discussion on empirical studies is done in view of the four previously mentioned objectives of this study. These were to determine the effect of socio-economic characteristics of clients on portfolio performance of microfinance institutions in Tanzania; to determine the effect of credit application appraisal on portfolio performance of microfinance institutions in Tanzania; to establish the effect of credit supervision practices on portfolio performance of microfinance institutions in Tanzania and finally; to determine the effect of credit collection policy on portfolio performance of microfinance institutions in Tanzania.
2.5.1 Effect of Socio-economic factors on Portfolio Performance of MFIs in Tanzania

2.5.1.1 Age of borrowers

The study by Reta (2011) on determinants of loan repayment performance of microfinance borrowers in Ethiopia through binary logit model of analysis observed that age of borrowers has significant influence on microfinance performance. As the age of borrower increases, the chance of respective borrower to become positively associated to loan repayment problem decreases. This means that possibility of the microfinance institution to be at higher risk of not being repaid the borrowed fund increases as it increases to extend loans to young borrowers. Similarly, Abafita (2003); Clamara et al. (2014) and Pepra (2012) noted that microfinance borrowers who were younger in age have been irresponsible in undertaking obligation of repaying the borrowed funds than matured microfinance borrowers. In other words, old age clients are capable to making regular loan repayments resulting in reduced risk of microfinance loan portfolio than young aged borrowers. However, studies by Folefack and Teguia (2016); Eze and Ibekwe (2007) observed inconsistent findings, where young age borrowers were actively servicing their loans than old age borrowers, consequently, resulted in increased portfolio at risk of microfinance institutions.

2.5.1.2 Sex of borrower

Various studies have reported contradictory findings on the influence of gender of borrower on financial performance of microfinance institutions. Bhatt and Tang (2002); Mwangi and Kihiu (2012); and Nawai and Shariff (2012) in their studies observed that women had low repayment rate compared to men. This led to portfolio at risk to be recorded higher to women than male clients. Among the reasons for such findings were, women had been involved in high risk and low return projects which made them unable to manage regular repayment terms. In addition, men have been owning the family economy which enabled them manage financial resources and capable to make regular repayments.
On the other hand, Abreham (2002); Khandker et al. (1995); Chaudhary and Ishfaq (2003) and Ayogyam et al. (2013) noted that female borrowers were better performers in loan repayment which resulted in low portfolio at risk of most microfinance institution. This means that microfinance institutions which extend loans to female clients were better in their loan portfolio compared to their counterparts. Therefore, financial sustainability of lending institutes is likely to be attained when borrowers are positively associated with high repayments to their lenders.

2.5.1.3 Education level of borrowers

The variable education level of borrower has been discussed by Bhatt and Tang (2002); Chaudhary and Ishfaq (2003) that microfinance institutions which provide loans to educated borrowers experienced high loan repayments and financial performance. These findings were contrary when credit was offered to borrowers who are uneducated and have low-level of education borrowers. Their studies revealed that educated borrowers can manage business. In addition, they can access and process information related to controlling various risks and to be negatively associated to loan repayment problem. Therefore, high repayment rate observed from microfinance borrowers with higher education level contributed to reduced portfolio at risk of the microfinance institutions. However, Zeller (1994) had different conclusion that education of borrower does not influence repayment performance to the microfinance institutions. It was argued that educated microfinance clients had access to multiple sources of loans. Consequently, they were unlikely to be effective in servicing their debts as required. Instead, commitment and constant monitoring of borrowers contributed to regular loan repayment. This study therefore, wanted to find out the position of the identified variable on microfinance performance.

2.5.1.4 Marital status of borrower

A study by Muturi (2016) on the effect of credit management practices on loan performance using logistic regression model of analysis revealed that marital status of microfinance borrower has significant influence on microfinance financial performance. In their study, married microfinance borrowers were negatively associated to repayment problems. This means that married clients contributed to low
rate of portfolio at risk of microfinance institution. These findings were in line with the study by Angaine and Waari (2014); Mwangi and Kihiu (2012) that married microfinance clients were more committed to repayment and influenced negatively on portfolio at risk of the lending institutes. There study posits that married clients had permanent residents and capable to assume responsibility than unmarried clients. Consequently, this led to high financial performance and increased outreach of credit services. However, studies by Brehanu and Fufa (2008) and Folefack and Teguia (2016) had contrary observation in relation to the influence of married borrowers in institutional financial performance. Their findings were in support of the view that microfinance institutions which extended loans to married borrowers experienced problems in loan repayment which affected loan portfolio performance. The problems in repayment rose because married borrowers had more dependants and usually had several social obligations and commitments. The existence of family responsibility made them fail to manage the regular loan repayments compared to unmarried (single) microfinance borrowers.

2.5.1.5 Family size of borrower
Muthoni (2016) advanced that borrowers with large family size had higher dependency ratio hence their income is likely to be consumed instead of saving for loan repayment. Consequently, higher default rates and unsustainable financial performance of microfinance institution. In the same vein, Tundui and Tundui (2013) observed that high number of children (dependants) influences borrowers’ ability to manage regular repayments. Increase in number of dependants within and without the household increase family expenditure and other socioeconomic demands. These social commitments impact negatively on repayment performance and ability of the firm to continue extending micro credits to the needy clients. Moreover, Kebede and Tafese (2016); Setargie (2013) and Al-Azzam et al. (2012) added that borrowers with small number or no dependants in the household were good clients in servicing installments than their counter parts. Therefore, borrowers need to be careful and organised before applying microfinance loans. Loans should be used only for intended purposes and particularly when investing in the planned projects. It is also important for microfinance borrowers consider their obligation of loan repayment
since that would help lower portfolio at risk and improve financial self-sufficiency, institutional growth and development.

**2.5.1.6 Business experience of borrower**

Shu-Teng *et al.* (2015) and Onyeagocha *et al.* (2012) in their study observed that borrowers with business experience influenced effective performance of microfinance institutions. It was argued that such borrowers were able to identify customers for their business products. In so doing, enable realise higher business profits (returns) to service their loans which reduced portfolio at risk of the microfinance institutions. Moreover, Tundui and Tundui (2013) observed that experience in business helps an entrepreneur increase income, repaying their loans and become negatively associated to repayment problems. These views were in line with Magali (2013) who contended that microfinance borrower having experience in business skills and knowledge in bookkeeping, marketing, planning and budgeting are capable of ensuring low loan default rates.

On the other hand, Korankye (2014) revealed that poor business practice by borrowers resulted in inability to finance borrowed funds which had negative impacts on financial sustainability of microfinance providers. Majority of microfinance borrowers lack efficient knowledge and skills for evaluating their business performance. They fail to realise profit gained, ploughing back required amount to manage timely loan repayment hence increase risk of gross loan portfolio. Therefore, micro-entrepreneurs need to be informed on business management skills for improving productivity and capital base to reduce possibility of loan defaults.

**2.5.2 The Effect of Credit Application Appraisal on Portfolio Performance of MFIs in Tanzania**

The credit application appraisal is the heart of a high-quality loan portfolio of any microfinance institutions (Sharma & Kalra, 2015). Appraisal process involves determining the creditworthiness of microfinance borrower. It aims at reducing extent of effect of delinquency of borrowers to the lending company. The credit assessment procedure always is led by the microfinance institutions’ credit policy and directives. This process determines whether to accept the microfinance borrower
proposal of request for funds or otherwise. Mokhtar (2011) argued that microfinance institution borrowers usually requires funds for two types of projects which are for starting new business and secondly, for investing in continuing business.

2.5.2.1 Collateral requirement of microfinance institution

Hamada (2010) defined collateral as any asset of value pledged by borrowers as security that requested loan would be re-paid in full, timely and with interest. Microfinance institutions require collateral from their loan applicants before provision of funds. Godquin (2004) added that collateral obligation in the process of borrowing from microfinance institution ranges up to and at times above 100 per cent of the loan principal. The collateral requirement in microfinance institutions for lending purposes is considered either as physical (traditional) collateral, or social (group) collateral or personal guarantee. Physical collateral involves pledge of the tangible assets such as real property owned, inventory of the business, cash savings or deposits, stocks /bonds equity in home equipment including certificate of titles to the lending institution (Giné & Karlan, 2010; and Mokhtar, 2011).

On the other hand, social collateral plays a substantial role in microfinance as another form of collateral in securing credits from lending institutions. This form of collateral uses the method of group lending with joint liability to reduce information asymmetries between borrowers and microfinance institution resulting in increased repayment performance (Janda & Turbat, 2013 and Silwal, 2003). The joint liability component is perceived as significant tools since it attract people or group of peole in an entity to utilize their common ties as capital for screening, monitoring and enforcing repayment of loans to their fellow borrowers. Therefore, by being jointly accountable for loans repayment of a crowd loan, borrower’s assurance their social capital entrenched in their ties with other borrowers (Kodongo & Kendi, 2013).

Microfinance institutions also use personal guarantee as another kind of collateral to facilitate provision of loans to the needy borrowers. This involves the person intending to access loan from microfinance institution to enlist friends or family members to provide personal guarantees (as cosigners). This means that in the event of inability to repay, the person who has provided a personal guarantee is responsible
for repaying the loan. However, most microfinance institutions have been using these various forms of collateral in combination with each other to ensure loan recovery (Ayogyam et al., 2013).

Inkumbi (2009); Armendariz and Morduch (2010); Babu and Singh (2007) added that borrower’s security need to featured by appropriate title, value stability as well as marketability. Moreover, security is regarded as an assurance against any unexpected event on the part of the lender. Microfinance institutions should not overlook appraising for character and/or capacity of borrower in substitute of a security. Lagat et al. (2013) commented that in the process of appraising clients for a loan, the need for security by the microfinance institution should be the last in consideration. It is important that credit should not be granted just because the borrower provided security. Instead, the security of a borrower should only provide support in the situation a borrower defaults repayment.

2.5.2.2 Average business income of borrower
The borrower business income is reported to have influence on portfolio performance of microfinance institutions. Sharma and Kalra (2015); Baiyegunhi et al. (2010) noted that prospective lender is interested to understand the way microfinance borrower intends to repay the loan offered. Lenders usually take into consideration the cash flow from the borrowers’ business project. Also, the repayment plan includes probability of completing their obligation of loan repayment successful. According to Ahmed and Malik (2015), microfinance institution has to evaluate the average business income of borrowers in order to determine his capability to ensure regular repayments. Van Deventer et al. (2013) explain that an investment credit to a borrower that yields sufficient profit enables the borrower to repay the loan promptly and within agreed loan terms. Majority of borrowers can easily repay the principal and interest. However, it is known to most lenders that some microfinance borrowers find it hard to repay the principal amount borrowed. It is necessary for the microfinance institutions ensure that borrowers are screened and their business incomes estimated in advance for effective repayment of the loans.
2.5.2.3 Average capital of borrower

Kariuki (2010) observed that microfinance institutions need to assess borrowers’ capital invested into the business. Lenders often want to see that the borrower has a financial commitment and has taken a risk for his/her business. According to Wester (1993) capital of a borrower invested in business is measured by the general business financial position. In addition, an emphasis is put into tangible net worth of the borrower’s business. Therefore, borrowers capital in business involves the money invested, which also indicates how much risk respective borrower is willing to take should the business fail.

Churchill and Frankiewicz (2006) noted that most microfinance institution face challenges in determining overall capital (monetary terms) of their applicants. It has been difficult to establish what has to be the capacity of the borrower to enable effective repayment of borrowed amount. Absence of and/or poor records management on the part of the applicant’s businesses progress, contributes delays in process of appraising clients. Loans officers are required to do more probing in order to have an average amount of money as total assets to enable determine loan size. Most importantly, to make decision on the necessary repayment terms associated with the loan (Nawai & Shariff, 2013). Studies by Aliija and Muhangi (2015) revealed that capacity of the client to repay has a great influence on the loan portfolio performance and hence reduction of risk imbedded. This is to say that capacity to repay of a borrower is very critical in client appraisal process. Microfinance institutions need to consider ability of loan applicants to fully refinance borrowed fund before consideration of extending credits to them.

2.5.2.4 Membership duration of borrower

According to Hietalahti and Linden (2006) membership duration of a borrower has significant influence on financial performance of microfinance institution. It is argued that borrowers who have been in contact with microfinance institution over a long period of time, have developed trust with the lenders, built strong attachment and feel a sense of ownership. This ensures effective loan repayment to the institution leading to reduced rate of portfolio at risk of the microfinance company.
Maata (2004) contends that honesty and integrity of the respective microfinance borrower is of paramount importance to ensure borrower repayment. In addition, Addo and Twum (2013) added that despite the security being offered by the borrower, loan application processing and disbursement should not proceed unless borrowers past performance in loan repayment is confirmed acceptable. Selection of the right type of borrower is necessary for ensuring timely loan repayment. It is the responsibility of the lending institutes to set procedures that would ensure only borrowers with acceptable previous track record are offered credit facilities.

Kuhn and Darroch (1999) and Peprah (2012) in their studies found that borrowers who have not stayed long since joining microfinance institution experienced high rate of loan defaults. Their observation contradicted to borrowers who have been accessing loan services, got experience and stayed long time with Microcredit Company. Therefore, the owner-manager of microfinance institutions need to be satisfied on the number of days since a borrower from joined the microfinance institution to qualify for credit applied. That would guide the lending institute to decide extending credit or not basing on experiences in loan repayment history for the duration in contact to microfinance institution.

2.5.3 The Effect of Credit Supervision Practices on Portfolio performance of MFIs

Microfinance institutions are required to establish effective credit supervision practices to ensure sustainable financial performance of MFIs. After credit assessment and disbursement is completed, borrowers are required to repay their installments as scheduled. Studies by Derban et al. (2005) observed that mode of loan repayment imposed by microfinance institution to borrowers influence positively repayment performance. Lending institutes need to monitor their clients so that at any point a borrower fails to manage repayments, immediate actions are undertaken to minimize the problem.
2.5.3.1 Repayment period of borrowers

Odongo (2004); Pasha and Negese (2014); and Armendariz and Morduch (2000) noted that in order to ensure good repayment microfinance institutions need to design proper monitoring of clients and follow up actions. Loan portfolio performance of most microfinance institutions is affected when repayment schedules do not favour borrowers to respond to their obligations. Microfinance institutions must balance between costs of transaction associated with frequent payments and ability of borrowers to manage it. Credit providers need to be aware of the risk of default from poor cash management due to infrequent repayments mode, compared to frequency repayment schedule to be applied by clients.

Ledgerwood (2000) added that loan payments of microfinance borrowers can be made on an installments basis. It can be made on either weekly, biweekly, monthly or in a lump sum at the end of the loan term. The setting of repayment terms depends on the cash patterns of the borrower, the interest rates charged and principal amount being paid altogether. It is argued that convenience in loan repayment period enable borrowers to utilise the loan to stated purpose. Also, enable comply with regular loan repayment schedule of the microfinance institution. Similarly, Warue (2012) observed that in order to have effective repayment and reduce risk of default from the loan beneficiary. MFIs require an effective system of monitoring which underlines repayment problems in an early stage. Microfinance loan officers and their supervisors need to focus on reactions that are likely impair ability of borrower to frequent loan repayment before it gets out of hand.

2.5.3.2 Follow up period measures to borrowers

The variable follow-up period measure to borrowers was perceived to be imperative for warranting risk of loan portfolio of microfinance entity is minimized. George (2015) and Rosengard et al. (2007) revealed that well established tracking and monitoring mechanism allow microfinance institutions to immediately recognize likely problems of loan diversion from intended purpose by borrowers. This action may result in problems of loan repayment and risk increasement.
On the other hand, Bofondi and Gobbi (2003); and Boateng and Agyei (2013) pointed that microfinance institutions need to set up monitoring teams to remind borrowers of their main obligations. That would ensure loan principal and interest is repaid as required within agreed terms to MFIs. However, most microfinance institutions engage in monitoring of borrowers when there are signs of default from their borrowers. Such practice might not be of value since the granted credit could have been already gone badly. Therefore, it is important for follow up efforts to the microfinance borrowers to commence immediately when the loan amount is disbursed. The monitoring team should supervise the whole progress of the borrower’s project to ensure repayment and minimize risk to gross loan portfolio.

In addition, Abdulfettah (2013); and Crabb and Keller (2006) argued that the probability of using loan funds into non-intended purposes decreases when supervision and follow up on loan utilisation to borrowers is undertaken. Mahjabeen (2008) also added that continuous follow up and supervision visit to clients enhances effective loan utilisation and higher installments resulting in low portfolio at risk of MFIs. However, Polio and Obuobie (2010) reported that MFIs’ appropriate selection techniques and appraisal system are negatively associated with portfolio at risk. Thus, it is necessary to ascertain specific factors that influence portfolio microfinance performance.

2.5.3.3 Timeliness of loan release to borrowers
Hooman (2009) did a study and found that timeliness of loan release to borrower influences portfolio at risk of the microfinance institution. Moreover, Idama et al. (2014); Nawai and Shariff (2012) in their study observed microfinance institutions that disburse loan in time to borrower helps reduce diversion to non-intended purposes. Johnson and Rogaley (1997) noted that timeliness of loan disbursement is important when such credits are required to deal with seasonal activities such as agriculture. It is argued when suppliers of funds have complicated appraisal and approval procedures, that might delay disbursement and impact repayment pattern resulting in increased risk of defaults. Not only that the same could likely affect
programme of seasonal loans for farmers and accordingly worsen the prospects of repayment.

Likewise, Kimando et al. (2012) reported that microfinance loans need to be released timely after receiving all required loans demands. When granting loans to the client, officers responsible is required to ensure proper financial documentation for security purposes of the loans granted. As such, microfinance managers need to complete all administrative procedures and extend loans timely. On the other hand, Oguntoyinbo (2011); Lagat et al. (2013); Pasha and Negese (2014); and Olomola (1999) were in view that failure of an institution to put in place proper disbursement controls and time frame for loan release would amount to abuse of the credit process. Proper documentation control of loan applicants help microfinance institution define time frame of processing the right amount of funds requested. Also, it enables arrangement of payment to respective borrowers within the shortest possible time. That is, in the long-run it contributes to decreasing the rate of loan defaults and consequently reducing risk of loan portfolio of the microfinance institution.

2.5.3.4 Microfinance training sessions to borrowers
Wongnaa and Awuyno (2013); and Bichanga and Aseyo (2012) in their findings revealed that provision of education and training to microfinance borrowers improved repayment and financial performance of the lending firms. In the same vein, Firafis (2015) suggested that it is important to educate microfinance employees on means of addressing clients with default issues. It can enable timely communication for necessary actions and attract customers on existing microfinance products. At the other hand, provision of training and accurate application procedures to clients makes them informed on legal resolutions against them should they fail to comply with agreed installements. Such efforts may consequently result in improved repayment and enhanced portfolio quality of microfinance companies.

Godquin (2004) advised that capacity building to employees serving at financial entities is imperatives for guaranteeing microfinance performance as well as to the borrowers to repay their loans and hence reduction of portfolio at risk. In the same view, Roslan and Karim (2009) and Mckernan (2002) observed that borrowers
without capacity building concerned their business management skills, experienced higher probability to loan defaults compared to borrowers accessed education and training.

Similarly, Muhoho and Layda (2016) observed that training is among the services provided by the microfinance institution. Their study experienced increased in microfinance repayment behaviour of loan beneficiaries due to training hence reduction of portfolio at risk. Similarly, Ibtissem and Bouri (2013) noted that provision of nonfinancial services such as education and training to microfinance borrowers facilitates not only the economic ability of the borrower to repay, also makes relationship with MFIs more valuable to him; consequently, leading to reduction of portfolio at risk of microfinance institutions and increase in outreach services.

2.5.3.5 Number of borrowers per loan officer
According to Angaine and Waari (2014) and Setargie (2013), lack of sufficient monitoring influences risk of microfinance loan portfolios. Microfinance institutions need to have required ratio of number of loan officers for effective monitoring of borrowers. A close monitoring by loan officers is important for success of micro-lending. Afolabi (2010) argued that it is necessary for managers of microfinance entities to determine manageable ratio of borrowers per loan officer. In so doing, they can provide prompt delivery of services and ensure follow up on repayments. Effective supervision and control by loan committee or credit officers allow them unveil details of borrowers’ financial status. Also, helps in making estimate on outcome regarding borrowers’ loan repayment and advice accordingly to ensure borrowed funds are repaid.

Armendariz and Morduch (2000) added that loan officers play a significant role in successful microfinance operations. They are involved throughout the process of extending loans to clients. This includes identifying borrowers, appraising, loan provision and collection to closing a loan. MFIs are required to ensure credit officers’ role is not underestimated by being overwhelmed with multiple tasks and fail to recruit and monitor loan beneficieries. Nawai and Shariff (2012) found that
frequent visits by loan officers at business premises had a positive and significant effect on repayment performance. Microfinance institutions that consider efficient ratio of borrowers per loan officer can easily make follow up and monitor their repayments. In addition, this helps to provide recommendations to supervisors for necessary actions to be taken for smooth operation lending business.

2.5.3.6 Operational cost per borrower
Kinde (2012) and Anduanbessa (2009) pointed out that microfinance institutions need to be conscious in managing operational cost involved to each borrower of microfinance institution. MFIs hold various costs involved when designing loans products, selling and collection of funds from their clients (Ciborra, 2006). Determination of operations cost per borrower is vital for sustainable operation of the micro lending business. The microfinance management has to be aware that the higher the cost per borrower, the higher would be the operational cost involved in managing respective microfinance clients. The effective management of operational cost in credit delivery enables an institution to achieve set goals of outreach and financial sustainability. Fernando (2008) commented that well operational cost per borrower facilitates reduction of microfinance entity from exposure to non-repayment. Therefore, it is important for microfinance institutions ensure manageable costs of operating the lending services of their institutions.

Gatuhu (2013); Javid and Abrar (n d) posits that the effectiveness of microfinance entities greatly rely on effectiveness of operational costs in credit management practices. High concern on costs is required to ensure that loans are continually being extended to many borrowers. At the same time loan repayments are monitored with the aim of reducing default rates and enhance fiscal sustainability of the microfinance entities. Thus, it follows without saying that microfinance managers have to establish operational costs that ensure credit management department functions in line with established procedures for sustainable credit lending business.
2.5.4 The Effect of Credit Collection Policy on Portfolio performance of MFIs

Microfinance institutions need in place an effective credit collection policy that guides into ways to recover its funds disbursed to its clients as loans. In a situation institutions’ credit policy is considered not attractive to encourage borrowers repay their dues timely. It may results to problem loans and underperformance of firm’s loan portfolios. In this study, there are four variables included in this fourth objective which include: grace period, interest rates, loan duration and loan sizes.

2.5.4.1 Interest rates charged to borrowers

Emran et al. (2006) and Papias and Ganesan (2009) commented microfinance organizations that charges high financing costs are probably going to influence quality of advance portfolio because of expanding default rates; thus, affecting adversely the entire financial performance of MFIs. Though Ayayi and Sene (2010) included that member based microfinance loan specialists demanding higher financing costs are getting huge profits. Beyond which the productivity of microfinance establishment will in general be more awful because of expanding rates of delinquency from their customers. Microfinance needs to know that charging high loan fees beyond a specific edge might be unfavourable for MFIs financial sustainability.

Hooman (2009) revealed that loan cost has the most noteworthy consequences for reimbursement performance. Similarly, Ledgerwood (2013) recommended that microfinance entities need to be keen about advancing price of its goods because it is a significant part of credit loan products design. It’s agreed that the balance must be settled to both side on which customers can afford and microfinance institutions earn profits. Microfinance institution has to ensure it covers all costs involved in lending in order to operate sustainably. Most microfinance clients are not interest-rate sensitive, hence charging interest rate above commercial bank rates may be acceptable. However, microfinance companies must ensure its operations are as efficient as possible through high monitoring and followups to clients to ensure high repayments and healthy financial performance.
Nyamsogoro (2010) and Kar and Swain (2014) argued that microfinance bank should increase their interest rates to the customers who have got high risk of defaults. Business with high threat of achievement should attract higher financing costs. However, microfinance foundations should take note that by acquainting higher financing costs with borrowers may bring about credit defaults and effect advance portfolio performance. McKernan (2002) shared the same view with Swain and Varghese (2013) that high financing costs charged by most microfinance organizations using a credit card offices altogether add to advance default. It was contended that regardless of whether microfinance organizations may have effective appraisal and assessment strategies of their advance candidates; expanded financing costs charged to borrowers may prompt default in installment and high rate of portfolio in risk. Tundui and Tundui (2013) demonstrated that loan fees charged to borrowers did not influence reimbursement performance of microfinance entities. This study therefore sought to decide the impact of financing costs on portfolio execution of microfinance entities in Tanzania.

2.5.4.2 Loan duration of borrowers

Lidgerwood (2009) considered loan duration as the time during which the whole advance must be reimbursed. It is contended that credit term as planned by microfinance institution can incredibly influence reimbursement plan, salary to the MFI, financing costs and the degree and utilization of advance by particular customers. Roslan and MohdZaini (2009) included that microfinance borrower who lean towards longer period to finish advance reimbursement demonstrates pledge to reimburse the advance. That may add to improved financial performance and decreased risk of gross credit portfolio.

On the other hand, Nyamsogoro (2010) pointed out that loan term of borrowers is affected by the lending approach used by microfinance institution. Borrowers who take longer duration to complete loan repayments indicate commitment with the lender hence reduced portfolio at risk of microfinance institution. However, findings by Roslan and Karim (2009); Onyeagocha et al. (2012) and Shu-Teng et al. (2015) were in view that expansion of advance span to borrowers is adversely related to
microfinance money related execution. In this way, lenders should devise proper institutional instruments expected to decrease risk of advance default and organisational underperformance.

2.5.4.3 Grace period of loans
The use of microfinance entities grace period to borrowers is perceived to impact reimbursement behaviour of the borrowers. Barboni (2012) confined grace period as a strategy of empowering standard credit reimbursement and collection procedure to have been practiced in two situations. Firstly, includes a circumstance where particular microfinance organization gives a borrower specific number of days before making regular credit reimbursement until completion of his advance amount. All things considered, there is no punishment for late installment after the given date of expiry. Furthermore, the act of grace period includes circumstance where a microfinance institution gives a borrower a timeframe where a financing cost isn't charged on another advance advertised. Abreham (2002) included the provision of grace period to microfinance borrowers impact postively reimbursement execution, and decrease of risk of microfinance advance portfolio. Essentially, entities which give time repayment of loans to their customers improve borrowers’ enterprise capacity and pull in different venture choices of their business. In addition, microfinance institutions that relax repayment frequency lead to reduction in transaction costs including decrease in degree of social interactions between group members.

Field et al. (2011) observed that grace period is vital for enhancing fiscal performance of the microfinance entities as well as reducing borrowers default’s rates. The results are similar to those by Pande et al. (2010) who delineated that microfinance borrowers who benefited through grace period were highly motivated to engage in small business activities contrary to those amid of a grace period.

2.5.4.4 Loan size to borrowers
Shariff (2013) using multinomial logit model revealed microfinance loan size to borrowers influence financial performance of microfinance institution. The study also added that loan size to debtors can be planned in small, medium or large sizes.
Most Commercial Banks prefer bigger loans than other loan categories. Crabb and Keller (2006) and Pischke (1991) opined that efficient loan size that fits ability of borrower to repay stimulates client’s enterprise performance. Portfolio at risk of gross loan portfolio is likely to be lowered if borrowers access loan size that can manage repayments without being coerced.

Nyamsogoro (2010) posits profitability of microfinance loaning business is related with bigger normal advance sizes offered to their customers. This observation was in line with Adongo and Stork (2006) that financial performance of microfinance institution is related to selling bigger loans to their customers. However, Cull et al. (2007) contended microfinance organizations that give littler advances accumulate higher benefits than bigger loan size. The finding indicates that majority of clients are in favour of small loan size for meeting their small business development. Likewise, Berhanu (2005) and Feroze et al. (2011) had opposing perception and contended that advance size of microfinance entities does not impact microfinance financial achievement. These empirical studies are in view that there are other various determinants which influence microfinance portfolio performance; consequently, the need for additional understanding in the existing gap among microfinance practitioners on main factors influencing quality of loan portfolio in microfinance operation in Tanzania.

2.5.5 Control Variables of this study
Control variables in this study were included to reduce the risk of attributing explanatory power to independent variable, that are not in fact responsible for the variation found in the dependent variable. As such the study intended to ensure that there was non-spurious relationship exist among the study variables of interests (Milanzi, 2008; Hair, 2010). The control variables involved in this study were MFI age, MFI size, Owner-manager experiences and Owner-manager academic qualifications.
According to Heentigala (2011) Owner-manager academic qualification contributes to overall performance of MFIs. It plays a significant role in management decision making including understanding of environment in which the institution operates. Owner-manager as operational leader having entrepreneurial skills and education are said to influence the entire staff towards financial and social performance. However, studies by Pascal and Mersland (2012); and Bennan (2006) argued that firm performance was not influenced by the difference of education between firm managed by CEO with MBA qualification and those institutions run by CEOs without graduate degree. Similarly, Soriano and Castrogiovanni (2012) posit that managers with education in business hardly impact on firm performance but rather education on general knowledge and experience one has acquired influence institutional performance.

Moreover, experience of Owner-managers in MFIs has been reported to positively influence MFIs performance. Waithaka et al. (2003) observed that work experience acquired by MFIs manager improve institutional microfinance performance. The experience gained from other companies or their own helps managers handle a variety of situations and opportunities which positively impact firms’ performance. Stanley (2011); Elsaid et al. (2011) adds that manager with business experience has generally better financial performance than otherwise. Therefore, microfinance institutions led by managers with little or no experience are likely to be reluctant to implement or catch up new approaches that could result in financial performance of the lending organisation.

The size of microfinance institution has been considered to significantly influence loan portfolio performance. According to Cull et al. (2007), MFIs economies or diseconomies of scale influence organisational performance. Muriu (2011) revealed that most MFIs that maintain profitable operations are due to increased strength of economies of scale. It is argued that bigger entities posses a wide opportunity to accessibility to mainly imperative ingredients of production such as technological resources including cheaper sources of funding. Coleman (2007) adds that size of microfinance institutions reflects ability to engage in various procedures and
structures which are crucial to enable sustainable credit services to their clients that ensures healthy financial performance. However, a study by Ramasamy et al. (2005) reported that firm size was negatively related to loan portfolio and general organisational performance. Consequently, the need for this study considers microfinance size as control variable in the model analysis of this study.

Moreover, age of the MFIs plays an important role on firm’s performance. Coad et al. (2011) observed experience possessed by the firm in its operations can enhance organisational performance. Tehulu (2013) noted that as an organisation continues with its operation, the extent of innovativeness increases leading to advanced production to meet customer demands. Similarly, firm age and performance can also be justified through learning by doing effects concept. As the institution assumes more years in operation, new entrepreneurial skills are acquired in handling challenges facing the organisation. This results in improved efficiency, revenues and increased level of firm assets. Kipesha (2013) and Ejigu (2009) in their study observed similar findings on the influence of MFIs age and financial performance. Therefore, in MFIs business operations, an increase in age means that borrowers get more stability and experience in their interaction with the lenders leading to high loan repayment and sustainable financial service delivery.

2.6 Knowledge Gap

From the existing literature, it is clear that credit risk management is important for sustainable microcredit services specifically to poor households and disadvantaged individuals. Effective credit risk management is yet a challenge to most MFIs. Various reviewed studies have revealed different strategies to improve repayment and reduce portfolio at risk of microfinance entities Shu-Teng et al (2015); Swain, (2014). However, the problem of ineffective credit risk management still persists leading to high portfolio at risk leading to underperformance, inefficiency and unsustainability of the microfinance institutions.
Similarly, the reviewed literature has not clearly informed on what determines loan portfolio performance of the microfinance institutions in Tanzania, despite sharing the need for lending services to low-income earners and disadvantaged groups in the community for enhanced socio-economic development.

The gap is explanation of why some MFIs are said to be effective in credit risk management and perform reasonably better in loan portfolio management compared to others. Consequently, there is need to unveil factors for high risk on loan portfolio of MFIs operating in Tanzania. Specifically, which practices are relevant for and can effectively work in managing credit risk and gross loan portfolio of non-member-based MFIs in Tanzania? Therefore, this study sought to bridge this existing knowledge gap by examining the credit risk management practices on portfolio performance of microfinance institutions in Tanzania.

2.7 Conceptual Framework

2.7.1 Credit Risk Management Practices on Portfolio at risk of MFIs in Tanzania

Conceptual framework shows interactions between different groups or individuals or issues in a manner that reveals additional evidences of an inquiry which is subject to change as required (Linda, 1999). The conceptual framework shown in Figure 2.1 was used to ascertain the research variables. There were twenty (20) independent variables that were considered in this study. The center of attention for this study was on four important areas; these include: social economic characteristics of clients, credit application appraisal, credit supervision practices and credit collection policy. The development of this conceptual framework was a result of review of various studies. The reviewed areas were on credit risk management of MFIs together with two theoretical perspectives, which were - asymmetric information and the transaction cost theory.
In this study, two types of variables were considered, the independent variables and the dependent variable. On the part of independent variables, there were four main factors each with respective variables. These were:


2. Credit application appraisal – borrower business income, collateral requirement of borrowers, capital of borrowers and membership duration of borrowers.

3. Credit supervision practices - MFI training sessions, timeliness of loan release, operational cost per borrower, number of borrowers per loan officer, follow up periods and convenience of repayment period.

4. Credit collection policy - loan duration, interest rate charged, grace period of loans and loan sizes.

The mentioned variables are hypothesised to influence portfolio at risk of microfinance entities (as dependent variable). The dependent variable was assessed as average rate of portfolio at risk of outstanding loan portfolio of MFIs. Therefore, portfolio performance of microfinance institution is an outcome of the effects of independent variable; that is credit risk management practices as denoted from the conceptual framework.
Figure 2.1 Credit Risk Management Practices on Portfolio at risk of MFIs

**Source:** Theory of asymmetric information, transaction costs theory and reviewed literatures

**2.8 Review of the hypothesis tested**

Basing on the developed model of microfinance portfolio at risk; this study came up with a number of research hypotheses that were supported by theories related to the study and reviewed researches. The theories applied in this study were the transaction cost theory and the asymmetric information theory. The use of these theories together with an understanding gained from various literatures made it possible the establishment of these research hypotheses. The hypotheses formulated reflect all variables constituted in each of the four factors of this study. These factors are socio-economic factors, credit application appraisal, credit supervision practices and credit assortment policy factors on portfolio at risk of microfinance entities.
2.8.1 Hypothesis related to socio-economic factors

In this study, the socio-economic factors are those factors related to individual client who accesses loan from microfinance institution. The variables of concern were age of borrower, sex of borrower, marital status, education, family size and business experience of borrowers. Many researchers have identified characteristics of borrowers to have influence on loan defaults and portfolio at risk of microfinance institutions (Tundui & Tundui, 2013; Mokhtar et al., 2012). Therefore, following this proposition, this study formulated hypotheses in order to establish kind of relationship between each of identified independent variables and portfolio at risk as dependent variable of this study.

2.8.1.1 Age of borrowers

Reviewed literature has documented that age of borrower influences financial performance of microfinance institution. Studies by Pasha and Negese (2014); Abebe (2012) suggested that an increase in age of microfinance borrower positively and significantly influences financial microfinance performance. This means that older borrowers are more responsible and disciplined in repaying their loans than younger borrowers leading to improved loan portfolio of microfinance institution. However, Baiyegunhi et al. (2010); Serve, et al. (2012) had inconsistent observations regarding the same variable. Therefore, this study hypothesised that:

\[ H1.1: \text{Age of borrowers of microfinance institution significantly influences portfolio performance of MFIs.} \]

2.8.1.2 Sex of borrower

Past studies done in Africa have revealed contradicting results about existing relationship between sex of borrower and portfolio microfinance performance. Some studies found male microfinance borrower reduced portfolio at risk of microfinance performance. Bhatt and Tang (2002); Amare and Bekabil (2008) observed that male borrower negatively influences microfinance portfolio performance. This means that male clients had been repaying their loans timely resulting in reduced portfolio at risk. However, a study by Proscovia (2003); Magali (2013) and Armendáriz and Morduch (2010) concluded that Women showed high level of return as well as
savings rate compared to male. Similarly, it was recorded that it is riskier to offer loans to men than women in the SACCOs’ operating in rural of Tanzania because women were negatively associated to portfolio at risk of MFIs. Therefore, this study aimed to test whether sex has any significant influence on portfolio at risk of microfinance performance by hypothesising that:

\[ H1. 2: \text{Proportion of sex of microfinance institution borrowers significantly influences portfolio performance of microfinance institutions.} \]

2.8.1.3 Marital status of borrower

Many studies have contradicting results regarding existing relationship between marital status of borrower and portfolio at risk of microfinance performance. Muturi (2016); Angaine and Waari (2014) observed married microfinance borrowers were negatively associated with repayment problems. However, studies by Brehanu and Fufa (2008); Folefack and Teguia (2016) reported contradictory findings that microfinance institutions extending credits to married borrowers experienced problems in loan repayment and high portfolio at risk. The problems in repayment experienced to married microfinance borrowers were because married clients had many dependants coupled with social obligations and commitments. Hence, this study hypothesised that:

\[ H1. 3: \text{Proportion of marital status of microfinance institution borrowers significantly influences portfolio performance of microfinance institutions.} \]

2.8.1.4 Family size of borrower

Many studies have related family size of borrower and ability to manage repayment obligation of the borrowed amount from microfinance institution. There have been varied observations regarding the effect of family size of borrower on portfolio performance. Abede (2012) and Al-Azzam (2012) noted larger family size indicates availability of free family-labour to fully utilise microcredit loans. This reduces cost of running micro-enterprise and enhances family repayment capacity including microfinance profitability. On the other hand, Okurut (2006); Muthoni (2016); and Pasha and Negese (2014) noted that huge household and families enlarge family
expenses financed by loans provided by microfinance entities; consequently, reducing loan repayment and increased portfolio at risk of microfinance institutions.

**H1. 4: Average family size of borrowers of microfinance institution significantly influences portfolio performance of microfinance institutions.**

### 2.8.1.5 Borrower business experience

Most of reviewed literature revealed that business experience of borrower helps to reduce repayment problems. A study by Magali (2013); Tundui and Tundui (2013) noted that increased years in business experience reduces loan defaults. The acquired skills by the borrower over time helps manipulate their business environment for increased profit and manage repayments. Similarly, Addo and Twum (2013) reported substantial business experience of microfinance borrower improves business profit and capital base. It also makes borrower manage regular loan repayments and reduce portfolio at risk of the lending institution. Therefore, it was logical to hypothesise that;

**H1. 5: Business experience of borrowers of microfinance institution significantly influences portfolio performance of microfinance institutions.**

### 2.8.1.6 Education level of borrower

The education level of microfinance borrower has been documented to negatively influence microfinance portfolio performance. According to Al-Azzam *et al.* (2012); Clamara *et al.* (2014); Kacem and Zouari (2013) educated borrowers usually have higher repayment rates which improve microfinance financial sustainability. Similarly, Blanco-Oliver *et al.* (2016) noted that increase in years of schooling increases probability of loan repayment rate and reduction of portfolio at risk of microfinance institution. Chaudhary and Ishfaq (2003) in their studies revealed educated borrowers can manage business well, proven with ability in accessing and process information. This helps controlling various risks and become negatively associated with loan repayment problems.
H1. 6: Proportion of education level of microfinance institution borrowers significantly influences portfolio performance of microfinance institutions

2.8.2 Hypothesis related to credit application appraisal

Credit application appraisal procedure is the heart in microfinance business. It requires microfinance institution to access relevant and important information regarding their clients before decision of granting credit is done. Microfinance institutions have been a means towards poverty remedying by engaging in informal economies. The engagement has enhanced livelihood, mobilisation of micro-saving and facilitating empowerment of women in the society. In this study, the variables involved in credit application appraisal were; borrower business income, collateral requirement, capital of borrower and membership duration of client.

2.8.2.1 Collateral requirement

Reviewed studies pointed out that lenders require security from their clients to ensure repayment of the borrowed amount. Kiplimo and Kalio (2014) and Kalui and Gatimu (2014) indicates microfinance institutions provide credit services via physical collateral, social collateral and relationship lending approaches. Studies by Maata (2004); Babu and Singh (2007) and Githinji (2009) showed existence of collaterals in extending credit to microfinance borrowers influences positively financial sustainability. Also, they enable continued microfinance service delivery to low-income households. In this end, it was hypothesised that;

H1. 1: Proportion of collateral requirements of microfinance borrowers significantly influences portfolio at risk of microfinance institutions.

2.8.2.2 Borrower business income

Surveyed literature revealed that borrower business income is vital determinant for portfolio at risk of microfinance performance. A study by Abreham (2002); Baiyegunhi et al. (2010); Okorie (1986) showed borrowers’ business income influenced negatively portfolio at risk of the microfinance institution. In the same vein, Setargie (2013); Magali (2013) affirmed that type of business activity engaged by borrowers greatly determines frequency of loan repayment. Microfinance clients
who engaged in non-agricultural businesses had higher income to enable regular credit servicing than those in agricultural activities. Consequently, it leads to reduced portfolio at risk of MFIs.

H1. 2: Average business income of microfinance borrower significantly influences portfolio at risk of microfinance institution.

2.8.2.3 Capital of borrower
Capital of borrower of microfinance institution has been reported to influence portfolio at risk of microfinance institution. Studies by Clamara et al. (2014); Okurut (2006); Moti et al. (2012) noted the influence of capital of borrower on microfinance financial performance. This observation was in line with Ikumbi (2011) who found that capital of borrower positively influences loan repayment performance. However, Folefack and Teguia (2016) had different conclusion that capital of borrowers insignificantly influences portfolio performance of MFIs. Therefore, this study hypothesises that:

H1. 3: Average capital of microfinance borrower significantly influences portfolio at risk of microfinance institution.

2.8.2.4 Membership duration of borrower
Ogeisia et al. (2014) pointed out that management of microfinance institution needs to clearly record the lapse of times loan applicant has accessed credit and repaid as required. Borrowers’ duration with the microfinance company significantly influences loan repayment and portfolio at risk. Moreover, Hietalahti and Linden (2006) added that borrowers who have been in contact with the microfinance institution over a long period of time, have developed trust with the lenders, build strong attachment and feel a sense of ownership. This behaviour results in enhanced loan repayment, reduced problem loans and healthier portfolio at risk of the microfinance entity. Therefore, this study hypothesised that;

H1. 4: Membership duration of microfinance borrowers significantly influences portfolio at risk of microfinance institutions.
2.8.3 Hypothesis related to credit supervision practices

Microfinance institutions need effective credit supervision practices to efficiently manage customer credit lines. Credit supervision helps minimize institutions’ exposure to bad debt and strengthen growth of outreach services. MFIs credit supervision starts from the sale of loan products and does not stop until the final repayment has been received. Credit supervision variables involved in this study include: borrowers per loan officer, training practices, timeliness in loan release, operational cost per borrower, follow up measures and repayment period.

2.8.3.1 Borrowers per loan officer

Past studies have shown contradicting results regarding the effect of borrowers per loan officer on portfolio at risk of microfinance institution. Field and Pande (2008) found that increasing number of borrowers per loan officer had no effect on portfolio at risk of microfinance institutions. Similarly, Pal and Mitra (2017); Magali (2013); as well as Angaine and Waari (2014) revealed number of borrowers to a loan officer positively associated to repayment problems and upstretched portfolio at risk of MFIs. Hence, the hypothesis that;

\[ H1.1: \text{Number of borrowers per loan officer of microfinance institutions and portfolio at risk of microfinance institution are significantly related.} \]

2.8.3.2 Microfinance training practices to borrowers

Reviewed literature has indicated that training affords microcredit clients a better understanding of their opportunities and how they can be managed. It helps them understand pricing of their products including marketing skills. Pasha and Negese (2014); Abebe (2012); Bichanga and Aseyo (2012) observed that training given by microfinance institution improved repayments and portfolio at risk of microfinance institutions.

Following this observation, this study tested the relationship between training practices of MFIs and portfolio at risk, by hypothesising that;
H1. 2: Training sessions of microfinance institutions and portfolio at risk of microfinance institutions are significantly related.

2.8.3.3 Timeliness of loan release
Timely processing and disbursing of credit to clients enables them utilise funds to intended investments and manage repayments. Pasha and Negese (2014); Nawai and Shariff (2012) as well as Abebe (2012) reported that timely disbursement of loan is a significant predictor of borrowers’ loan repayment performance. Thus, it was logical to hypothesise that;

H1. 3: Timely loan release of microfinance institutions and portfolio at risk of microfinance institutions are significantly related.

2.8.3.4 Follow up measures
Effective follow up measures to microfinance borrowers improves financial performance of microfinance institution. Studies by Proscovia (2003); Crabb and Keller (2006); and Korankye (2014) argue that frequent visiting of borrowers’ business premises improves repayment behaviour and portfolio at risk of the microfinance institution. However, Udoh (2008) recorded that frequent visits by supervisors to microfinance borrowers had insignificant influence on portfolio at risk of microfinance institutions.

H1. 4: Follow up period measures of microfinance institutions and portfolio at risk of microfinance institutions are significantly related.

2.8.3.5 Operational cost per borrower
Studies by Bichanga and Asey (2013); Kinde (2012); as well as Anduanbessa (2009) revealed negative relationship between operational cost per borrower and portfolio at risk of microfinance companies. The costs per borrower undertaken by MFIs entails extent to which supervision to borrowers is undertaken to ensure low default rates. Following this reservation, this study therefore hypothesised that;
H1. 5: *Operational cost per borrower of microfinance institutions and portfolio at risk of microfinance institutions are significantly related.*

2.8.3.6 Repayment period
Convenient repayment period encourages customers to make regular loan repayment to microfinance companies. Studies by Abafita (2003); and Armendariz and Murduch (2000) found that frequency of repayment period significantly influences borrowers’ loan repayment rate. On the other hand, these research findings contradicted with study by Kodongo and Kendi (2013); as well as Nyamsogoro (2010) which showed that repayment period of borrowers do not influence delinquency and portfolio at risk of the lending institutes. Similarly, Saloner (2007) observed that weekly loan repayment schedule posed problems for borrowers who generated lower revenue cycles to enable reduction of portfolio at risk.

H1. 6: *Microfinance institutions repayment periods and portfolio at risk of microfinance institutions are significantly related.*

2.8.4 Hypothesis related to Credit collection policy
The effect of credit collection policy on portfolio at risk of microfinance entities is well explained in transaction costs theory. According to Coase (1960) it is necessary for one party in business to be aware of the cost involved in transaction between them to ensure continued business operation. Therefore, microfinance companies need to establish policies that enhance repayment of credit from their clients. The following hypotheses are related to variables in this study objective.

2.8.4.1 Interest rates of MFIs
Microfinance institutions charge interest rate on loans extended to customers. The pricing of loan products is guided by various factors including ability of borrowers to manage regular repayment of the principal and interest rates. Studies by Papias and Ganesan (2009); Kodongo and Kendi (2013); and Kar and Swain (2014) pointed out that interest rates variable influences microfinance loan delinquency and financial performance of MFIs. However, these findings were inconsistent with the research by Tundui and Tundui (2013) who noted interest rates charged by MFIs had
insignificant influence on client’s financial performance. Therefore, the hypothesis related to this variable was:

\[ H1. 1: \text{Microfinance institutions interest rates charged and portfolio performance are significantly related.} \]

2.8.4.2 Loan size of MFI

Previous researches have pointed out that size of loan given to microfinance applicant’s influences financial performance of the company. Kodongo and Kendi (2013) showed that loan size offered by microfinance company influence positively loan repayments. The findings further revealed that big loan size enabled clients meet their investment demands. However, the findings by Wangechi (2004); and Berhanu (2005) reported loan size bears no influence to effective repayment rates, rather supervision by credit officers contributed to financial performance of MFIs. This study therefore hypothesised that.

\[ H1. 2: \text{Microfinance institutions loan sizes offered and portfolio performance are significantly related.} \]

2.8.4.3 Grace period of loans

A study by Abreham (2002) found that provision of grace period of loans to microfinance loan applicants contributed to high loan repayment. Increasing loan repayment is an indication of lending institutes’ ability of managing default rates and improved portfolio at risk. Tucker (2001) reported similar findings where microfinance institutions that provided grace period on loans to their customers experienced reduced portfolio at risk of their microfinance institutions.

\[ H1. 3: \text{Microfinance institutions grace period of loans and portfolio performance are significantly related.} \]

2.8.4.4 Loan duration of MFIs

Surveyed literature revealed that loan duration of MFIs influenced financial performance and sustainability of the lending institutions. Okorie (1986) confirmed that microfinance loan duration relates to improved financial performance of the
lending institute. The findings further added that longer loan duration was associated with big loan size offered from the MFIs. This enabled borrower to effectively make investment and manage repayments. On the other hand, studies by Roslan and Karim (2009); Onyeagocha et al. (2012) were in view that longer loan duration made borrowers fail to manage regular repayments due to diversion of loan to unintended purpose including committing the funds into social contingencies. It is therefore hypothesised that;

**H1. 4: Microfinance institutions loan duration and portfolio performance are significantly related.**

### 2.9 Model Specification of the Study

This study used multiple linear regression model in the analysis of its objectives. The decision to use this model from the pot of multiple regression techniques was due to the advantages embedded in this statistical technique in relation to the present study. The linear regression model helps to determine the relationship between a dependent variable and two or more predictor variables (Hair et al., 2010). In this study, the dependent variable was portfolio performance of microfinance institutions as measured by portfolio at risk. Whereas the main independent variable was credit risk management practices which include social economic variables, credit application appraisal variables, credit supervision variables and credit collection variables.

Ndunguru (2007) adds that multiple linear regression analysis techniques facilitate the use of independent variables whose values are already known to determine the single dependent value selected by the researcher. In this technique, every independent variable is weighted by the regression analysis procedure in order to ensure maximum prediction from the set of independent variables (Ibid). Similarly, multiple linear regression analysis is a dependence technique, in order to use it and yield desired outcome, one must be able to divide the variables into dependent and independent variables. More importantly, both variables should be in metric kind of measurement.
Tabachnik and Fidell (2013) and Hair et al. (2010) point out that in order to apply the model and establish validity inferences and generalisations about the theory, several critical assumptions must be satisfied. The main assumptions include linearity, independence of errors, homoscedasticity, collinearity and normality.

2.9.1 The multiple linear regression model

The multiple linear regression model can be expressed in the equation as follows:

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots + \beta_k X_k + \varepsilon \]

Where:

- \( Y \) = Dependent variable (Portfolio Performance as measured by Portfolio at risk)
- \( \beta_0 \) = Constant
- \( \beta_i \) = Regression coefficient
- \( X_i \) = Value of the predictor variable
- \( \varepsilon \) = Error term

Therefore, with respect to this study, the description of the variable is such that the dependent variable was portfolio performance of MFIs (measured in rate of portfolio at risk); and the predictor variables were as follows: The variables related to objective one i.e. social economic variables includes age of borrower (AGE), sex of borrower (SEB), education of borrower (EDU), marital status of borrower (MSB), business experience of borrower (BEX) and family size of borrower (FZB). The second objective of the study was on credit application appraisal, which involved the variables - borrower business income (BBI), collateral requirement of borrower (COR), capital of borrowers (CAB) and membership duration (MED).

The third objective of the study was on credit supervision practices, the respective variables related include - number of borrowers per loan officer (BLO), operational cost per borrower (OPC), training given to borrowers (TRG), timeliness of loan release (TML), follow up period measures (FLP) and convenience in repayment period (CRP). Finally, the fourth objective of the study was on credit collection policy. The variables of concern were loan duration (LOD), interest rates (ITR), grace period of the loan (GRP) and loan size (LOS).
Therefore, this study dealt with four objectives with their respective variables as clarified above. The study was carried out in the regions of Dar es Salaam, Morogoro and Dodoma in Tanzania. Multiple linear regression model was used to analyse the data for the study, and establish relationship between the response variable and predictor variables. The section that follows provide methodological approach undertaken in carrying out this study to enable generalisation of findings.
CHAPTER THREE
RESEARCH METHODOLOGY

3.0 Chapter Overview
This section discusses the methodology adopted by this study, it equally points out the reasons for choosing particular research design. Similarly, it describes the study areas, population and sampling techniques including clarifications on variable measurements. The types and data collection methods are also presented, including the model employed in analysis of the data collected for this study.

3.1 Research Design
This research involved cross-sectional research design because it enables the deployment of appropriates number of subjects, not geographically bound in finding relationships between variables at one moment in time. The respondents for study were randomly selected providing equal chance to all members from sampling frame rather than employing purposive sampling. Being a cross-sectional study, it was possible to collect large amount of data in order to complete the requirement of this study (Milanzi, 2008).

The deployment of cross-sectional design facilitated the use of both qualitative and quantitative approaches to data collection, although quantitative was the main approach of this study. The main reason of making quantitative technique dominant was that the research tested causal relationship of the related predictor variables. These main variables were socio-economic, credit application appraisal, credit supervision and credit collection policy on portfolio at risk of microfinance institution as portrayed in the conceptual framework (Saunders et al., 2009). Davis (2000) added that quantitative techniques can measure specific characteristics through structured data collection procedures. It also involved large representative sample so that results can be projected to the entire population. Consequently, a survey was undertaken to non-member-based microfinance institutions from different geographical areas for data collection and analysis procedures.
In addition of quantitative study, this research involved an understanding of holistic picture regarding the specific problems under investigation through key informants’ interviews. The face to face discussion with individual respondents facilitated combination of data collection techniques that helped to compliment limitations by one technique, to allow cross checking and verification (triangulation). Therefore, the use of this design when intermixed with appropriate regression analysis model can produce reliable results for generalisation. Besides, cross-sectional studies are both cost and time effective and provide outcomes associated at specific point in time (Brannen, 2005; Mapesa, 2012; Creswell, 2014).

3.1.1 Qualitative approaches in quantitative findings
This study involved integration of qualitative methods into quantitative approach of data collection and procedures. Consequently, a mixed research approach was used when collecting required information and analysis of data in order to produce results for the study. The use of mixed research approach that allows combination of quantitative and qualitative approaches helped to utilise the strength of each technique in the study. There is more insight to be gained from engaging both approaches in a study than relying on either form on itself. Together with widening an understanding of the findings to the research problem as both modes of inquiry are used in a study (Creswell, 2009).

Figure 3.1 Qualitative approach in quantitative findings

Source: Reviewed literature
3.2 Description of the study areas

This study was carried out in three regions of Dar es Salaam, Morogoro and Dodoma in Tanzania. The studied regions lie between 5° to 9° latitudes South and 35° to 39° longitudes East. Dar es Salaam region is the largest commercial city and good natural harbor. The region favours small, medium and large business activities, fueled by efficient transport and communication infrastructure existing in the region. Morogoro region is the commercial and transportation center. The region also favours agricultural activities especially crop cultivation such as sisal, tobacco, coffee, maize, rice and livestock production. The region has tropical weather, having the Mikumi National Park which attracts tourists in the area. Dodoma region is the Capital City and is centrally positioned in Tanzania. The region favours agricultural and business activities. Crops grown in the area include grains, wine, beans to mention a few and livestock production especially cattle keeping. Business activities are on rapid increase in Dodoma region. The famous international grain market at Kibaigwa attracts various people to engage in business activities in the region. Infrastructures are rapidly developing, where roads and railways are being constructed to connect Dodoma City and other regions of Tanzania.

3.2.1 Districts involved in the study

In order to ensure effective representation of the highlighted study areas in each region; Districts were selected in which the study was undertaken. From Dar es Salaam region three Districts were identified which were Kinondoni, Ilala and Temeke. In Morogoro region, Morogoro Urban District was selected while in Dodoma region, Dodoma Urban District was involved in the study.

The spread of microfinance institutions is throughout the regions and districts of Tanzania, although differs in extent of concentration (MIT, 2014; TAMFI, 2014). The selection of the mentioned study areas was guided by Finscope (2013) and Kessy (2010) among others, which prompted for the need to have a study that would focus in the mentioned areas. Wilson (2002) commented that it is illogical to identify areas for conducting research using simple random technique. As such, the researcher should have enough and relevant information which necessitate and guide selection process of the areas in which a particular study would be conducted.
Figure 3.2: A Map of Tanzania indicating all regions including Dar es Salaam, Morogoro and Dodoma

3.2.2 Justification of the study areas

Dar es Salaam region

The selection of Dar es Salaam region was due to its strategic position as a commercial center with major economic activities like manufacturing, trade, education and training, transportation, construction and financial services center.
Presence of these activities attracted many people and made the region most highly populated area in Tanzania. Similarly, Dar es Salaam was found to have higher number of microfinance institutions than other regions in Tanzania. Finscope (2013) revealed that Dar es Salaam had 53.8% of the population that used and benefits from the services of non-bank formal financial institutions. This contributed to inclusion of Dar es Salaam region to be one of study areas for data collection.

**Dodoma region**

Dodoma is the central region and Capital City of Tanzania, with a mix of economic sectors. The sectors are crop cultivation, retail business, handcraft production, processing/manufacturing industry and livestock keeping (Kessy et al., 2011). The region was engaged as one of the study areas in order to assess capacity of the existing microfinance institutions in the region to provide financial support to microfinance clients (low income individuals). Also, determine the extent to which existing microfinance institutions manage credit risk and ensure portfolio performance. Finscope (2013) noted that 41.3% of the adult population were found engaged in various small business and other non-formal activities through credits from microfinance institutions. Thus, the region was included for assessing the extent to which microfinance borrowers influence loan portfolio performance of the microfinance institutions.

**Morogoro region**

Morogoro was equally involved in this study because it was found to have relatively high number of microfinance institutions in Tanzania (TAMFI, 2014). Apart from that the region has attracted majority from various regions due to its suitable climatic conditions that favour agricultural activities, including small and medium business opportunities. Besides, Finscope (2013) identified this region to constitute 46.5% of the adult population that access financial services from non-bank formal institutions including non-member-based microfinance institutions. In this regard, the region was made one of the study zones to allow for assessment of MFIs services to low-income households. Moreover, establish the effect of credit risk management practices on
sustainable portfolio financial operation of microfinance sector in the region and country at large.

3.3 Study Population
This study focused on non-member-based microfinance institutions specifically Financial NGOs and Microcredit Companies. These are one of the categories of non-bank formal financial institutions in Tanzania. The overall population of this study involved all microfinance institutions (Financial NGOs and Microcredit companies) that existed in Tanzania mainland. The comprehensive population of the identified microfinance foundations was created by joining informational index from the Bank of Tanzania (BoT - Microfinance segment, 2010); the Ministry of Industry and Trade (MIT) through the microfinance permitting division (2014); Tanzania Association of Microfinance Institutions (TAMFI) (2015); SELF Microfinance Fund (2015) and Finscope, (2013). The database gave data with respect to the enrollment, activity and their effort administrations. In this regard, the sampling frame constituted a total of 872 microfinance institutions having characteristics as required for effective representation. The database also enabled the researcher identify number of non-member based microfinance entities available to most regions of mainland Tanzania.

However, due to time and financial consideration, it was impossible for the survey to be carried out in all regions of mainland Tanzania. Instead, the survey was carried out within five districts located in three different regions. The five districts in which the survey was conducted with their respective regions include: Temeke, Kinondoni and Ilala districts in Dar es Salaam region; Morogoro Urban district in Morogoro region and Dodoma Urban district in Dodoma region. According to Cooper and Schindler (2014) identified target population need to be accessible, related to the study topic, available within given timeframe and contain desired information that can answer the study questions. Therefore, identified microfinance institutions of the target population for this study were found to have experience in microloans services delivery and therefore appropriate for being engaged in the study.
3.3.1 Unit of Analysis
This study has considered non-member based microfinance institutions as the unity of analysis. These institutions are responsible to ensure that their loan portfolios are financially capable of continually extending microloan services to their customers. It is therefore the responsibility of respective microfinance institution to ensure that credit risk management framework is in place for effective loan portfolio performance. The microfinance institutions need to be informed on procedures of identifying needy clients, appraising, supervising and ensure borrowed amount is repaid timely for sustainable operation of their institutions. Therefore, this study identified non-member-based microfinance institutions as study respondents that were supplied with questionnaire tools. They also provided data set information about their borrowers and general credit risk analysis to ensure quality portfolio microfinance performance (Pascal, 2012). In addition, Kumar (2011) pointed out the need to identify unit of analysis well in advance before the actual survey procedures. It helps ensure the instrument for data collection captures all information of the variables under study. Similarly, it facilitates to provide direction in variable measurement procedures and for drawing appropriate sample size of the study; finally, to center the study into specific category of individuals as source of data collection unit for effective data analysis and generalisation of the findings (Creswell, 2012).

3.3.2 Sample size determination
There are various procedures regarding the relevant approach needed to determine the accurate sample size required in the study. Silverman (2011) observed that 15 subjects per forecaster is appropriate in social science research in order to generate reliable equation. Hair et al. (2006) suggest that a guiding rule in estimating the sample size in quantitative studies is to consider the ratio of explanatory variables to observations. The minimum ratio of observations to variables should be 5:1 but preferably 15 to 20 observations for each independent variable for econometric analyses. Furthermore, Tabachnik and Fidell (2013) reported a formula for calculating a sample size requirement, considering the number of independent variables that one wishes to use: 

\[ N > 50 + 8m \] 

(where \( m \) = number of independent variables).
variables). On the other hand, Aaker et al. (2001) suggested that a sample size of above 200 can be reliable to the study and capable to facilitate undertaking advanced statistical analysis.

In view of the techniques for sample size determination above, this study involved 20 predictor variables in all four objectives. This study opted for a sample size determination formula as suggested by Tabachnik and Fidell (2013). Consequently, a sample size of 210 microfinance institutions could be relevant to undertake advanced statistical analysis. However, in order to widen and ensure effective representation of the population while considering generalisation of the study results. This study raised the sample size to 240 non-member-based microfinance institutions of the target population under investigation. The raised number of sample size of the study was within the acceptable range of sample size requirement for the study as suggested by Hair et al. (2006). Sample size for a study may be determined based on the ratio of predictor to cases involved. Therefore, this study involved 20 explanatory variables, which was equivalent to a ratio of twelve cases per predictor (12:1) to a total sample size of 240 non-member based microfinance institutions for this study. The ratio was considered relevant for data collection as advised by various researchers to enable proceeding with quantitative model of analysis.

3.3.3 Sampling procedures

The sample selection procedures involved in this study were from microfinance entities that registration of its members is not a requirement for them to access credits (non-member-based MFIs). These were drawn from five mentioned districts for analytical survey approach. Collis and Hussey (2003) confined an analytical survey to be applied when the purpose is to ascertain if there is any relationship between different variables. However, this study noted that some non-member based microfinance institutions had branches in every district involved in the study while others not. The branches had different numbers of staff, different borrowers per staff ratio including separate branch portfolio financial reports. In addition, these microfinance institutions had own credit risk management procedures following different location, client economic activities and lending types (Nyamsogoro, 2010;
Snijders and Bosker, 1993). In this regard, the study adopted a decomposition approach which intended to recognise the branches found in identified districts as independent and stand-alone financial units. In so doing, it enabled an assessment of their portfolio performance from the specific branch of operation. The identified branches of non-member-based microfinance institutions were capable of providing credit services similar to other stand-alone microcredit companies. The decomposition process aimed to set all non-member-based microfinance institutions involved in this study into relatively similar operational environment. Also, it aimed to enable assessment of credit risk on portfolio microfinance performance.

3.3.4 Sampling Techniques

Pryce (2005); and Kothari (2009) classified sampling methods into two types, probability and non-probability sampling methods. Each of the two types of sampling techniques has strengths and weaknesses which are to be considered when drawing a sample from a given sampling frame. In this study, probability sampling techniques was used when accessing non-member-based microfinance institutions for the purpose of distributing semi-structured questionnaire tools. It aimed at ensuring that all individuals with similar characteristics had equal chance of being represented in the study. The sampled non-member-based microfinance institutions required in this study were those that had been in operation for not less than three years by the year 2015. In addition, microfinance institutions required for this study were ones that had basically one main product that is in common which is provision of loan services to low income clients.

3.3.4.1 Stratified Random Sampling

This study involved stratified random sampling technique to enable identification of participants. This procedure enabled the division of the population of the study into regions of preferences as well as identifying into study area (districts). The goal of stratifying the study population was to minimize the variability within each stratum and maximize the differences between strata. The districts within which homogeneous strata were made included Morogoro Urban in Morogoro region, Dodoma Urban in Dodoma region, Ilala, Temeke and Kinondoni Municipality in Dar es Salaam region. In order to ensure that the sample maintains required precision
of the total population, disproportionate stratified sampling was considered. The process of obtaining sample size or representative from entire population involved each stratum by deploying simple random sampling. The process involved assigning a unique number to each case in the sample starting from 0. Then the cases were selected using a table of random numbers until the actual sample size was reached (Saunders et al., 2009).

Table 3.1: Sample Size Composition by Regions and Districts

<table>
<thead>
<tr>
<th>s/n</th>
<th>Regions</th>
<th>MFIs</th>
<th>%</th>
<th>Districts</th>
<th>MFIs</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dar es Salaam</td>
<td>159</td>
<td>66.3</td>
<td>Ilala</td>
<td>51</td>
<td>21.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Kinondoni</td>
<td>62</td>
<td>26.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Temeke</td>
<td>46</td>
<td>19.1</td>
</tr>
<tr>
<td>2</td>
<td>Morogoro</td>
<td>44</td>
<td>18.3</td>
<td>Morogoro Urban</td>
<td>44</td>
<td>18.3</td>
</tr>
<tr>
<td>3</td>
<td>Dodoma</td>
<td>37</td>
<td>15.4</td>
<td>Dodoma Urban</td>
<td>37</td>
<td>15.4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>240</td>
<td>100.0</td>
<td></td>
<td>240</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Researcher, 2016

3.4 Key Informants Interviews

This study also consisted of officials from various organisations who were involved with microfinance services provision. Among the organisations included were supervisory bodies and others engaged as wholesale microfinance providers. These officials participated in this study as key informants in order to supplement information so as to get important information. The obtained data facilitated better discussion of the variables involved in the study. The study participants involved as key informants were officials from TAMFI, CRDB Microfinance Section, BoT (Microfinance Section), Ministry of Industry and Trade (Microfinance Licensing Department), the SELF Microfinance Fund (a government scheme) and Financial Sector Deepening Trust (FSDP). Kumar (2011) added that key informants have to be informed on the subject area, accessible, able to participate and having a great knowledge regarding the issues under discussion. These members were selected purposefully from identified organisations to provide information based on their knowledge and experience in the subject under investigation.
3.4.1 Preparation of an interview guide

In order to capture all required issues during an interview session with respondents. A set of guiding questions were prepared that involved all variables to be covered in each interview session. An interview guide prepared featured all important issues required to be discussed with the interviewees. Kumar (2011) contends that it is important to develop an interview guide to guarantee that the area of enquiry is well covered and to ensure the information from various participants in the study is compared accordingly. This instrument is both a method of data collection and a study design in qualitative research. In this study an interview guide was a research instrument that was used for data collection process.

3.4.2 Interview summary sheets

An interview summary sheet of one page was prepared by a researcher at the end of each conversation. The sheet was prepared for the sake of minimizing information into manageable issues or themes and recommendations. The sheet helped to generate required data participant’s designation regarding the discussion made. The issues rose including repercussion of these insights from the interviewees were recorded for references in analysis at the end of each interview, the researcher prepared.

3.5 Data Collection Procedures

3.5.1 Collection of primary data

In this study, the primary data were gathered by the use of interviews conducted with key informant participants who were guided by the researcher and research assistants. The primary data collection procedure through interview with the identified study participants involved a two-way process. The first stage, involved visiting respective study participants in their offices and requesting for an interview session regarding the research topic. Together with that it involved making arrangement of the specific time and convenience area for the discussion. In the next stage, involved actual interviews with the respondents where issues of interest to the research were asked and recorded accordingly. In the process of data collection, the use of interview guide questions enabled the respondents to express not only the
information given by the researcher, but also their perceptions on various issues related to the study variables represented in the data collection tool. Therefore, the interview guide became the basis of collecting the required information from individual participants. It also helped to raise any issues relating to the microfinance loan service delivery for the period under study (Kumar, 2011; Milanzi, 2008).

3.5.2 Questionnaire development
The questionnaire used for data collection in this study was adopted from other studies. It was modified to suit requirements based on research objectives and questions for this study. The tool was prepared by the researcher through experience from other research works conducted in other areas. For this study, the instrument was first prepared in English and then translated into Kiswahili and subsequently the Kiswahili version was translated back to English using a different translator to ensure validity of the instrument. As such the final questionnaire was thus duplicated in both languages i.e. Kiswahili and English. This aimed at making sure that any respondents could be free to fill in the questionnaire or provide data set needed for computation of quantitative information in any language that they were conversant with.

3.5.2.1 Data collection
The process of data collection through the questionnaire instrument in this study involved a two-way process. This was reconnaissance stage and thereafter the actual questionnaire distribution to the intended study participants. The instrument for data collection tool was printed, distributed and administered by the researcher and research assistants in all identified districts of the study areas. The use of semi-structured questionnaires enabled the microfinance institution to provide data set information of their borrowers and filled the questionnaire given. In addition, the respondents provided this study with other relevant information about credit risk management procedures. They also supplied this study with various needed records that facilitated computation of quantitative information for meeting variable requirements. In order to ensure high administering of the data collection exercise, the researcher and research assistant met with the respondents to provide clarifications when necessary. They were equally involved for follow ups to
respondents for timely feedback of the questionnaire instrument from participants. The use of questionnaire tool in data collection process enabled the study informants to air out their views amid of any disturbance. It also encouraged privacy to the respondents and reliability of the data provided to the study (Creswell & Clark, 2007; Saunders et al., 2009).

3.5.3 Pilot Study
The main study was preceded by a pilot study that involved face to face interviews using a questionnaire. This process aimed at checking the accuracy and reliability of the tool before the final use of questionnaire. The prior study involved 25 microfinance institutions in all three regions of the study. The process helped the researcher to identify some errors in the instrument that would have not been noted for correction. Apart from that the exercise added value to the study, because there were important suggestions given from the respondents on the questionnaire that helped in improving the instrument. More importantly, it enabled the testing of the adequacy and effectiveness of the analysis techniques to be used in the study. Finally, it helped to familiarize the researcher with the actual environment in the field and way forward to managing them for effective data collection (AbuHassan and Schattner, 2008; Tundui and Tundui, 2013).

3.5.4 Reliability and Validity
In this study, reliability and validity issues had been the concern of the study in different ways. During the questionnaire preparation it was guaranteed that there was a clear understanding of the language via translation from English to Kiswahili and back to English language. This aimed at ensuring that all concepts used in the data collection tool were well understood in both languages.

On the other hand, the questionnaire was subjected to pilot study in order to make sure that all respondents were informed of all the variables required for measurement. Whenever there was need to review the questionnaire in order to make sure it measures what it was supposed to measure so as to provide consistent outcome, it was reviewed.
Moreover, in the actual data collection phase, there was high concern of administering questionnaire to respondents. Also, it entailed providing clear instructions on how the questionnaire had to be filled in. This intended to avoid missing cases including misunderstanding of the questions therein. Lastly, during data analysis, the study ensured that the data were in line with the model requirements. All other statistical measures were considered in order to produce consistent and reliable output results.

3.5.4.1 Ethical Consideration

In conducting this research, there was high consideration on research ethics in order to make sure that the study was acceptable, reliable and yet consistent to the society and academic community. There were various research ethics principles that were taken care of which enabled effective execution of this study. These include, among others:

Adhering to confidentiality where the study assured the participants that the information they gave was treated with high confidentiality. There existed no part of respondents’ information that could be disclosed to the public. This was communicated to study participants prior to engaging them with questionnaires to fill in or conducting an interview.

Similarly, informed consent as another concern of ethics in research that was sought. This research work had to make sure that respondents were informed so that they could voluntarily decide to participate in the study. The study confirmed that there was no any participant who was coerced to provide information for this study.

Furthermore, study participants were also informed about the benefits for them to be part of this study. Those who participated in this research work were aware of what was expected from their participation in the study. The members’ involvement in this study was associated with their willingness to provide relevant data to enable completion of the study as required.
Generally, research ethics principles were adhered to in this study from the proposal preparation, data collection, analysis, and interpretation and reporting of the findings as insisted by Schenk and Williamson (2005).

3.6 Operationalisation of variables

3.6.1 Objective one: Socio-economic variables

The first objective of this study was to determine the influence of socio-economic variables on portfolio performance of microfinance institutions in the study areas. There were six variables involved, namely age of borrowers, gender of borrowers, education of borrowers, marital status of borrowers, family size of borrowers and business experience of borrowers.
<table>
<thead>
<tr>
<th>S/N</th>
<th>Variable Name</th>
<th>Description and measurement</th>
<th>Expected influence</th>
<th>Comment</th>
<th>References (if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Age of borrowers</td>
<td>Average age of borrowers of MFI in a year (continuous variable)</td>
<td>+ / -</td>
<td>Age of borrowers indicates experience in doing business and ability to repay the loan from the MFIs hence low portfolio at risk.</td>
<td>Vigano (1993); Roslan &amp; karim (2009)</td>
</tr>
<tr>
<td>2</td>
<td>Sex of borrowers</td>
<td>Percentage of male and female borrowers of MFI in a year (dummy, 0= female; 1= male) (categorical variable)</td>
<td>+ / -</td>
<td>High proportion of female borrowers accessing MFI loans, the higher loan repayment performance</td>
<td>Vigano (1993); Khanker et al. (1995); Chaudhary &amp; Ishfaq (2003);</td>
</tr>
<tr>
<td>3</td>
<td>Education level of borrowers</td>
<td>Proportion of education level of borrowers of MFI in a year (dummy: primary education = 0; secondary educn =1; post sec non univ =2; university = 3) (categorical variable)</td>
<td>-</td>
<td>Borrower with a higher educational level likely to be negatively associated with repayment problems, and hence low portfolio at risk of MFIs</td>
<td>Abafita (2003); Bhatt and Tang (2002); Nawai &amp; Shariff (2012); Setargie (2013);</td>
</tr>
<tr>
<td>4</td>
<td>Marital status of borrowers</td>
<td>Proportion of married and unmarried borrowers of MFIs in a year. (dummy, 0=unmarried borrowers, 1= married borrowers) (categorical variable)</td>
<td>+/-</td>
<td>Married microfinance borrowers are likely to be loyal and committed to loan repayment, leading to reduced portfolio at risk.</td>
<td>Brehanu &amp; Fufa 2008); Angaine &amp; Waari (2014)</td>
</tr>
<tr>
<td>5</td>
<td>Family size of borrowers</td>
<td>Average number of dependants in household of borrowers in MFIs in a year (continuous variable)</td>
<td>-</td>
<td>Fewer the number of dependants of borrower reflects repayment capacity, hence reduced portfolio at risk of MFIs.</td>
<td>Tundui and Tundui (2013); Angaine &amp; Waari (2014)</td>
</tr>
<tr>
<td>6</td>
<td>Experience of borrower in business</td>
<td>Average business experience of MFIs borrower in years (continuous variable)</td>
<td>-</td>
<td>Experience reflects ability to manage business hence negatively associated with repayment problem.</td>
<td>Tundui and Tundui (2013); Muthoni (2016); Reta (2011)</td>
</tr>
</tbody>
</table>

Source: Researcher, 2016.
From the operationalisation table above, the prediction equation for objective one on socio-economic variables can be represented as

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon \]  

(1)

Where: \( Y \) = Predicted dependent variable (Portfolio Performance as measured by Portfolio at risk); \( \beta_0 \) = Constant,

\( \beta_1: \beta_6 \) = Regression coefficients,

\( X_1: X_6 \) = Value of the predictor variables are age of borrower (AGE), sex of borrower (SEB), education of borrower (EDU), Marital status of borrower (MSB), experience of borrower (EXB) and family size of borrower (FSB).

\( \varepsilon \) = Error term

**3.6.2 Objective two: Credit application appraisal variables**

The second objective of this study was to determine the effect of credit application appraisal on portfolio performance of microfinance institutions in the study areas. There were four variables used, namely business income of borrowers, collateral requirement, capital of borrowers, and membership duration of borrowers.
Table 3.3: Measurement of Credit application appraisal variables on portfolio performance of MFIs

<table>
<thead>
<tr>
<th>S/N</th>
<th>Variable Name</th>
<th>Description and measurement</th>
<th>Expected influence</th>
<th>Comment</th>
<th>References (if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Business income of borrowers</td>
<td>Average annual business income of MFIs borrower in Tsh (continuous variable)</td>
<td>+/-</td>
<td>Amount of income of borrower reflects stability in business hence high loan repayment.</td>
<td>Brehanu &amp; Fufa (2008); Nawai &amp; Shariff (2012)</td>
</tr>
<tr>
<td>2</td>
<td>Collateral requirement for borrowers</td>
<td>Proportion of kinds of collateral required by MFIs. (dummy, 0=physical collateral; 1=social collateral; and 2=personal guarantee) (categorical variable)</td>
<td>+/-</td>
<td>Frequency in use of particular type of collateral reflects stability in repayment hence reduced portfolio at risk.</td>
<td>Hooman (2009); Kodongo &amp; Kendi (2013); Babu &amp; Singh (2007)</td>
</tr>
<tr>
<td>3</td>
<td>Capital of borrowers</td>
<td>Average annual monetary value of MFI borrowers’ assets in Tsh (continuous variable)</td>
<td>-</td>
<td>Capital reflects commitment of borrower, hence negatively associated with loan repayment problem</td>
<td>Aballey (2009); Clamara et al. (2014)</td>
</tr>
<tr>
<td>4</td>
<td>Membership duration of borrowers</td>
<td>Average membership duration in months of MFIs borrower (continuous variable)</td>
<td>-</td>
<td>Borrowers who have stayed long with MFIs have developed trust in MFI, likely to be negatively associated with repayment problems.</td>
<td>Sheila (2011); Field et al. (2009); Addo &amp; Twum (2013)</td>
</tr>
</tbody>
</table>

Source: Researcher, 2016.

The prediction equation of the above second objective of credit application appraisal is defined below as follows:

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \]  

\( (ii) \)

Where: \( Y = \) Predicted dependent variable (Portfolio Performance as measured by Portfolio at risk); \( \beta_0 = \) Constant, 
\( \beta_1 - \beta_4 = \) Regression coefficients,
$X_1 - X_4 = \text{Value of the predictor variables - Borrower business income (BBI), kind of collateral (CRB), Capital of borrower (CAB) and Membership duration (MDB)}.$

$\varepsilon = \text{Error term}$

### 3.6.3 Objective three: Credit supervision practices variables

The third objective of the research was to determine the effects of credit supervision practices on portfolio performance of microfinance entities. There were six variables used – operational cost per borrower, training sessions, time for loans delivery, repayment period, number of borrowers per loan officer and follow up period measures.
<table>
<thead>
<tr>
<th>S/N</th>
<th>Variable Name</th>
<th>Description and measurement</th>
<th>Expected influence</th>
<th>Comment</th>
<th>References (if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Number of borrowers per loan officer</td>
<td>Total number borrowers divided to a number of loan officers of MFIs (continuous variable)</td>
<td>+/-</td>
<td>It is assumed that higher ration reflect borrowers are likely to be positively associated with repayment problem, hence high portfolio at risk</td>
<td>Ameyaw-Amankwah (2011); Sentargie (2013)</td>
</tr>
<tr>
<td>2</td>
<td>Operational cost per borrower</td>
<td>Operating expenses divided to average number of borrowers for the period of MFIs (continuous variable)</td>
<td>+/-</td>
<td>Indicate effectiveness of MFI management to ensure borrowed funds are repaid timely</td>
<td>Sheila (2011); Rahman &amp; Mazlan (2014); Javid &amp; Abrar (n.d)</td>
</tr>
<tr>
<td>3</td>
<td>MFIs Training sessions to borrowers</td>
<td>Number of MFIs training sessions to borrowers per year (continuous variable)</td>
<td>-</td>
<td>Training sessions to borrowers reflects added skills and knowledge, negatively associated with repayment problem</td>
<td>Brehanu and Fufa (2008); Roslan and Karim (2009)</td>
</tr>
<tr>
<td>4</td>
<td>Timeliness of loan release to borrowers</td>
<td>Average number of days to process and disburse loan to borrowers per year (continuous variable)</td>
<td>+/-</td>
<td>Shorter number of days taken by MFI likely to reduce loan diversion hence high repayment</td>
<td>Asongo &amp; Nyor (2014); Pasha &amp; Negese (2014); Olomola (1999)</td>
</tr>
<tr>
<td>5</td>
<td>Follow up period to borrowers</td>
<td>Average number of times to follow up (tracking) borrowers until final repayment per year (continuous variable)</td>
<td>-/+</td>
<td>Reflects seriousness of MFIs to ensure borrowers observe their obligation to loan repayment. High follow up efforts to borrowers more repayments</td>
<td>Korankye (2014); Crab &amp; Kellor (2006); Abebe (2012)</td>
</tr>
<tr>
<td>6</td>
<td>Convenience of repayment period to borrowers</td>
<td>Average number of days for borrowers to making regular loan installments ((continuous variable)</td>
<td>-/+</td>
<td>Repayment schedules that fits borrowers’ expectation, contribute to low portfolio at risk</td>
<td>Roslan &amp; Karim (2009); Armendariz &amp; Murdoch (2000)</td>
</tr>
</tbody>
</table>

Source: Researcher, 2016
From the operationalisation table above, the prediction equation for objective three on credit management strategies can be shown as

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon \]  

(iii)

Where:  
- \( Y \) = Predicted dependent variable (Portfolio Performance as measured by Portfolio at risk);  
- \( \beta_0 \) = Constant,  
- \( \beta_1 - \beta_6 \) = Regression coefficients,  
- \( X_1 - X_6 \) = Value of the predictor variables - number of borrowers per loan officer (BPL), operational cost per borrower (OPC), training sessions given (TRG), timeliness of loan release (TML), follow up period measures (FLP) and Convenience of repayment period (CRP).  
- \( \varepsilon \) = Error term

3.6.4 Objective four: Credit collection policy on portfolio performance of MFIs

The fourth objective of this study was to determine the effect of credit collection policy on portfolio performance of microfinance institutions in the study areas. There were four variables these include: grace period, interest rates, loan duration and loan size.
Table 3.5: Measurement of Credit collection policy variables

<table>
<thead>
<tr>
<th>S/N</th>
<th>Variable Name</th>
<th>Description and measurement</th>
<th>Expected influence</th>
<th>Comment</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Loan duration</td>
<td>Average number of days for which borrowed funds are fully repaid (continuous variable)</td>
<td>+</td>
<td>Longer period is assumed to be negatively associated with repayment problem, hence low portfolio at risk</td>
<td>Fight (2004); Nyamsogoro (2010)</td>
</tr>
<tr>
<td>2</td>
<td>Interest rate charged to borrowers</td>
<td>Average rate of interest charged on loan products to borrowers per year. (continuous variable)</td>
<td>+</td>
<td>High interest rate on borrowed amount is associated with loan repayment problems.</td>
<td>Hartungi (2007); Papias &amp; Ganesan (2009)</td>
</tr>
<tr>
<td>3</td>
<td>Grace period of loans</td>
<td>Average number of days given to borrowers before first installments to MFIs (continuous variable)</td>
<td>-</td>
<td>Days offered to borrowers likely to influence negatively on repayment problems.</td>
<td>Roslan &amp; Karim (2009); Abreham (2002)</td>
</tr>
<tr>
<td>4</td>
<td>Loan sizes to borrowers</td>
<td>Average amount of money in Tsh given to borrower in a year (continuous variable)</td>
<td>+/-</td>
<td>Loan sizes that fits borrower expectations, stimulate enterprises and increase repayment to MFI</td>
<td>Field et al. (2009); Roslan &amp; Abd Karim (2009); Kinde (2012)</td>
</tr>
</tbody>
</table>

Source: Researcher, 2016

From the operationalisation table above, the prediction equation for objective four of the study on credit collection policy can be shown as

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon \ldots \ldots\ldots\ldots\ldots (iv)$$
Where: \( Y \) = Predicted dependent variable (Portfolio Performance as measured by Portfolio at risk)
\[ \beta_0 = \text{Constant,} \]
\[ \beta_1 - \beta_4 = \text{Regression coefficients,} \]
\[ X_1 - X_4 = \text{Value of the predictor variables loan duration (LDR), Interest rates (INTR), grace period of loans (GRP) and loan size (LS).} \]
\( \varepsilon = \text{Error term} \)

3.6.5 Operationalisation of dependent variable

In this study, the dependent variable was portfolio at risk of microfinance institution. The variable was measured as average rate of portfolio at risk of outstanding loan portfolio of microfinance institutions. This measure is considered important in operation of MFIs as it portrays organisations’ competence to ensure that all credits are recovered timely for effective financial sustainability of the microfinance loan services (Nyamsogoro, 2010; Mersland & Strom, 2008).

Measurement of dependent variable

The dependent variable in this study was measured by:

Portfolio at risk (PAR) 90 days =

\[
\frac{\text{Outstanding principal balance of all loans past due more than 90 days}}{\text{Outstanding principal balance of all loans}}
\]

3.6.6 Operationalisation of Control variables

In analyzing the realationship existing between the hypothesized dependent and independent variables, the study considered four control variables. Specifically, the reasons were to specify the unique attribution of the interest’s variables after scheming for further re-identified factors (Milanzi, 2008; Hair, 2010). The control variables involved in this study were; managers/owners experiences, manager/owners education qualifications, MFIs size and the MFIs age.
### Table 3.6: Measurement of Control variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measurement procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFIs age</td>
<td>Number of years since the establishment (continuous variable)</td>
</tr>
<tr>
<td>MFIs size</td>
<td>Total assets of microfinance institution in Tsh. (continuous variable)</td>
</tr>
<tr>
<td>Manager/owners experiences</td>
<td>Working experience(number of years) in microfinance entity (continuous variable)</td>
</tr>
</tbody>
</table>
| Manager/owners qualification | The level of education obtained by the Managers of MFI  
1=Sec level  2=Technical level; 3=University level (categorical variable) |

Source: Researcher, 2016

### 3.7 Data Management

In this study, data management process followed after the field work exercise was completed. The collected questionnaire data were inspected to eliminate errors and poor-quality data to ensure completeness of filled information. This aimed at ensuring that only quality data were used in the analysis and incomplete questionnaires were ignored. Results of data management process were a decrease of the total sample from 240 distributed questionnaires to 227. These were found useful and dully filled questionnaires collected from targeted microfinance institutions. According to Patton (1990) the quality of any analysis in research usually depends on the extent of underlying quality of the data collected. That is why in this research high attention was put into making sure that data cleaning and associated procedures were highly taken into consideration.

This study used SPSS for data analysis since it is efficient and able to analyse cross-sectional and other data set over a range of time (Landau & Everitt, 2004). Moreover, the SPSS software was user friendly and interactive to the researcher. Therefore, the questionnaires data were entered into SPSS computer files for further processing and initial statistical diagnostics.
3.7.1 Data Analysis

The analysis procedures in this study were done through two approaches; these were qualitative and quantitative data analysis.

3.7.1.1 Qualitative data analysis

Analysis of qualitative data collected from key informants’ interviews (KII) and participants’ observation started earlier when the researcher was in the field. In order to be consistent in dealing with such data, an interview summary form was produced which was used to record information immediately after an interview session. In so doing, enabled the researcher to reduce volume of recorded information into set of categories agreeable for further analysis of the study. Themantic content analysis, helped to further reduce the volume of recorded information into main themes that emerged from the responses given by study participants. This technique was also used to analyse relevant documents and observation notes in order to identify patterns of recurring themes and sub-themes in line with the research questions. The interpreted information was reported and complemented with quantitative information that was obtained from the study findings via the questionnaire distributed (Lacey et al., 2001; Silverman, 2011).

3.7.1.2 Quantitative data analysis

This was the main and dominant approach in analysing and reporting information gathered from distributed questionnaires. A computer assisted programme SPSS for windows, together with Microsoft excel and word 2016 were used to facilitate data management and analysis procedures. Before the actual data analysis, the data were run to check if they were in line with the model of analysis to be used – that is multiple linear regression models. The model requires that any data subjected into it, has to conform to its assumptions prior to being employed for regression analysis.

From the analysis, descriptive statistics information such as frequency distribution, minimum, maximum, mean and standard deviation together with correlation tables were presented. Hair et al. (2006) added that descriptive statistics aims at describing and providing an understanding of various sample characteristics. In this study various statistical information of socio-economic, credit application appraisal, credit
supervision practices and credit collection policy as well as portfolio at risk of microfinance institution were highlighted (Williams & Monge, 2001; Hair et al., 2010).

In addition to descriptive analysis and statistics being presented, this study used multiple linear regression models in the analysis of quantitative data. In this process, the overall mode fit was tested by model analysis of variance. Besides, Hair et al. (2006) pointed out that level of significance stands for the likelihood that the researcher is willing to accept that the estimated coefficient is classified as different from zero when it is actually zero. In this regard, levels of significance were used to test hypotheses of this study based on the results of linear regression analysis. Studies by Hair et al. (2006) revealed that the most widely used level of significance is 0.05 (or 5%). For that reason, a 5% level of significance was referred to when making decision relating to hypothesis tested on the study variables.

3.7.2 Multiple Linear Regression Model
Multiple linear regression models as an econometric model of data analysis technique was used in this study. Multiple linear regressions examine relationship between a single outcome measure and several predictor or independent variables (Wooldridge, 2000). The objective of multiple regression analysis is to use the independent variables whose values are known to predict the single dependent value selected by the researcher. Each independent variable is weighted by the regression analysis procedure to ensure maximal prediction from the set of independent variables (Hair et al., 2014). Regression analyses can be used with either continuous or dichotomous independent variables (Tabachnik & Fidell, 2013).

The right utilization of the different relapse model necessitates that few basic presumptions be fulfilled so as to apply the model and establish validity (Jacques, 2007). Inferences and generalizations about the hypothesis are just substantial if the assumption in an investigation have been tried and satisfied. Ignoring the regression suppositions adds to wrong validity estimates. At the point when the assumption is not met, results may offer ascent to Type I or Type II errors, or over-or under-estimation of significance of impact size (Norusis, 2012). Meaningful data analysis
depends on the researcher understanding and testing of the presumptions and the outcomes of violations.

3.7.2.1 The Multiple linear regression equation model

The regression equation as used in this study takes the following form:
\[ Y_\_ = A + B_1X_1 + B_2X_2 + \ldots + B_kX_k \]

where, \( Y_\_ \) is the predicted value on the DV, \( A \) is the \( Y \) intercept (the value of \( Y \) when all the \( X \) values are zero), the \( X \)s represent the various IVs (of which there are \( k \)), and the \( B \)s are the coefficients assigned to each of the IVs during regression. Although the same intercept and coefficients are used to predict the values on the DV for all cases in the sample, a different \( Y_\_ \) value is predicted for each subject as a result of inserting the subject’s own \( X \) values into the equation (Tabachnik & Fidel, 2013; Hair et al., 2014).

3.7.2.2 Assumptions of the multiple linear regression model

Multiple regressions make a number of assumptions about the data that have to use this model of analysis. Before a complete regression analysis can be performed, the assumptions concerning the original data must be made (Tabachnick & Fidell, 2007). The assumptions of the multiple linear regression analysis include:

**Normality**

Different regression assumes that variables have typical appropriations. The assessment of normality of the metric variable includes both experimental proportions of dissemination’s shape attributes (skewness and kurtosis) and the normal probability plots. The empirical measures give a guide with regards to the factors with critical deviations from typicality, while the normal probability plots give a visual depiction of the shape of distribution. If the variation from the ordinary circulation is adequately huge, all subsequent measurable tests are invalid, because normality is required to utilize the F and t statistics (Hair et al., 2014). Also, non-typically disseminated variables can misshape relationships and essentialness tests as
the outliers can impact both Type I and Type II errors and the general exactness of results (Keith, 2006).

**Linearity**
Various regressions can precisely evaluate the relationship among dependent and independent variable when the relationship is linear in nature. If the linearity is disregarded all the estimated of the regression including regression coefficients, standard mistakes, and trial of measurable criticalness may be biased (Keith, 2006). At the point when bias happens, all things considered, it doesn't repeat the genuine populace esteems. Infringement of this assumption undermines the significance of the parameters evaluated in the analysis. The consequences of the regression analysis will under-or over-estimated the true relationship and increase the risk of Type I and Type II errors (Williams & Monge, 2001).

**Independence of Errors**
In regression, it is assumed that the predicted value is not related to any other prediction; i.e., each predicted value is independent and that the subjects are responding independently (Stevens, 2009). When independence of errors is violated standard scores and significance tests will not be accurate and there is increased risk of Type I error. When data are not drawn independently from the population, the result is a risk of violating the assumption that errors are independent. This means that violations of this assumption can underestimate standard errors, and label variables as statistically significant when they are not (Hair et al., 2014).

**Homoscedasticity**
This is where the dependent variable(s) exhibit equal levels of variance across the range of predictor variable(s). This assumption is imperative since the variance of the affected variable is justified in connection to the limited range of the influencing values (Hair et al., 2014). This is evident when the variance around the regression line is the same for all values of the predictor variable. If this dispersion is unequal across values of the independent variable, the relationship is said to be
heteroscedastic. This results in incorrect estimates of the variance leading to the statistical and inferential problems that may hinder theory development (Ho, 2006).

**Collinearity**

Collinearity occurs when several independent variables correlate at high levels with one another, or when one independent variable is a near linear combination of other independent variables (Keith, 2006). The more variables overlap (correlate) the less able researchers can separate the effects of variables. Multiple regressions allow independent variables to be correlated to some degree; in such situation, the researcher is able to interpret regression coefficients as the effects of independent variables on the dependent variables when collinearity is low. This means that inferences can be made about the causes and effects of variables reliably (Wooldridge, 2000).

Therefore, in the analysis of this study through the mentioned model, all the required assumptions had been checked and conditions were met to enable further analysis, interpretations and generalisations of the findings.
CHAPTER FOUR
PRESENTATION OF THE FINDINGS

4.0 Introduction
This chapter presents the research findings basing on the study objectives. The information presented in this chapter is a result of data collected from sampled microfinance institutions. The study used semi structured questionnaires, key informants’ interviews including various literatures related to the study. Multiple linear regression and qualitative analysis procedures were undertaken prior to presentation of these findings.

4.1 Response Rate of the sampled Non-member-based microfinance institutions
In this study, a total of 240 non-member based microfinance institutions were given questionnaires. These were microfinance institutions in Dar es Salaam, Morogoro and Dodoma regions. The study participants who returned filled questionnaires were 227 (94.58%), while 13 (5.42%) were questionnaires not returned, including those partially filled hence were ignored for further analysis. In this regard, the response rate for this study was 94.58%. Creswell (2012); Saunders et al. (2009) added that 50% response rate is adequate, 60% to 69% is good, while 70% and above is very good. Therefore, the response rate of 94.58% obtained in this study was relevant to making meaningful advanced analysis and drawing of conclusion.

Table 4.1: Response rate of the sampled microfinance institutions

<table>
<thead>
<tr>
<th>Microfinance institutions</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response</td>
<td>227</td>
<td>94.6</td>
</tr>
<tr>
<td>Non-response</td>
<td>13</td>
<td>5.4</td>
</tr>
<tr>
<td>Total</td>
<td>240</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Researcher, 2016
4.1.1 Distribution of sampled microfinance institutions by Regions and Districts

This study was carried out in three regions as indicated in Table 4.2 below. The composition of microfinance institutions involved in each region was as follows; 68.3% (n=155) were MFIs from Dar es Salaam region; 17.6% (n=40) were from Morogoro region and 14.1% (n=32) were from Dodoma region. The distribution shows that Dar es Salaam region had the highest proportion of the microfinance institutions included in this study (Dar es Salaam region 68.3%) compared to other regions. This was mainly due to higher concentration of microfinance institutions in Dar es Salaam region than in other regions of Tanzania. More importantly, the study involved three districts which were Ilala, Kinondoni and Temeke.

Table 4.2 below also shows distribution of microfinance institutions district wise. Ilala district had 22.0% (n=50) of the sampled microfinance institutions, Kinondoni district was represented by 26.9% (n=61) of MFIs and Temeke district had 19.4% (n=44) microfinance institutions involved in Dar es Salaam region. The distribution indicates that Kinondoni district had higher proportion of microfinance institutions involved in this study than others. This follows existence of many microfinance institutions in Kinondoni district as compared to other districts. Also, this suggests presence of majority SMEs and individuals engaged with microfinance services. On the other hand, Morogoro urban district had 17.6% (n=40) of the sampled microfinance institutions and Dodoma urban district had 14.1% (n=32) of the total microfinance institutions involved in this study.

Table 4.2: Distribution of sampled microfinance institutions by Regions and Districts

<table>
<thead>
<tr>
<th>s/n</th>
<th>Regions</th>
<th>MFIs</th>
<th>%</th>
<th>Districts</th>
<th>MFIs</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dar es Salaam</td>
<td>155</td>
<td>68.3</td>
<td>Ilala</td>
<td>50</td>
<td>22.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Kinondoni</td>
<td>61</td>
<td>26.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Temek</td>
<td>44</td>
<td>19.4</td>
</tr>
<tr>
<td>2</td>
<td>Morogoro</td>
<td>40</td>
<td>17.6</td>
<td>Morogoro urban</td>
<td>40</td>
<td>17.6</td>
</tr>
<tr>
<td>3</td>
<td>Dodoma</td>
<td>32</td>
<td>14.1</td>
<td>Dodoma urban</td>
<td>32</td>
<td>14.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>227</td>
<td>100.0</td>
<td></td>
<td>227</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Researcher, 2016
4.1.2 Descriptive statistics as reported in sampled microfinance institutions

This section put forward descriptive statistics of the data provided by the non-member based microfinance institutions involved in this study. The presentation of descriptive information, acts as foothold toward comprehensive model analyses on the study objectives. This study specified four factors of concern; these were socio-economic characteristics, credit application appraisal, credit supervision practices and credit collection policy factors. The dependent variable of this study was portfolio at risk of non-member-based microfinance institutions. However, before presentation of descriptive statistics from the collected data; procedures were undertaken for screening of the collected data from sampled microfinance institutions.

4.1.3 Screening for Outliers and Leverage variables of sampled MFIs

This study dealt with screening of the data in different ways, prior to detailed descriptive analysis and presentation of the results in order to avoid errors in interpretation of the findings. In this process missing data, data validity and outliers were checked accurately. As such some statistical information may not appropriately be represented when the data are not normally distributed (Keenan and Stevens, 2016). According to Algur and Biradar (2017) an Outlier is a quantity of information that diverges severely from the given average of the set of data. Studentised residuals are a type of standardised residuals that can be used to identify outliers. In this study, the data were tested for outliers through the studentised residual. This procedure intended to determine the values that could have indices with greater observation. Attention was paid to cases whose studentised residuals that exceed +2 or -2 values (Zakaria et al., 2014). In undertaking this process, five observations were determined to have been greater than 2.5 studentised residual, which were then removed from the analysis. This aimed to avoid undue exaggeration of the relationship after an analysis (Ho, 2006; Woodridge, 2000). This exercise led to the drop of five observations of the total sample from 227 to 222 observations.

Leverages are observations with an extreme value on a predictor variable. Leverage determines the extent in which the predictor variables deviate from its mean. In this study, Cook’s Distance was used for identifying influential observations and helped
to clarify the course of action. In this regard, large values suggest that an observation has a lot of influence. The conventional cut-off/threshold value used for Cooks distance is $4/n$ (where $n=222$) (Zakaria et al., 2014; Keenan & Stevens, 2016). Therefore, when the procedure was used in assessment of the data in this study, it resulted in further drop of three more observations from the sample. Finally, the study remained with 219 cases of non-member based microfinance institutions that were then subjected to descriptive and inferential analysis.

4.2 Descriptive statistics of Socio-economic variables on portfolio at risk of MFIs

The first objective of this study was to determine the influence of socio-economic variables on portfolio at risk of microfinance institutions in the study areas. The predictor variables involved in this objective were sex of microfinance borrower, marital status of microfinance borrowers, education level of microfinance borrowers, average age of microfinance borrowers, and average family size of microfinance borrowers and average business experience of microfinance borrowers. The dependent variable for the study was average portfolio at risk of microfinance entities. Likewise, managers/owners education level, experiences, MFIs size and MFIs age, are regarded as control variables.

4.2.1 Descriptive statistics of dependent, independent and control variables as reported in sampled Microfinance institutions

Table 4.3 presents the mean portfolio at risk of the surveyed microfinance institutions as 8.9898 percent. The minimum average portfolio at risk was reported 3.67 and maximum was 21.00 percent accordingly. These results suggest that on average microfinance institutions differ from one institution to another in loan portfolio management. This could be due to varying credit risk management strategies applied by respective non-member based microfinance institutions.

Moreover, the surveyed microfinance institutions reported an average age of their borrowers to be a minimum and a maximum of 25.00 to 66.00 years respectively. In addition, borrowers’
average age had a mean value of 44.95 years indicating that MFIs in study areas extended loans to matured clients than otherwise. These microfinance borrowers are likely to be negatively associated to repayment problems. The variable average number of borrowers’ dependants as presented by surveyed microfinance institutions depicts a mean of 4 members. Furthermore, the minimum number of dependants being 1 and maximum of 10 dependants per borrower. This indicates that MFIs provided loan services to clients with many dependants. Consequently, clients may fail to manage regular repayments and increase risk of loan portfolios. The borrower business experience in the table also showed the mean of 3.8 years. In addition, borrowers had minimum experience in business of 1 year and maximum of 8 years. This suggests that surveyed non-member based microfinance institutions in study areas extended credit services to clients experienced in their businesses. This indicates that clients were likely to manage repayments and build confidence to lending institutes for more outreach services.

Furthermore, Table 4.3 presents MFIs age with a mean estimation of 6.28 years. The research again demonstrates a minimum and maximum MFIs age revealed 3.00 and 15.00 years respectively. The age dispersion demonstrates MFIs associated with the study had ample involvement in microfinance task and along these lines reasonable for the idea of this investigation. In addition, the examination recorded Owner/supervisor encounters to be between at least 2.00 years and 18.00 years' greatest. The normal experience among the visited MFI supervisors over the investigation regions was 6.00 years. The variability of owner/manager experiences among the sampled non-member based microfinance institutions was 3.29 years. These statistics implies that microfinance managers in study areas had reliable experience to manage the firm to achieve social and financial objectives. The variable MFI sizes recorded a mean of Tsh 276,014,051.74. It likewise reveals minimum and maximum all out resources of their MFIs to be Tsh 70,000,000.00 and Tsh 615,000,000.00 separately. The variety in the measure of advantages among microfinance organizations during the time of study was Tsh 184,098,247.16. The mean complete resources of overviewed MFIs suggest that chose MFIs in this
examination are very much attached monetarily to give credit administrations to the poor customers reasonably.

Table 4.3: Descriptive statistics of dependent, independent and control variables as reported in surveyed MFIs

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent variable</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portfolio at risk (PaR90)</td>
<td>8.9898</td>
<td>2.98651</td>
<td>3.67</td>
<td>21.00</td>
<td>219</td>
</tr>
<tr>
<td><strong>Independent variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average age of borrowers</td>
<td>44.9543</td>
<td>11.00074</td>
<td>25.00</td>
<td>66.00</td>
<td>219</td>
</tr>
<tr>
<td>Average no of dependants</td>
<td>4.0639</td>
<td>1.85124</td>
<td>1.00</td>
<td>10.00</td>
<td>219</td>
</tr>
<tr>
<td>Borrower business experience</td>
<td>3.8484</td>
<td>1.64429</td>
<td>1.00</td>
<td>8.00</td>
<td>219</td>
</tr>
<tr>
<td><strong>Control variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MFIs age</td>
<td>6.2800</td>
<td>2.18900</td>
<td>3.00</td>
<td>15.00</td>
<td>219</td>
</tr>
<tr>
<td>MFIs size (TAS)</td>
<td>276014051.74</td>
<td>184098247.16</td>
<td>70000000</td>
<td>615000000</td>
<td>219</td>
</tr>
<tr>
<td>Owner/manager experiences</td>
<td>6.0000</td>
<td>3.294</td>
<td>2.00</td>
<td>18.00</td>
<td>219</td>
</tr>
</tbody>
</table>

Source: Researcher, 2016

4.2.2 Distribution of sex of borrowers as reported by sampled microfinance institutions

Table 4.4 below shows that of the 154 visited microfinance institutions, (70.3%) were dominated by female borrowers accessing microcredit services. On the other hand, 65 microfinance institutions (29.7%) among surveyed microfinance institutions were dominated by male clients accessing loan services. The recorded gender distribution among the sampled non-member based microfinance institutions indicates that most microfinance institutions are accessed by female borrowers than males. The low percentage of males using microfinance institutions suggests they have other sources of finance for meeting their social and economic obligations.
Table 4.4: Distribution of the sex of borrowers as reported in sampled MFIs

<table>
<thead>
<tr>
<th>Sex of MFIs clients</th>
<th>Microfinance institutions</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td>65</td>
<td>29.7</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>154</td>
<td>70.3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>219</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Researcher, 2016

4.2.3 Distribution of Education level of borrowers as reported by microfinance institutions

Table 4.5 presents distribution of education level of borrowers reported by surveyed microfinance institutions. The study showed that 40.2% (88) among surveyed microfinance institutions were dominated by borrowers with primary level of education. In addition, 31.1% (68) of the microfinance institutions were dominated by borrowers with secondary education. The study also revealed that 16.9% (37) and 11.9% (26) of the sampled microfinance institutions constituted post-secondary non-university borrowers and university education borrowers respectively. The surveyed microfinance institutions did not report to have borrowers with no formal education. This distribution indicates most MFIs are serving borrowers of lower level of education i.e. (40.2%) and (31.1%) respectively. This means that these clients lack alternative sources of finance to cater for their financial obligations. It also indicates that MFIs really serves intended individuals that were excluded from the main stream of banking services.
Table 4.5: Distribution of education level of borrowers as reported by surveyed MFIs

<table>
<thead>
<tr>
<th>Education level of MFIs borrowers</th>
<th>Microfinance institutions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td>Primary education</td>
<td>88</td>
<td>40.2</td>
</tr>
<tr>
<td>Secondary education</td>
<td>68</td>
<td>31.1</td>
</tr>
<tr>
<td>Post-secondary non-University</td>
<td>37</td>
<td>16.9</td>
</tr>
<tr>
<td>University</td>
<td>26</td>
<td>11.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>219</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Source: Researcher, 2016

4.2.4 Distribution of Marital status of borrowers as reported in sampled MFIs

Table 4.6 below presents results of marital status of borrowers as reported in surveyed microfinance institutions across study areas. The table indicates that 115 (52.5%) of surveyed microfinance institutions were dominated by unmarried borrowers. On the other hand, 104 (47.5%) of microfinance institutions were dominated by married microfinance clients. The distribution denotes that approximately both categories access microloans from the lending institutes. It also implies that surveyed microfinance institutions rest confidences on their customers to have ability in refinancing their loans to enable operate financially sustainable.

Table 4.6: Distribution of marital status of borrowers as reported in sampled MFIs

<table>
<thead>
<tr>
<th>Marital status of borrowers</th>
<th>Microfinance institutions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td>Not-married</td>
<td>115</td>
<td>52.5</td>
</tr>
<tr>
<td>Married</td>
<td>104</td>
<td>47.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>219</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Source: Researcher, 2016
4.2.5 Distribution of Education level of Owner-managers as reported in sampled MFIs

The surveyed microfinance institutions also reported education levels of owner-managers leading these institutions. The table exhibits that 23 (10.5%) of microfinance institutions were led by managers with secondary level of education. Moreover, 101 (46.1%) of managers among studied non-member-based microfinance institutions had post secondary non-university education. On the other hand, 95 (43.4%) of microfinance institutions were managed by University graduates. The information justifies that large number of MFIs are governed by CEO who possess non-university education. The information further implies that inability of CEOs to govern its MFIs effectively is a threat to portfolio performance of MFIs hence resulting to the failure of MFIs and incapacity of reaching deprived people.

Table 4.7 Distribution of education level of Owner-managers as reported in sampled MFIs

<table>
<thead>
<tr>
<th>Education level of Owner-managers</th>
<th>Microfinance institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
</tr>
<tr>
<td>Secondary education</td>
<td>23</td>
</tr>
<tr>
<td>Post secondary non-University</td>
<td>101</td>
</tr>
<tr>
<td>University</td>
<td>95</td>
</tr>
<tr>
<td>Total</td>
<td>219</td>
</tr>
</tbody>
</table>

Source: Researcher, 2016

4.3 Correlation Analysis

Table 4.8 shows correlation matrix between various variables under study. The independent variables were average age of borrowers, average number of dependants of borrower, average business experience of borrower, gender of borrower, marital status of borrower and education level of borrowers. In addition, the matrix has included control variables which were MFI age, manager experience, MFI size and
manager qualification. The response variable in this study was portfolio at risk of microfinance entities.

Table 4.8: Correlations for socio-economic factors, control and portfolio at risk (n = 219)

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAR (90 days)</td>
<td>.108*</td>
<td>.069</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of bor</td>
<td>.245**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of den</td>
<td>.312**</td>
<td>.070</td>
<td>.158*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exper of bor</td>
<td>.228**</td>
<td>.070</td>
<td>.274**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married bor</td>
<td>.307**</td>
<td>.332**</td>
<td>.070</td>
<td>.158*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male bor</td>
<td>.225**</td>
<td>.149*</td>
<td>.054</td>
<td>.104</td>
<td>.278**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post sect bor</td>
<td>.333**</td>
<td>.055</td>
<td>.110</td>
<td>.079</td>
<td>.076</td>
<td>.017</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sec ed</td>
<td>.001</td>
<td>-.025</td>
<td>.144*</td>
<td>.133</td>
<td>.043</td>
<td>.004</td>
<td>.152**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University</td>
<td>.015</td>
<td>-.067</td>
<td>-.122</td>
<td>-.074</td>
<td>.084</td>
<td>.047</td>
<td>.181**</td>
<td>.145*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manager exp</td>
<td>.088</td>
<td>-.075</td>
<td>-.064</td>
<td>.028</td>
<td>-.047</td>
<td>.051</td>
<td>-.061</td>
<td>-.026</td>
<td>.140*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MFI age</td>
<td>-.063</td>
<td>.021</td>
<td>.008</td>
<td>-.042</td>
<td>-.067</td>
<td>.071</td>
<td>.018</td>
<td>-.010</td>
<td>.024</td>
<td>.026</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MFI size</td>
<td>.157</td>
<td>-.133*</td>
<td>-.113</td>
<td>-.056</td>
<td>-.095</td>
<td>.070</td>
<td>-.091</td>
<td>.056</td>
<td>.088</td>
<td>.048</td>
<td>.135*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manager Sec</td>
<td>-.019</td>
<td>-.129</td>
<td>.058</td>
<td>-.021</td>
<td>-.041</td>
<td>.016</td>
<td>.074</td>
<td>-.021</td>
<td>.061</td>
<td>.024</td>
<td>-.033</td>
<td>.073</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Manager Univ</td>
<td>.023</td>
<td>-.012</td>
<td>-.025</td>
<td>-.029</td>
<td>-.017</td>
<td>.051</td>
<td>-.013</td>
<td>.093</td>
<td>-.018</td>
<td>.090</td>
<td>.127</td>
<td>.077</td>
<td>.240**</td>
<td>1</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

4.3.1 Implication of correlation analysis

Table 4.8 exhibits the Pearson correlation between variables. It reports the direction and degree of the linear relationship that exist between two variables. From the table above, there exist positive and negative relationship between portfolio at risk of microfinance institutions and most of the independent variables. However, the correlation analysis does not show the effects that exist among the variables. The sign shows the direction of the relationship while the degree of relationship is determined by the absolute value. Moreover, the correlation matrix also serves as a check for the collinearity between variables involved in this study to realise set objectives (Hair et al, 2014). The results from multicollinearity diagnostics indicate that there is no extreme multicollinearity among the variables for the study.
4.4 Regression Analysis Procedures

This study used multiple linear regression models in the analysis of the influence of socio-economic factors on portfolio at risk of microfinance institutions. For the sake of having uniformity in results, the model requires that all assumptions be adhered to prior undertaking advanced analysis procedures. Assumptions associated to this model include: normality, homoscedasticity, linearity and multicollinearity (Hair et al., 2006; Ndunguru, 2007).

4.4.1 Normality, multicollinearity, homoscedasticity and linearity

In this study, assumptions of normality and linearity, multicollinearity, constant of error term and independence of observation were tested via different test statistics. This aimed to ensure that there is no any violation of the model assumption before actual analysis of data was made.

The normality of the dependent variable and some independent continuous variables were checked by Shapiro-Wilk test, Kolmogorov-Smirnov and visual scatterplots. The Kolmogorov-Smirnov and Shapiro – Wilk test statistics revealed a p-value of 0.200 and 0.325 respectively. These values are above the p-value 0.05 therefore it is evident that the data were approximately normally distributed. Linearity of the data set was achieved through visual inspection of the relationship of scatterplot matrix. Also, since normality was attained, that also guaranteed existence of linearity of the data set in this study.

The data were equally checked with Durbin Waston test for determining level of independent observation. The Durbin Watson statistic is a number that tests for autocorrelation in the residuals from a statistical regression analysis. It is always between 0 and 4 indices, a value of 2 means that there is no autocorrelation in the sample. Values approaching 0 indicates positive autocorrelation and values toward 4 indicate negative autocorrelation. In this study objective the value of Durbin Watson statistic test shows 1.977 which means the data for this objective were free from autocorrelation (Keenan and Stevens, 2016). Homoscedasticity refers to the assumption that dependent variable exhibits equal levels of variance across the range of predictor variables.
Similarly, multicollinearity was equally checked for its conformity with the data collected from variables in this objective. Hair et al. (2006) noted that a maximum acceptable VIF would be 10.0 and anything higher would indicate a problem. On the other hand, the tolerance value should not be below 0.10 for the data to be acceptable and free from tolerance problems. Having that in mind, the data for this study were tested for multicollinearity and noted that the VIF values in this study objective were not exceeding 2.50. Based on these indices, which were within the range of 10.0 it indicates that the data for this study had no multicollinearity cases.

4.4.2 Hypotheses related to the influence of social-economic variables in this study

This section reveals hypothesis developed on socio-economic variables in this study. This follows a detailed literature review conducted in the previous chapter. These hypotheses were formulated in order to establish the relationship between each identified independent variable and portfolio at risk of microfinance institution (dependent variable). In this first objective of the study, there were six hypotheses developed and tested outlined as follows:

\textit{H1. 1: Age of borrowers of microfinance institution significantly influences portfolio performance of microfinance institutions.}

\textit{H1. 2: Proportion of sex of microfinance institution borrowers significantly influences portfolio performance of microfinance institutions.}

\textit{H1. 3: Proportion of marital status of microfinance institution borrowers significantly influences portfolio performance microfinance institutions.}

\textit{H1. 4: Average family size of borrowers of microfinance institution significantly influences portfolio performance of microfinance institutions.}

\textit{H1. 5: Average business experience of borrowers of microfinance institution significantly influences portfolio performance of microfinance institutions.}

\textit{H1. 6: Proportion of education level of microfinance institution borrowers significantly influences portfolio performance of microfinance institutions.}
4.4.2.1 Hypothesis testing

The study intended to determine the effect of socio-economic factors on portfolio at risk of microfinance entities in the country. For the purpose of determining the combined effect of socio-economic factors on portfolio at risk the study deployed multiple linear regression model. The influence of each variable on portfolio at risk of microfinance entities was tested by the level of significance (p-values).

An overall fit model was deployed to experiment the collective effect of all variables on the portfolio at risk of microfinance entities before testing hypothesis related to each variable of socio economic factors. The overall model was significant at $F (13, 205) = 18.179; p = .000 < .05$, which also indicated that in large, the ideas picked for this study absolutely justify an imperative percentage of the discrepancy in portfolio at risk of microfinance institutions.

Similarly, the investigation established that the approximated result of the ordinary least square (OLS) as well is at a fairly agreeable degree. The adjusted $R^2$ is 0.504 and observed $R^2$ value is 0.535, accordingly. This entail that independent variables can justify about 53.5% of the portfolio at risk of microfinance institution.

4.4.3 Linear Regression Output

This study tested the influence of socio-economic factors on portfolio at risk of microfinance entities. The use of linear regression analysis helps to measure the impact that the explanatory variables have on the explained variable (portfolio at risk). It also aids to determine the extent to which changes in the independent variables influences the reponse variable. Furthermore, the ordinary least square model of analysis exhibits the overall effect of all the predictor variables on the response variable specified for this study.
Table 4.9: Regression Results for Socio-economic Variables on Portfolio at risk of MFIs

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>T Value</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>8.703</td>
<td>6.683</td>
<td>1.302</td>
<td>.194</td>
</tr>
<tr>
<td>Male borrowers</td>
<td>.820</td>
<td>.405</td>
<td>2.024</td>
<td>.044</td>
</tr>
<tr>
<td>Married borrowers</td>
<td>-1.012</td>
<td>.430</td>
<td>-2.357</td>
<td>.019</td>
</tr>
<tr>
<td>Age of borrowers</td>
<td>-.069</td>
<td>.030</td>
<td>-2.289</td>
<td>.023</td>
</tr>
<tr>
<td>Number of dependants</td>
<td>.225</td>
<td>.094</td>
<td>2.384</td>
<td>.018</td>
</tr>
<tr>
<td>Experience of borrowers</td>
<td>-.183</td>
<td>.072</td>
<td>-2.535</td>
<td>.012</td>
</tr>
<tr>
<td>Borrower sec eductn</td>
<td>-.418</td>
<td>.507</td>
<td>-.824</td>
<td>.411</td>
</tr>
<tr>
<td>Post sec non-unive</td>
<td>-1.846</td>
<td>.452</td>
<td>-4.087</td>
<td>.001</td>
</tr>
<tr>
<td>Borrower Univer eductn</td>
<td>-.745</td>
<td>.668</td>
<td>-1.115</td>
<td>.266</td>
</tr>
<tr>
<td>Manager experience</td>
<td>.046</td>
<td>.056</td>
<td>.818</td>
<td>.414</td>
</tr>
<tr>
<td>MFI age</td>
<td>-.078</td>
<td>.084</td>
<td>-.932</td>
<td>.353</td>
</tr>
<tr>
<td>Log MFIs size</td>
<td>.752</td>
<td>.733</td>
<td>1.026</td>
<td>.306</td>
</tr>
<tr>
<td>Manager sec edctn</td>
<td>-.089</td>
<td>.407</td>
<td>-.217</td>
<td>.828</td>
</tr>
<tr>
<td>Manager Univer edtn</td>
<td>.220</td>
<td>.584</td>
<td>.376</td>
<td>.707</td>
</tr>
</tbody>
</table>

R- Square 0.535, Adjusted R- Square 0.504, F- Statistic 18.179, Prob. (F-stat) .000, Number of observations 219, Significant at 5%

Source: Researcher, 2016

\[ PAR \ 90 \ days = \beta_0 + \beta_1 (SEB) - \beta_2 (MSB) - \beta_3 (AGE) + \beta_4 (FSB) - \beta_5 (EDU) - \beta_6 (EXB) + \beta_7 \text{Controls} + \epsilon \quad (i) \]

Where:
PAR 90 days = Portfolio at risk more than 90 days of MFIs
AGE = age of borrower, SEB = sex of borrower, EDU = education of borrower, MSB = Marital status of borrower, EXB = experience of borrower and FSB = family size of borrower
Controls = control variables (MFI size, MFI age, Manager Experience and Manager Education qualification).

Table 4.9 of the regression output point out male borrowers of microfinance institution is positive and statistically significant at level of 5% (p = 0.44). These results indicate that increase in number of male borrowers accessing credit services in microfinance institutions results in 0.82 unit increase in portfolio at risk of microfinance entity. This further means that male microfinance clients influence portfolio at risk of microfinance institutions positively. The regression results agreed strongly with the hypothesis which stipulated that sex of MFI borrowers had direct relationship with portfolio performance.

Therefore, compared to microfinance institutions which extend credits and enable female borrowers utilise loan services. Microfinance institutions that provide loans to male borrowers have higher chance to increase portfolio at risk of their microfinance institution. In other words, the rate of loan repayment from the male microfinance borrowers is highly uncertain leading to increased portfolio at risk of the microfinance companies; consequently, decreasing financial sustainability of the microfinance institution to continue financial support to the needy low-income earners.

Similarly, the category of married borrowers in the regression results Table 4.15 is found to be negatively associated and statistically imperative at level of 5% (p = 0.019). This means that the category is one a determinant of microfinance portfolio at risk. The findings imply further that a unit increase of married microfinance borrowers leads to 1.012 unit reduction in portfolio at risk of microfinance entity. Therefore, compared to microfinance institutions which provide loans to proportion of unmarried microfinance borrowers, MFIs that extend credit services to married borrowers stand a better chance of improving their loan portfolios performance. These findings further mean that proportion of married microfinance borrowers are considered to be more responsible, committed and therefore fulfill their obligation of loan repayment as required. This leads to reduced portfolio at risk of the microfinance institutions and enhance institutional financial sustainability.
Moreover, the regression output Table 4.15 indicates the variable average age of borrowers of microfinance institutions is negatively related and statistically significant at level of 5% (0.023). The significance level is below conventional 0.05 (p < 0.05), this means that the variable age of borrower of microfinance institution determines portfolio performance of microfinance institutions. The results indicate that if other variables are regarded invariable, a unit increase of microfinance institutions that offered credits to matured borrowers leads to decrease rate of portfolio at risk of microfinance entities by 0.069 unit. These regression results are in line with the hypothesis which stated that age of microfinance borrower influences portfolio performance. These results portray further that as the age of microfinance borrower increases, one gains experience in business and become settled. In addition, clients are capable of accumulating income to enable repayment of their dues than the youngsters, resulting in deceased portfolio at risk of microfinance institutions and improved quality of financial performance.

The variable number of dependants of microfinance borrower in the regression output is found positive and statistically significant at level of 5% (p = 0.018). The coefficient was positively signed in the hypothesis and the results strongly supported this view point. The family size of borrower influences portfolio at risk. This implies that a unit increase in microfinance borrowers with many dependants to MFIs leads to 0.225 unit increase in portfolio at risk of respective lending institute. These findings further imply that microfinance borrowers with higher number of dependants within their households are likely to produce only for consumption purposes than being committed to manage repayments. Consequently, the lending institute experience high deliquescent rate due to low repayment and hence increase risk of loan portfolio of MFIs.

Furthermore, Table 4.9 indicates variable average business experience of borrower to have negatively related and significant at 5 % (p = 0.012). This means that keeping other factors constant, a unit increase of credits to microfinance borrowers with business experience leads to decreased rate of portfolio at risk of microfinance institutions by 0.183 units. In other words, microfinance institutions that extend loans
to borrowers with reliable experiences in business are likely to be positively associated with loan repayments.

The category post-secondary non-university in the regression table shows negatively related and statistically significant at level of 1% (p = 0.001). This suggests that a unit increase of borrowers of post-secondary non-university to microfinance institutions results in 1.846 unit decrease in loan portfolio at risk of microfinance institutions. It can therefore be argued that borrowers with post-secondary non-university determine portfolio performance of microfinance institutions. Thus, in order to ensure healthy loan portfolio and sustainable microfinance service delivery, microfinance institutions need to thoroughly define type of clients capable to repay cost of loans offered to enable sustainable microfinance operation.

4.5 The effect of credit application appraisal on portfolio at risk of MFIs
This sub section of the study sought to determines the effect of credit application appraisal on portfolio at risk of microfinance entities. The independent variables in this objective were – average capital of microfinance borrower, average borrower business income, membership duration of microfinance borrower and collateral requirements of microfinance borrowers. The study involved control variables in this analysis which were; MFI age, MFI size, Owner-manager education qualification and Owner-manager business experience. The reponse variable of the study was portfolio at risk of microfinance institution.

4.5.1 Descriptive statistics of independent variables as reported in sampled MFIs
The surveyed microfinance institutions showed the mean value for average capital of their borrowers for the period to be Tsh 7,179,086.77. Moreover, the observed amount ranges between Tsh 500,000 as minimum and Tsh 15,000,000.00 maximum amount. The variation in recorded capital of borrower during the period was Tsh 3,682,950.67. This result implies that microfinance clients served by the MFIs in study areas had relatively low capital for their business. It also means that
microfinance institutions need to be conscious when extending loans to their clients to avoid repayment problems.

On the other hand, Table 4.10 also exhibits microfinance institutions’ record of their borrowers’ duration in contact with lending institutes to have a mean value of 28.89 months. The study observed a minimum of 6 months and maximum of 58 months for borrower duration in contact with MFIs. The dispersion of borrower duration with microfinance institution was 12.018 months. In other words, microfinance borrowers have been moving from one lending institution to another for accessing microcredits services. Consequently, the lending institute has to employ effective appraisal procedures to ensure that credits are extended to only those clients capable of meeting their loan obligations accordingly.

Similarly, Table 4.10 below reveals that microfinance institutions reported average borrower business income to have minimum and maximum of Tsh 1,500,000 and Tsh 20,000,000.00 respectively. Moreover, the surveyed MFIs showed the mean value of borrower business income of Tsh 8,201,415.53 during the period of study. This distribution indicates that microfinance borrowers experienced low return from their business. Consequently, they are likely to be unable of becoming effective in servicing borrowed funds to their respective lending institutes.

Table 4.10: Descriptive statistics of independent variables as reported by surveyed MFIs

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital of borrower (TZS)</td>
<td>7179086.77</td>
<td>3682950.67</td>
<td>500000</td>
<td>1500000</td>
<td>219</td>
</tr>
<tr>
<td>Borrower duration in MFI</td>
<td>28.89</td>
<td>12.018</td>
<td>6</td>
<td>58</td>
<td>219</td>
</tr>
<tr>
<td>Business income of borr</td>
<td>8201415.53</td>
<td>5974260</td>
<td>1500000</td>
<td>20000000</td>
<td>219</td>
</tr>
</tbody>
</table>

Source: Researcher, 2016
4.5.2 Distribution of collateral requirements of borrowers as reported by sampled MFIs

The surveyed microfinance institutions also reported types of collateral requirements needed by borrowers to enable access loan services. The study recorded that 48.9% (107) of microfinance institutions preferred their borrowers to use physical kind of collateral when accessing loan services. On the other hand, 44.3% (97) of the microfinance institutions during the study required their loan applicants to use social collateral (group lending approach) in launching loan requests to MFIs. Furthermore, 6.8% (15) of microfinance institutions accepted personal collateral (personal guarantee) in processing and granting credits to loan applicants. This distribution suggests that majority of microfinance institutions in the study areas preferred borrowers to use physical collateral approach (traditional collateral), followed by group lending when intending to access microcredit services. This further means that microfinance institutions in studied areas consider these two lending approaches relevant and result in high loan repayment rates and reduced portfolio at risk.

Table 4.1: Distribution of collateral requirements as reported in sampled microfinance institutions

<table>
<thead>
<tr>
<th>MFIs collateral requirements</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical collateral</td>
<td>107</td>
<td>48.9</td>
</tr>
<tr>
<td>Social collateral</td>
<td>97</td>
<td>44.3</td>
</tr>
<tr>
<td>Personal collateral</td>
<td>15</td>
<td>6.8</td>
</tr>
<tr>
<td>Total</td>
<td>219</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Researcher, 2016
4.6 Correlation Analysis
The information in Table 4.12 below gives correlation matrix of the variables linked to credit application appraisal on portfolio at risk of microfinance entities. The predictor variables identified were average business income of borrower, average capital of borrower, average membership duration of borrower and collateral requirement of borrower. In addition, the analysis has included control variables which were; MFI age, Owner-manager experience, MFI size and Owner-manager education qualification.

Table 4.12: Correlations for credit application appraisal on Portfolio of MFIs (n = 219)

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Portfolio at risk</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Memb dur bor</td>
<td>-.166*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Avg Cap bor</td>
<td>-.211**</td>
<td>-.014</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Avg Incom bor</td>
<td>-.244**</td>
<td>.064</td>
<td>.393**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Social capital</td>
<td>-.175**</td>
<td>-.013</td>
<td>-.009</td>
<td>.089</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Personal guar</td>
<td>.009</td>
<td>-.028</td>
<td>.005</td>
<td>.136*</td>
<td>.231**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Manager exper</td>
<td>.088</td>
<td>-.063</td>
<td>.134*</td>
<td>.094</td>
<td>-.017</td>
<td>.066</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. MFI age</td>
<td>-.063</td>
<td>-.071</td>
<td>.027</td>
<td>.053</td>
<td>.029</td>
<td>.056</td>
<td>.026</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. MFI size</td>
<td>.157*</td>
<td>-.061</td>
<td>-.024</td>
<td>-.007</td>
<td>.170**</td>
<td>.078</td>
<td>.048</td>
<td>-.133*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Borr sec edm</td>
<td>.019</td>
<td>.101</td>
<td>.024</td>
<td>.132</td>
<td>-.131</td>
<td>.092</td>
<td>.024</td>
<td>-.033</td>
<td>.073</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11. Borr Univer</td>
<td>.021</td>
<td>.071</td>
<td>.007</td>
<td>-.006</td>
<td>.059</td>
<td>-.100</td>
<td>.090</td>
<td>.127</td>
<td>.077</td>
<td>.246**</td>
<td>1</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Source: Researcher, 2016

4.6.1 Implication from correlation analysis
The Pearson correlations in Table 4.12 indicates the variables average membership duration, average capital of borrower and average business income of borrowers are negatively and significantly correlated with portfolio at risk of MFIs. In addition, the category social capital of borrowers is observed correlated to the response variable.
However, the analysis does not show the effect that exists among the study variables. On the other hand, the correlation matrices also assist as a check for collinearity between variables employed to achieve specified study objective. It is therefore noted that the correlation analysis portrays absence of collinearity problems between variables under study. Collinearity problems could have caused decrease of the explanatory power of the predictor variables upon the response variable leading to drawing wrong conclusions (Hair et al., 2014).

4.7 Linear Regression Analysis Procedures

Linear regression model was deployed in analysis of the effects of credit application appraisal on portfolio at risk of microfinance institutions. For the sake of guaranteeing valid and uniformity of results, the model requires all assumptions of the model to be observed before undertaking advanced analysis procedures. Assumptions associated with this model include normality, homoscedasticity, linearity and multicollinearity (Hair et al., 2006; Ndunguru, 2007).

4.7.1 Normality, multicollinearity, homoscedasticity and linearity

In this study, normality of the dependent variable was tested through Kolmogorov-Smirnov and Shapiro-Wilk statistic tests including visual scatterplots. The Shapiro-Wilk (S-W) normality test at default bears the null hypothesis that the data is normally distributed. The output of the test statistics revealed a p-value of 0.067 for Shapiro-Wilk test and p-value 0.201 for Kolmogorov-Smirnov test. Thus, the null hypothesis was accepted and therefore the data of the dependent variable were almost normally distributed (Keenan & Stevens, 2016).

With regard to the normality of the predictor variables, these were tested by visual scatterplots. However, the variable average capital of microfinance borrower and average business income of microfinance borrowers were initially found not normally distributed. These were transformed into logarithmic form (natural log) in order to attain normality. Norusis (2012) adds that statistical inference becomes less and less robust as distributions depart from normality. Warranting the information of the research is necessary for ensuring data comply with normality requirement prior to undertaking regression analysis.
Similarly, the independent test of observation was conducted in order to assess the extent to which the data conform to the requirement of the linear regression model. In this study, Durbin Watson test was used for that purpose. The instrument tests for autocorrelation in the residuals from a statistical regression analysis. In this regard, the statistic test indicated 2.026 indices hence an assumption of independent observation was not violated.

With regard to the homoscedasticity, this requires that the standard deviations of errors of prediction to be approximately equal for all predicted dependent variable scores. This was equally checked and the visual plots showed points scattered almost along the line. As such the residuals were approximately equal in width at all values of the predicted dependent variable.

Multicollinearity assumption was tested through tolerance and variance inflation factor. The test assesses the extent to which variables were highly correlated between them. In this study the VIF value for variables of this objective was not exceeding 2.0 hence the data for this study had no multicollinearity problems. Hair (2010) argues that multicolineality may cause reduced explanatory power of the predictor variables to the dependent variable, resulting in drawing unfair conclusion of the study.

4.7.2 Hypothesis related to the effect of credit application appraisal on portfolio at risk of MFIs

The credit application appraisal variables used in this study were: average borrower business income, collateral requirement, average capital of borrower and average membership duration of borrower. Through these variables, the effect of credit application appraisal on portfolio at risk of microfinance institutions was analysed. The following hypotheses were used to test this relationship:

*H1. 1: Proportion of collateral requirements of microfinance borrowers significantly influences portfolio at risk of microfinance institutions.*
H1. 2: *Average business income of microfinance borrower significantly influences portfolio at risk of microfinance institution.*

H1. 3: *Average capital of microfinance borrower significantly influences portfolio at risk of microfinance institution.*

H1. 4: *Membership duration of microfinance borrowers significantly influences portfolio at risk of microfinance institutions.*

4.7.2.1 **Hypothesis testing**

The study intended to determine the effect of credit application appraisal on portfolio at risk of microfinance entities in Tanzania. For the purpose of determining the effect of credit application appraisal on portfolio at risk of microfinance entities, the study deployed multiple linear regression model. The influence of each variable on portfolio at risk of microfinance entities was tested by the level of significance (p-values).

An overall model fit was deployed to experiment the collective effect of all variables on the portfolio at risk of microfinance entities before testing hypothesis related to each variable of credit application appraisal. The overall model was significant at $F(10, 208) = 18.906; \ p = .000 < .05$, which also indicated that in large, the ideas picked for this study absolutely justify an imperative percentage of the discrepancy in portfolio at risk of microfinance institutions.

Similarly, the investigation established that the approximated result of multiple regression analysis as well is at a fairly agreeable degree. The adjusted $R^2$ is 0.449 and observed $R^2$ value is 0.476, respectively. This entail that independent variables can justifiy about 47.6% of the portfolio at risk of microfinance entity.

4.7.3 **Linear Regression Results**

The study used ordinarily least square (OLS) model to test the influence of credit application appraisal on portfolio at risk of microfinance institution. The model helps to measure the impact that the explanatory variables have on the explained variable (portfolio at risk). It also aids to determine the extent to which changes in the independent variables influences the response variable. Predictor variables of this
study were: collateral requirements microfinance borrowers, average membership
duration of borrowers; log of capital of borrowers and log of borrower business
income.

Table 4.1: Model results for credit application appraisal variables on PAR of MFIs

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients</th>
<th>Standard Error</th>
<th>T Value</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>19.553</td>
<td>8.337</td>
<td>2.345</td>
<td>.020</td>
</tr>
<tr>
<td>Log Capital borr</td>
<td>-1.534</td>
<td>.662</td>
<td>-2.316</td>
<td>.022</td>
</tr>
<tr>
<td>Avg borr duration</td>
<td>-.039</td>
<td>.016</td>
<td>-2.400</td>
<td>.017</td>
</tr>
<tr>
<td>Log Income borr</td>
<td>-1.478</td>
<td>.646</td>
<td>-2.287</td>
<td>.023</td>
</tr>
<tr>
<td>Social capital</td>
<td>-.884</td>
<td>.408</td>
<td>-2.167</td>
<td>.031</td>
</tr>
<tr>
<td>Personal guarantee</td>
<td>-.156</td>
<td>.791</td>
<td>-1.97</td>
<td>.844</td>
</tr>
<tr>
<td>Manager exper</td>
<td>.106</td>
<td>.059</td>
<td>1.799</td>
<td>.074</td>
</tr>
<tr>
<td>MFI age</td>
<td>-.072</td>
<td>.089</td>
<td>-.813</td>
<td>.417</td>
</tr>
<tr>
<td>Log MFI size</td>
<td>1.271</td>
<td>.772</td>
<td>1.648</td>
<td>.101</td>
</tr>
<tr>
<td>Manager sec edtn</td>
<td>.092</td>
<td>.435</td>
<td>.211</td>
<td>.833</td>
</tr>
<tr>
<td>Manager Univ edtn</td>
<td>.631</td>
<td>.619</td>
<td>1.020</td>
<td>.309</td>
</tr>
</tbody>
</table>

R-Square 0.476, Adjusted R-Square 0.449, F-Statistic 18.906, Prob. (F-stat) .000,
Number of observations 219, Significance at 5%

Source: Researcher, 2016

\[ PAR\ 90\ \text{days} = \beta_0 - \beta_1 \text{COB} - \beta_2 \text{MBD} - \beta_3 \text{BBI} - \beta_4 \text{COLL} + \beta_5 \text{Controls} + \epsilon \] (ii)

Where:
PAR (90) = Portfolio at risk more than 90 days of MFIs, BBI = Borrower business income

COLL = Collateral requirements of borrowers, COB = Capital of borrowers, MBD = Membership duration of borrower.

Controls = control variables (MFI size, MFI age, Manager’s experience and Manager’s education qualification)

The findings of the linear regression output Table 4.1 indicate that the “variable average capital of microfinance borrowers” has negative and statistically significant at level of 5% (p = 0.022). This means that this variable determines portfolio at risk of microfinance institution. The findings further mean that keeping all other factors constant, unit increase of microfinance institutions that extends credits to borrowers with sufficient capital of business results in 1.534 unit decrease in loan portfolio at risk of microfinance institution. These findings are in line with the hypothesis that capital of borrower had significant relationship with portfolio performance. Therefore, microfinance institutions which provide credit facilities to borrowers with relatively high capital in their business, are likely to be effective in their business investment options. Consequently, they become negatively associated to repayment problems. High capital of microfinance borrowers indicates commitment and experience of borrowers in managing their business and effective loan repayment, thus, making the lending institute record low portfolio at risk and financially sustainable to continue extending credit services to low income individuals.

Similarly, the variable average membership duration of borrower is found in the model results Table 4.13 to be negatively related and significant at level of 5% (p = 0.017). These results support stated hypothesis that borrower membership duration is directly related to portfolio performance. The findings therefore imply that a unit increase of microfinance loans to borrowers that have been in contact with the firm for long duration results in 0.039 unit decrease of portfolio at risk of microfinance institutions. This further implies that microfinance institutions that retain their borrowers through loan services make them consider themselves responsible for undertaking their obligation of repayment. In addition, it makes clients own the
services offered by the company and ensure healthy financial performance. On the other hand, when loans are extended to borrowers not familiar with microfinance institution, they are likely to be irresponsible for repaying and hence increase portfolio at risk.

Moreover, the variable average business income of borrower is observed in regression results output negatively related and statistically significant at level of 5% (p = 0.023). This implies that unit increase of microfinance loans to borrowers with high business income results in 1.478 unit decrease of portfolio at risk of the microfinance institution. Therefore, in order to ensure a healthy loan portfolio, the lending institutes need to consider sound cash flow of the main business of microfinance client. Also, consideration is equally required to all other sources of finance from the clients prior to loan disbursement to them since that would help the MFIs avoid bad debts that increase risk of loan portfolio to the company.

Furthermore, the category “social capital of microfinance borrower” is found (see Table 4.13) to be negatively related to and significant at 5% (p = 0.031). This indicates that the category “social capital of microfinance client” determines portfolio at risk of MFIs. The findings further imply that microfinance institutions can minimize problems of non-performing loans and decrease portfolio at risk when emphasis is put on the use of social collateral as condition for accessing credits to MFIs. The use of social capital which essentially lies on trust among groups of borrowers serves to monitor themselves on effective use of borrowed funds, to speed up regular repayments and avoid social embarrassment among them. Consequently, this leads to reduction of microfinance portfolio at risk and enhance institutional financial viability.

4.8 The effects of credit supervision practices on portfolio at risk of MFIs
Credit supervision is considered one of the most important activities in microfinance lending business. It starts from the sale of the product and does not stop until final payment has been received (Hunte, 1996; Ibtissem & Bouri, 2013). In this study, the factors related to credit supervision practices include: borrowers per loan officer,
training sessions, operational costs per borrower, timeliness of loan release, follow up measures and repayment period.

4.8.1 Descriptive statistics for the independent variables as reported by sampled MFIs
Table 4.14 exhibits the records from surveyed microfinance institutions on the average of borrowers per loan officer during the study period to be the ratio mean value of 157.1872. Moreover, it falls within a range of 49.0 (minimum) and 401.0 (maximum) ratio and standard deviation of 88.42322. This depicts that microfinance entities studied possess required ratio of loan officer. Therefore, loan officers are believed to effectively monitor their customers to guarantee the returns and minimized loans related problems.

The table also shows microfinance entities’ average duration on loan release to their borrowers to be a mean value of 4.278 days. The variable also recorded a minimum and a maximum of 1.0 and 14.0 days taken to disburse loans to their clients. This distribution indicates that the visited non-member based microfinance institutions during the study period do not take long days to process and release credits to loan applicants. This helps encourage their clients to timely requests the funds for deprived people to invest in their business and facilitate the repayments.

The variable microfinance training sessions to borrowers was observed to have a mean of 34.3014 sessions in a year. Furthermore, it falls within a range of a minimum of 5.0 and maximum of 80.0 sessions in a year respectively. The variation in provision of training frequency to microfinance clients for the period reads 19.80364 sessions. This means that microfinance institutions in the study areas have been effective in providing training to their clients. Trainings help borrowers on proper utilisation of funds and more importantly recover the credited amount to the firm timely.

Table 4.14 also exhibits minimum and maximum microfinance followup measures of 10.0 and 140.0 frequencies on disbursed loans during the year under study. Similarly, the variable recorded a mean of 57.5068 and standard deviation of 29.13955
respectively. This implies that microfinance institutions in the study areas for the period have not invested much in monitoring their clients. On the other hand, the variable repayment period in the table shows a mean of 22.3790 days, indicating clients in studied microfinance institutions manage their loan installments within days. The study again portrays a minimum and maximum of 7 and 30 days for regular loan repayments. Generally, the study considers repayment duration for borrowers during the study period to be convenient to loan beneficiaries. Therefore, problems of loan are perceived to be minimized because customers have been provided with the specified time of repaying their loans suiting their ability obeys loan installments given.

The variable average operations cost per borrower during the study period as observed by surveyed microfinance institutions reads a minimum of 25,000.00 Tsh and maximum of 350,000.00 Tsh. In addition, the variable shows a mean value operational cost per borrower to be 151,746.18 Tsh, with a variation in cost per borrower recorded 107,892.97 Tsh during the year under study. This implies that microfinance entities meet huge costs of operations concerned business hence marking an entity to charge high interest rates to recover necessary costs. Consequently, microfinance borrowers may likely be unable to bear cost of loans and shy away from repayments.
Table 4.14: Descriptive statistics of credit supervision practices variables as reported in surveyed MFIs

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borrowers per loan officer</td>
<td>157.1872</td>
<td>88.42322</td>
<td>49.00</td>
<td>401.00</td>
<td>219</td>
</tr>
<tr>
<td>Timeliness of loan release</td>
<td>4.2785</td>
<td>2.43447</td>
<td>1.00</td>
<td>14.00</td>
<td>219</td>
</tr>
<tr>
<td>Training sessions</td>
<td>34.3014</td>
<td>19.80364</td>
<td>5.00</td>
<td>80.00</td>
<td>219</td>
</tr>
<tr>
<td>Follow up measures</td>
<td>57.5068</td>
<td>29.13955</td>
<td>10.00</td>
<td>140.00</td>
<td>219</td>
</tr>
<tr>
<td>Repayment period</td>
<td>22.3790</td>
<td>9.48672</td>
<td>7.00</td>
<td>30.00</td>
<td>219</td>
</tr>
<tr>
<td>Operations cost per borrow</td>
<td>151746.18</td>
<td>107892.97</td>
<td>25000.00</td>
<td>350000.00</td>
<td>219</td>
</tr>
</tbody>
</table>

Source: Researcher, 2016

4.9 Correlation Analysis

Table 4.15 below presents correlation analysis for the effect of credit supervision practices on portfolio at risk of microfinance institutions. The independent variables of interest were: average of borrowers per loan officer, average training sessions, average operational costs per borrower, average timeliness of loan release, average follow up measures and average repayment period. The analysis also involved control variables: MF age, MFI size, Owner-manager experiences and Owner-manager education qualification. The response variable of the study was portfolio at risk of microfinance institution.
Table 4.15: Correlation matrix for credit supervision practices on PAR of MFIs (n=219)

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Portfolio at risk</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Borrowers to offic</td>
<td>.159*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Press-release loa</td>
<td>.161*</td>
<td>.021</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Log cost per borr</td>
<td>-.210**</td>
<td>.084</td>
<td>.231**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Training sessions</td>
<td>-.142*</td>
<td>.001</td>
<td>-.066</td>
<td>.012</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Followup mean</td>
<td>.017</td>
<td>.010</td>
<td>.032</td>
<td>-.013</td>
<td>-.016</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Repayment period</td>
<td>-.040</td>
<td>.028</td>
<td>-.073</td>
<td>.108</td>
<td>.221</td>
<td>.080</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Manager exper</td>
<td>.088</td>
<td>.029</td>
<td>-.060</td>
<td>.055</td>
<td>-.031</td>
<td>.009</td>
<td>-.130</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. MFIs age</td>
<td>-.063</td>
<td>.017</td>
<td>.008</td>
<td>.002</td>
<td>.071</td>
<td>.002</td>
<td>-.020</td>
<td>-.025</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. MFIs size</td>
<td>.157*</td>
<td>.003</td>
<td>.015</td>
<td>-.112</td>
<td>-.037</td>
<td>.020</td>
<td>.159*</td>
<td>.048</td>
<td>.133*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Manager sec edn</td>
<td>-.019</td>
<td>.052</td>
<td>.057</td>
<td>.098</td>
<td>-.029</td>
<td>.129</td>
<td>.082</td>
<td>.024</td>
<td>-.033</td>
<td>.073</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>12. Manager univ ed</td>
<td>.021</td>
<td>.112</td>
<td>-.048</td>
<td>.014</td>
<td>.063</td>
<td>.101</td>
<td>.005</td>
<td>.090</td>
<td>.127</td>
<td>.077</td>
<td>.246**</td>
<td>1</td>
</tr>
</tbody>
</table>

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Researcher, 2016

4.9.1 Implication of correlation analysis

The Pearson correlations analysis in Table 4.15 above indicates the variable for number of borrowers per loan officer and timeliness to loan release correlates with portfolio at risk at p value < .05. However, the variables training sessions and operational cost per borrower had negative and significant relationship with portfolio at risk of MFIs. The table also assists to check for collinearity between variables involved in this study. The ‘rule of thumb’ considers the existence of collinearity between variables at a correlation value of 0.5 and above. From Table 4.15, there existed no multicollinearity among the variables for this study (Hair et al., 2006; Ndunguru, 2007).
4.10 Linear Regression Analysis Procedures

This section reveals assumptions involved for use of multiple linear regression model in this study. The objective of this study was to determine the effects of credit supervision practices on portfolio at risk of microfinance institutions in Tanzania. In order to produce consistent and unbiased results, assumptions of the model need to be adhered to prior undertaking advanced analysis procedures. The assumptions associated with this model include normality, homoscedasticity, linearity and multicollinearity (Hair et al., 2006; Ndunguru, 2007).

4.10.1 Normality, linearity, multicollinearity, independent observation and homoscedasticity

Multicollinearity being one of model assumptions was tested by variation inflation factor (VIF). The maximum variance inflation factors among regressed variables were observed not exceeding 2.50 in all variables. This range was within the acceptable indices of 10.0 for data to be considered to have multicollinearity problems (Woodridge, 2000; Keenan & Stevens, 2016). Thus, the data for this study objective was considered to be free from the problem of multicollinearity.

In addition, normality test for the dependent variable is required to ensure the relevancy of any study in linear regression analysis. Although some literature suggests that normality testing is equally needed on independent variables to ensure reliable regression coefficient. However, Woodridge (2006) adds that if that requirement were to hold, it could not be possible to use dummy coded variables in regression models. Consequently, there is no requirement that predictor variables be normally distributed.

In this study, normality of the dependent variable and most of the predictor variables were tested by visual plots and the Shapiro-Wilk test statistics. However, the variable operational cost per borrower was initially found not normally distributed. It was then transformed into logarithmic form (natural log) in order to attain normality. The Shapiro-Wilk statistic test was performed for checking the normality of the dependent variable data set. The test statistic indicated a p-value 0.200. This means that the data for this study were almost normally distributed and hence in line with
the model requirement for further analysis. With regard to linearity assumption, this was then automatically attained after normality was achieved.

Similarly, the constant of error variance was equally checked through the scatter plot. The test observed the points were scattered almost along the line. In addition, residuals were proximately equal in width at all values of the predicted dependent variable. Moreover, independence observation assumption was checked through Durbin Watson test statistics. The outcome of statistic test indicated a value of 2.072. The obtained value was considered relevant since it is within the acceptable range of between 1 and 3 indices. For this reason, the data of this study were favourable for proceeding to use OLS regression analysis and generalisation of study findings (Keenan & Stevens, 2016).

4.10.2 Hypotheses related to the effect of credit supervision practices

There were six hypotheses formulated for testing the relationship between credit supervision practices on portfolio at risk of microfinance institutions. These hypotheses were developed basing on the variables related to factor credit supervision practices. The variables include: timeliness of loan release, operational cost per borrower, training sessions, borrowers to loan officer, follow up measures and repayment period. The six hypotheses to be tested were:

H1. 1: Number of borrowers per loan officer of microfinance institutions and portfolio at risk of microfinance institution are significantly related.

H1. 2: Training sessions of microfinance institutions and portfolio at risk of microfinance institutions are significantly related.

H1. 3: Timely loan release of microfinance institutions and portfolio at risk of microfinance institutions are significantly related.

H1. 4: Follow up period measures of microfinance institutions and portfolio at risk of microfinance institutions are significantly related.

H1. 5: Operational cost per borrower of microfinance institutions and portfolio at risk of microfinance institutions are significantly related.
**H1. 6: Microfinance institutions repayment periods and portfolio at risk of microfinance institutions are significantly related.**

**4.10.2.1 Hypotheses testing**

The third objective of this study was to determine the effect of credit supervision practices and portfolio at risk of microfinance institution. The multiple linear regression model was deployed to identify the pooled effect of all credit supervision practices of the study. Finally, p-values level was used to measure the contribution of each variable on portfolio at risk of microfinance entities.

An overall fit model was deployed to measure the joint effects of all variables on the portfolio at risk of microfinance entities before testing hypothesis related to each variable of credit supervision practices. The overall model was significant at $F(11, 207) = 15.227; p = .002 < 0.05$. This means that credit supervision practices selected for this study were good predictors of portfolio at risk of microfinance institutions.

Likewise, the research discovered that the approximated ordinary least square (OLS) of linear multiple regression model is also at a fairly reasonable degree. The adjusted $R^2$ is 0.415 and observed $R^2$ value is 0.447, accordingly. This indicates that influencing variables can justify about 44.7% of the portfolio at risk of microfinance entity.

**4.10.3 Regression Results**

Table 4.16 presents results on the variables included in OLS regression model. This model helps to determine the impact of the explanatory variables on the explained variable (portfolio at risk). It also aids to ascertain the extent to which changes in the independent variables influence the response variable. Furthermore, the regression model of analysis exhibits the overall effect of all the predictor variables on the response variable specified for this study.
Table 4.16: Model results for credit supervision practices on portfolio at risk of MFIs

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients</th>
<th>Standard Error</th>
<th>T Value</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>5.252</td>
<td>8.323</td>
<td>.631</td>
<td>.529</td>
</tr>
<tr>
<td>Borrowers to officer</td>
<td>.006</td>
<td>.002</td>
<td>2.561</td>
<td>.011</td>
</tr>
<tr>
<td>Timely loan release</td>
<td>.167</td>
<td>.083</td>
<td>2.015</td>
<td>.045</td>
</tr>
<tr>
<td>Log optn cost per borr</td>
<td>-1.183</td>
<td>.537</td>
<td>-2.204</td>
<td>.029</td>
</tr>
<tr>
<td>Training sessions</td>
<td>-.022</td>
<td>.010</td>
<td>-2.197</td>
<td>.029</td>
</tr>
<tr>
<td>Followup measures</td>
<td>-.001</td>
<td>.007</td>
<td>-.103</td>
<td>.918</td>
</tr>
<tr>
<td>Repayment period</td>
<td>-.003</td>
<td>.021</td>
<td>-.128</td>
<td>.898</td>
</tr>
<tr>
<td>Manager exper</td>
<td>.057</td>
<td>.060</td>
<td>.954</td>
<td>.341</td>
</tr>
<tr>
<td>MFI age</td>
<td>-.057</td>
<td>.090</td>
<td>-.628</td>
<td>.531</td>
</tr>
<tr>
<td>Log MFI size</td>
<td>1.524</td>
<td>.786</td>
<td>1.940</td>
<td>.054</td>
</tr>
<tr>
<td>Manager sec edtn</td>
<td>.111</td>
<td>.439</td>
<td>.253</td>
<td>.801</td>
</tr>
<tr>
<td>Manager univ edtn</td>
<td>.636</td>
<td>.632</td>
<td>1.006</td>
<td>.316</td>
</tr>
</tbody>
</table>

R- Square 0.447, Adjusted R- Square 0.415, F- Statistic 15.227, Prob. (F-stat) .002, Number of observations 219, Significant at 5%

Source: Researcher, 2016

\[
PAR = \beta_0 - \beta_1(\text{OPC}) - \beta_2(\text{TRG}) + \beta_3(\text{BORR}) + \beta_4(TML) - \beta_5(\text{FLP}) - \beta_6(\text{CRP}) + \beta_7 \\
\text{Controls} + \varepsilon \ldots \ldots \ldots (iii)
\]

PAR 90 days = Portfolio at risk more than 90 days of MFIs, BORR = Number of borrowers per loan officer, OPC = Operational cost per borrower, TRG = Training
sessions given, $TML = \text{Timeliness of loan release}$, $FLP = \text{Follow up period measures}$, $CRP = \text{Convenience of repayment period}$, $Controls = \text{Control variables} = \text{MFI size, MFI age, Manager's experience and Manager's education}$

From Table 4.16 after controlling for MFI age, size, manager’s experience and education; the variable timeliness on loan release were found positively related and measurably huge at level of 5% ($p = 0.045$). This implies the variable is a determinant of portfolio in risk of microfinance institution. If the other factors are held steady (ceteris poribus), an expansion in number of days for handling and discharging customers' credits causes an expansion in portfolio at risk of the microfinance institution by 0.167 units. In other words, microfinance organizations ought to attempt shorter number of days for preparing customers' credit applications and discharging assets so as to diminish portfolio at risk of their gross advance portfolio. This would empower borrowers use the acquired sum in their arranged venture openings including submitting assets into other social necessities. Therefore, microfinance institutions that give credits to their customers timely are probably going to energize compelling usage of the borrowed amount hence reducing advance reimbursement problems.

Likewise, the variable for borrowers per advance officer proportion in Table 4.16 above is positive and statistically significant at level of 5% ($p = 0.011$). These outcomes suggest that the higher the proportion of borrowers to an advance official, the higher the rate of microfinance portfolio at risk. As it were, microfinance establishments that keep up higher number of customers to be directed by one advance official may bring about an expansion portfolio at risk of those separate MFIs. It's a given that the degree of remarkable advances to the microfinance establishments is credited to expanding the quantity of microfinance borrowers that must be under single advance official. This is on the grounds that the capacity of the credit official to oversee enormous number of customers is probably going to be diminished, bringing about expanded deliquescent and monetary underperformance of the foundation.
The variable instructional meetings led by the microfinance foundations as appeared in the relapse yield table uncover to be adversely connected and factually noteworthy at level of 5% (p = 0.029). These outcomes imply that microfinance organizations that expand instructional meetings on different aptitudes to their borrowers acknowledge diminishing of the rate of danger of microfinance gross credit portfolio. This was commonly expected in light of the fact that expansion in recurrence of instructional courses of the microfinance establishment to their borrowers means increment of the fundamental information and abilities on the most ideal approaches to keep their business records and appropriate usage of assets.

Besides, the variable operational expense per borrower in Table 4.16, was observed to be adversely and factually noteworthy at level of 5% (p = 0.029). This implies the variable is a determinant of microfinance portfolio execution. This proposes a unit increment in microfinance operational cost (spending plan) for overseeing singular borrower of the microfinance foundation causes 1.183 units decrease in credit portfolio in danger of microfinance organization. Subsequently, the microfinance organizations should seek after cost streamlining and cost minimization strategies so as to acquire prevalent exhibitions in their portfolios. They have to distribute enough spending plans for by and large supervisory purposes including advance evaluation forms, dispensing systems and accumulation of assets from their customers. This will guarantee powerful credit supervision, screen borrower’s commitments to reimbursement, and subsequently, feasible financial functioning of the lending institution.

4.11 The effects of credit collection policy on portfolio performance of MFIs in Tanzania

In this fourth objective, the study determined the effects of credit collection policy on portfolio performance of microfinance institutions in Tanzania. The factors involved in this analysis were average loan duration, average interest rates, average grace period of loans and average loan size. Similarly, the study involved control variables in analysis of this relationship which were; MFI size, MFI age, Owner-manager
experience and Owner-manager education qualification. The dependent variable in this study was portfolio at risk of microfinance institutions.

4.11.1 Descriptive statistics of independent variables as reported by sampled MFIs

Table 4.17 below shows variable average loan duration of microfinance institutions to have a mean value of 245.242 days. The minimum and maximum loan duration reported was 90.0 and 1080.0 days respectively. The distribution indicates that microfinance institutions in the studied areas provide their clients about nine months to complete their loan installments. This further implies that on average clients are in favour of loan products of less than one year. Also, it helps the company to actively manage their loan portfolios through effective monitoring and reduce problem loans.

The interest rates variable among the surveyed MFIs in the table indicates a minimum and maximum of 15.00 and 45.50 percent respectively. In addition, the mean interest rate charged by microfinance institutions during the study period was 26.39 percent. The dispersion of the interest rates is 7.61423 percent. The findings suggest that across the study areas, microfinance institutions charge high interest rates to their clients. There is possibility for microfinance borrowers to fail to carry the loan to maturity leading to increased portfolio at risk of the lending institutes in the study areas.

Furthermore, Table 4.17 displays variable grace period of loans of microfinance institutions with a mean of 3.1553 days. The study again records a minimum and maximum of 0.00 days and 30.00 days respectively. The variation in the provision of grace period during the period of study was 6.4852 days. It indicates that few microfinance institutions in study areas provide grace period of loans to their clients. This follows observed small mean value of the variable and the fact that the study records zero minimum days from the microfinance institutions under study.

Moreover, the variable loan size of non-member based microfinance institutions exhibits a minimum and maximum of 250,000 Tsh and 10,000,000 Tsh respectively. Furthermore, the table also reports a mean loan size of 3,041,108.374 Tsh during the period under study. It also indicates a variation of 2,719,066.887 Tsh across
microfinance institutions in study areas. The distribution generally denotes that MFIs provides loan sizes that serve wide range of clients needs. The mean loan size observed indicates further that clients may access such loans to cater for their business. In this way, it encourages efficient repayments and sustainable portfolio performance.

Table 4.17: Descriptive statistics of independent variables in the sampled MFIs

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan duration (days)</td>
<td>245.242</td>
<td>185.41061</td>
<td>90.00</td>
<td>1080.00</td>
<td>219</td>
</tr>
<tr>
<td>Interest rates charged (%)</td>
<td>26.3904</td>
<td>7.61423</td>
<td>15.00</td>
<td>45.50</td>
<td>219</td>
</tr>
<tr>
<td>Grace period of loans (days)</td>
<td>3.1553</td>
<td>6.48524</td>
<td>0.00</td>
<td>30.00</td>
<td>219</td>
</tr>
<tr>
<td>Loan size</td>
<td>3041108.3</td>
<td>2719066.8</td>
<td>25000</td>
<td>10000000.00</td>
<td>219</td>
</tr>
</tbody>
</table>

Source: Researcher, 2016

4.12 Correlations Analysis

Table 4.18 below provides correlation matrix of the variables related to credit collection policy on portfolio at risk of microfinance institutions. The independent variables involved in this analysis were loan duration, loan size, interest rates and grace period of loans. Together with these variables, control variables involved in this analysis were: MFI age, MFI size, Owner-manager experience and Owner-manager education qualification.
Table 4.18: Correlation matrix of credit collection policy variables on PAR (n =219)

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Portfolio at risk</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Loan duration</td>
<td>-.090</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Interest rates</td>
<td>.168*</td>
<td>.056</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Grace period</td>
<td>.140*</td>
<td>.082</td>
<td>.033</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Loan size</td>
<td>.171*</td>
<td>.115</td>
<td>.058</td>
<td>.078</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Manager exper</td>
<td>.088</td>
<td>.023</td>
<td>.045</td>
<td>.007</td>
<td>.015</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. MFI age</td>
<td>-.063</td>
<td>.012</td>
<td>.046</td>
<td>.080</td>
<td>.036</td>
<td>.026</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. MFIs size</td>
<td>.157*</td>
<td>-.001</td>
<td>.013</td>
<td>.043</td>
<td>.012</td>
<td>.048</td>
<td>.133*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Manager sec edtn</td>
<td>-.019</td>
<td>.085</td>
<td>.096</td>
<td>.040</td>
<td>.003</td>
<td>.024</td>
<td>-.033</td>
<td>.073</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10. Manager univ</td>
<td>.021</td>
<td>.137*</td>
<td>.087</td>
<td>.068</td>
<td>.106</td>
<td>.090</td>
<td>.127</td>
<td>.077</td>
<td>.246**</td>
<td>1</td>
</tr>
</tbody>
</table>

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Researcher, 2016

4.12.1 Implication of correlation analysis

The Pearson correlation results presented in Table 4.18 indicate that variable grace period of loans and loan size are negatively and statistically significant at the level of 5% correlated to portfolio at risk of MFIs. In addition, variable interest rate is significant and positively correlated to portfolio at risk. The variable loan duration denotes to have insignificant correlation with explained variable. Moreover, the correlation table also aids to justify the collinearity among variables deployed in a study. The existence of collinearity amongst between variables at a correlation value of 0.5 and above is also considered in the ‘rule of thumb’. Grounded on this results and observation, it was observed that the correlation discussed declares to have no
multicollinearity problems that prevail among the variables in this objective (Hair, 2010).

4.13 Regression Analysis Procedures
This section put forth assumptions for use of multiple linear regression model in this study. The objective of this study was to determine the effects of credit collection policy on portfolio performance of microfinance institutions in Tanzania. For the sake of having unbiased and consistent results, the model requires assumptions to be adhered to prior undertaking advanced analysis procedures. The assumptions associated with this model include normality, homoscedasticity, linearity and multicollinearity (Hair et al., 2006; Ndunguru, 2007).

4.13.1 Normality, linearity, multicollinearity and independent observation
In this study, normality of the dependent variable was tested through Shapiro-Wilk statistic test. The Shapiro-Wilk test statistic indicated a p-value of 0.088. The observed value implies that the data for this study were almost normally distributed. It is in line with model requirement for further analysis and interpretations of the results. The normality of the predictor variables in this study were tested by visual scatter plot matrix. However, the variables “loan duration” and “loan sizes” were initially found not normally distributed. Hence, were transformed into logarithmic form (natural log) in order to attain normality. On the other hand, linearity of the data set was achieved through visual inspection of the relationship of scatterplot matrix. Also, since normality was attained, that also guaranteed existence of linearity of the data set in this study.

Moreover, independence of observation assumption was checked through Durbin Watson test statistics. The outcome of statistic test indicated a value of 1.9152. The computed value is within the acceptable indices of between 1 to 3 parameters. This confirmed the data were free from independent observation problems (Keenan & Stevens, 2016).

Similarly, the constant of error variance was equally checked through the scatter plot. The test observed the points were scattered almost along the line. In addition, residuals were proximately equal in width at all values of the predicted dependent
variable, indicating the data of this study objective were acceptable for advanced analysis procedures.

Multicollinearity was another concern for this study, Wooldridge (2006) adds that where there is high multicollinearity correlation between two or more predictor variables, the results become high but imperfect. In this study, VIF test was conducted in order to assess the extent of multicollinearity problem observed in the data set. The assessment observed the VIF value was not exceeding 2.0 in all variables of this objective. Therefore, the VIF test was within the acceptable parameters, to affirm that the data set in this objective had no multicollinearity problems (Hair et al., 2006).

4.13.2 Hypotheses related to the effect of credit collection policy on portfolio at risk of MFIs

There were four hypotheses formulated for testing the relationship between credit collection policy and portfolio at risk of microfinance institutions. These hypotheses were developed basing on the variables related to factor credit collection policy. The variables used in this study were: loan duration, loan size, grace period of loans and interest rates charged. This study therefore, tested the following four hypotheses as shown below:

\[ H1.1: \text{Microfinance institutions interest rates charged and portfolio performance are significantly related.} \]

\[ H1.2: \text{Microfinance institutions loan sizes offered and portfolio performance are significantly related.} \]

\[ H1.3: \text{Microfinance institutions grace period of loans and portfolio performance are significantly related.} \]

\[ H1.4: \text{Microfinance institutions loan duration and portfolio performance are significantly related.} \]
4.13.2.1 Hypotheses testing

The research sought to examine the effects of credit collection policy on portfolio at risk of microfinance entities in Tanzania. For the sake of examining the combined effects of all credit collection policies on portfolio at risks, multiple linear regression model was applied. In testing the attribution of each variable on portfolio at risks of an entity, the study deployed level of significance (p-values).

A general model fit was utilized to test the combined effect of all variables on the portfolio at a risk of microfinance organizations before testing hypothesis related to each variable of credit collection policy. The general model was significant at $F(9, 209) = 16.275; p = .002 < 0.05$. This implies as a rule the concept selected for this study did in reality clarify a significant extent of the change in portfolio at risk of microfinance foundation.

Similarly, the investigation found that the estimated consequence of various regression analyses is additionally at a very tasteful level. The balanced $R^2$ is 0.384 and observed $R^2$ worth is 0.412, respectively. This implies the independent variable can clarify about 41.2% of the portfolio at risk of microfinance institution.

4.13.3 Linear Regression Analysis Results

The study used multiple linear regression model to test the influence of credit collection policy on portfolio at risk of microfinance institution. The model helps to measure the impact that the explanatory variables have on the explained variable (portfolio at risk). It also aids to determine the extent to which changes in the independent variables influences the response variable. Predictor variables of this study were log of loan duration, log of loan size, grace period of loans and interest rates.
Table 4.19: Model results for credit collection policy variables on portfolio at risk of MFIs

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients</th>
<th>Standard Error</th>
<th>T Value</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>5.254</td>
<td>7.836</td>
<td>.670</td>
<td>.503</td>
</tr>
<tr>
<td>Log loan duration</td>
<td>-.974</td>
<td>.858</td>
<td>-1.135</td>
<td>.258</td>
</tr>
<tr>
<td>Interest rates</td>
<td>.061</td>
<td>.026</td>
<td>2.350</td>
<td>.020</td>
</tr>
<tr>
<td>Grace period</td>
<td>-.068</td>
<td>.030</td>
<td>-2.239</td>
<td>.026</td>
</tr>
<tr>
<td>Log loan size</td>
<td>-1.487</td>
<td>.570</td>
<td>-2.611</td>
<td>.010</td>
</tr>
<tr>
<td>Manager exper</td>
<td>.072</td>
<td>.059</td>
<td>1.209</td>
<td>.228</td>
</tr>
<tr>
<td>MFI age</td>
<td>-.086</td>
<td>.091</td>
<td>-.948</td>
<td>.344</td>
</tr>
<tr>
<td>Log MFI size</td>
<td>1.661</td>
<td>.775</td>
<td>2.143</td>
<td>.033</td>
</tr>
<tr>
<td>Manager sec edtn</td>
<td>.069</td>
<td>.438</td>
<td>.158</td>
<td>.874</td>
</tr>
<tr>
<td>Manager univ edtn</td>
<td>.504</td>
<td>.641</td>
<td>.786</td>
<td>.433</td>
</tr>
</tbody>
</table>

R- Square 0.412, Adjusted R- Square 0.384, F- Statistic 16.275, Prob. (F-stat) .002
Number of obs 219, Significant at 5%

Source: Researcher, 2016

\[ PAR\ 90\ days = \beta_0 - \beta_1(LOT) + \beta_2(INTR) - \beta_3(GRP) - \beta_4(LS) + \beta_5\ Controls + \varepsilon \ldots \ldots \ldots \ (iv) \]

Where:

- \( PAR = \) Portfolio at risk more than 90 days of MFIs
- \( LD = \) Loan duration, \( INTR = \) Interest rates, \( GRP = \) Grace period of loans, \( LS = \) Loan size
- \( Controls = \) control variables (MFI size, MFI age, Manager’s experience and manager’s education.)
From Table 4.19 above, the predictor variable of interest rates was positively correlated and statistically significant at level of 5% (p = 0.020). As such it confirms the hypothesis that microfinance institutions interest rates charged and portfolio performance are significantly related. This renders that a unit increase in interest rates to microfinance borrowers will increase portfolio at risk of the lending institute by approximately 0.061 units. This implies that interest rates charged by MFIs are imperative for determining portfolio at risk of microfinance entity.

The variable log of loan size in the regression output table above is negatively and statistically significant at level of 5% (p = 0.01). These findings imply that if other variables are held constant, any unit increase of loan size to microfinance borrowers results in decrease in the risk of portfolio at risk of microfinance institution by 1.487 units. This finding indicates that financial entities offering enormous big loan to their clients, inspire them to be committed to repay back to their MFIs.

The findings of the variable grace period of loans in Table 4.19 records negatively correlated and statistically significant at level of 5% (p = 0.026). From this results it is clear that portfolio at risk is determined by its variables. The results indicate that an increase of grace period of loans per unit results to 0.068 unit minimization in loan portfolio at risk of microfinance entities. These results of the study are in line with the hypothesis which stipulated that grace period of loans and portfolio performance is significantly related. Therefore, borrowers with grace period utilises funds as planned in their projects. More importantly, they enable clients reorganise accordingly to undertake their obligation of regular loan repayments.

4.14 Qualitative data analysis results
This study used both quantitative and qualitative data collection approaches. After the analysis and presentation of quantitative data, sequentially the qualitative data were analysed. In analysing qualitative data, Neuman (2011) argues that no single qualitative data analysis approach is widely accepted to making an analysis comprehensive in itself. In addition, Schurink et al. (2011) added that qualitative data analysis is a very personal process, with few rigid rules and procedures. As such
there are always variations in the number and description of steps for the qualitative data analysis process.

According to Flick (2014), there are two approaches to analysing qualitative data, the first one is intended to reduce the big sets of data (complexity in the data). This strategy involves coding the data to allow the grouping of several elements under one concept. The procedure helps to have fewer categories than a large variety of dissimilar experience (phenomena). The second qualitative analysis approach involves expanding the material (collected data) through production of more interpretations. In this process, an emphasis is put on description, analysis and elaboration of the meaning from the original text, which is longer and substantial than original text.

On the other hand, Best and Khan (2006) pointed out that qualitative data analysis process involves three stages. The first stage is organising the data, second being describing the data in which the researcher seeks to describe various relevant viewpoints of the study. Thirdly, interpretation stage which involve providing explanation of the findings and thus attaching significance of results to an analytic framework (Patton, 2002).

In this study, analysis of qualitative data collected from key informants’ interviews (KIIIs) and participants’ observations stated earlier when the researcher was in the field collecting data. In order to be consistent in dealing with such data, an interview summary form was produced which was used to record information immediately after an interview session. It enabled the researcher to reduce the volume of recorded information on credit risk management into set of categories agreeable for further analysis of the study. Thematic content analysis, helped to further reduce the volume of recorded information into main themes that emerged from the responses given by the study participants.
The process of analysing qualitative data of this study involved a number of steps:

(i) Identifying the main themes was done after carefully going through the descriptive responses in order to understand the meaning intended to be communicated. From these responses themes were developed to reflect these meanings. All constructs; socioeconomic, credit application appraisal, credit supervision practices, credit collection policy and their related variables involved in various themes in relation to portfolio at risk of microfinance institutions were extracted.

(ii) Then the emerged main themes were assigned codes; the coding techniques helped in finding and marking the underlying main ideas in the data. This process was done when transcripts were read several times and having identified interesting phrases and concepts noted.

(iii) Classifying responses under the main themes was the next step involved when identifying relationship existing between themes. The process concerned going through the transcripts of all interviews and classifying the contents of the notes under different themes.

(iv) Integrating themes and making inferences, this step involved interpretation of the reassembled data. In this stage, explicit patterns of constructs developed from the field were formalised and generalised. The interpretative approach was used in line with the meaning of themes related to portfolio at risk of microfinance institutions in Tanzania. These findings were associated with the theoretical and empirical studies reviewed and the quantitative results from the model findings presented in the previous sections of this study.

4.14.1 Themes established during qualitative data analysis
In this study, qualitative analysis intended to determine how selected variables influence portfolio at risk of microfinance institutions. In undertaking, this analysis facilitated the comparison of theoretical expected signs with linear regression model findings (quantitative model sign). Therefore, themes as the results of qualitative analysis of the factor socioeconomic of individuals, credit application appraisal,
credit supervision practices and credit collection policy are presented in the table below.

4.14.1.1 Socioeconomic factors
The variables related to socio-economic factors involved were: average age of borrower, average family size of borrowers, and average business experience of borrower, sex of borrower, proportion marital status of borrower and education level of borrower.
Table 4.2 Socio-economic themes developed after qualitative analysis

<table>
<thead>
<tr>
<th>SN</th>
<th>Predictor variable</th>
<th>Theoretical expected sign</th>
<th>Quantitative model sign</th>
<th>Qualitative analysis (themes developed)</th>
</tr>
</thead>
</table>
| 1  | Age of borrowers   | +/-                        | -                       | 1. Experience increases with increase in age hence high repayments  
|    |                    |                            |                         | 2. Increased access in resources to manage production  
|    |                    |                            |                         | 3. Confidence and trust from the community members |
| 2  | Family size of borrowers | -                         | +                       | 1. Increased cost for provision of family basic needs  
|    |                    |                            |                         | 2. Increased family (community) commitments |
| 3  | Business experience of borrowers | -                         | -                       | 1. Ability to acquire new skills for improved business operation  
|    |                    |                            |                         | 2. Increased rate of return  
|    |                    |                            |                         | 3. Increase in network with business clients.  
|    |                    |                            |                         | 4. Confidence to access opportunities to improve business activities |
| 4  | Sex of borrowers (Male) | +/-                       | +                       | 1. More access to other sources of finance hence low commitment to repay microfinance loans  
|    |                    |                            |                         | 2. Determines resource distribution in family. |
| 5  | Education level of borrowers | -                         | -                       | 1. Necessary for effective utilisation of borrowed funds  
|    |                    |                            |                         | 2. Increased bargaining power in business interactions |
| 6  | Marital status of borrowers (Married) | +/-                    | -                       | 1. Increase of social obligation hence respect microloans services  
|    |                    |                            |                         | 2. Capable to carry out responsibility  
|    |                    |                            |                         | 3. Need to maintain their reputation in society |

Source: Researcher, 2016

4.14.1.2 Credit application appraisal factors

The variables related to credit application appraisal factor of microfinance institution were business income of borrower, capital of borrower, collateral requirement of borrower and membership duration of borrower.
Table 4.21 Credit application appraisal themes developed after qualitative analysis

<table>
<thead>
<tr>
<th>SN</th>
<th>Predictor variable</th>
<th>Theoretical expected sign</th>
<th>Quantitative model sign</th>
<th>Qualitative analysis results (themes developed)</th>
</tr>
</thead>
</table>
| 1  | Business income of borrower | +/-                      | -                       | 1. Increased confidence to dealing with any business contingencies  
|    |                    |                           |                         | 2. Help borrowers manage competition in their business |
| 2  | Capital of borrowers | -                        | -                       | 1. Helps MFIs clients expand their business  
|    |                    |                           |                         | 2. Increase in commitment for repayment  
|    |                    |                           |                         | 3. Reduced loan diversion |
| 3  | Collateral requirements of borrowers | +/-                  | -                       | 1. Increase in trust and confidence to carry the loan to maturity  
|    |                    |                           |                         | 2. Enhance obligation of borrower to utilise loans effectively |
| 4  | Membership duration of borrowers | -                      | -                       | 1. Reflect increased closeness of borrower to the firm  
|    |                    |                           |                         | 2. Reduce follow up cost and makes borrower responsible to repayment  
|    |                    |                           |                         | 3. Increase trust between parties |

Source: Researcher, 2016

4.14.1.3 Credit supervision practices factors
The variables related to credit supervision practices of microfinance institution were: number of borrowers per loan officer, operational cost per borrower, MFIs training sessions to borrower, follow up period measures to borrower, timeliness of loan release and repayment period to borrower.
Table 4.22 Themes of credit supervision practices developed after qualitative analysis

<table>
<thead>
<tr>
<th>SN</th>
<th>Predictor variable</th>
<th>Theoretical expected sign</th>
<th>Quantitative model sign</th>
<th>Qualitative analysis results (themes developed)</th>
</tr>
</thead>
</table>
| 1  | Number of borrowers per loan officer | +/- | + | 1. Reduced number of loan officer increase deliquescent  
  2. Increase of ineffectiveness to screening MFIs loan applicants.  
  3. Increase of communication problems between parties |
| 2  | Operational cost per borrower | +/- | - | 1. Increase budget reflect efficiency in monitoring clients  
  2. Reduced time and efforts in managing active and inactive borrowers  
  3. Reflect ability of MFIs funds management. |
| 3  | MFIs training sessions to borrower | - | - | 1. Helps to encourage reduced loan mismanagement  
  2. Increase skills on business record management  
  3. Increase confidence in running business and overcome challenges |
| 4  | Follow up period measures to borrowers | + | - | 1. Makes borrowers to be consistent to repayment  
  2. Bad borrowers are noticed earlier and action taken in advance |
| 5  | Timeliness of loan release | +/- | + | 1. Increase misallocation of borrowed funds  
  2. Worsen the quality of MFIs service to customers |
| 6  | Repayment period to borrowers | +/- | - | 1. Ensures prompt and sustainable loan service delivery  
  2. Lessens follow up costs |

Source: Researcher, 2016
4.14.1.4 Credit collection policy factors
The variables related to credit collection policy of microfinance institution were; loan duration, interest rates charged, grace period and loan sizes.

Table 4.23 Themes of credit collection policy developed after qualitative analysis

<table>
<thead>
<tr>
<th>SN</th>
<th>Predictor variable</th>
<th>Theoretical expected sign</th>
<th>Quantitative model sign</th>
<th>Qualitative analysis (themes developed)</th>
</tr>
</thead>
</table>
| 1  | Terms of loan      | +                          | -                       | 1. Helps borrowers manage loan utilisation  
|    |                    |                            |                         | 2. Efficient loan terms reduces repayment problems |
| 2  | Interest rate charged to borrower | +  | +          | 1. Increased cost of fund results in repayment problem  
|    |                    |                            |                         | 2. Increases borrowing transaction cost  
|    |                    |                            |                         | 3. Decreases firm’s dependence on donors |
| 3  | Grace period of loans | -  | -          | 1. Encourages efficient repayment  
|    |                    |                            |                         | 2. Effective utilisation of borrowed funds |
| 4  | Loan sizes         | +/-                        | -                       | 1. Enable appropriate project investment  
|    |                    |                            |                         | 2. Attract clients demands for MFI’s loans  
|    |                    |                            |                         | 3. Enable borrowers to honour their obligation to repayment |

Source: Researcher, 2016

4.15 Summary of hypotheses tested
This section outlines in summary the outcome of all the hypotheses which were stated in chapter two of this study, and then tested in chapter four, through multiple linear regression model. The study had four main factors, each having several hypotheses tested. Variables which were under socioeconomic factor included age of borrower, sex of borrower, education of borrower, marital status of borrower, family size of borrower and borrower business experience. The credit application appraisal
variables tested were borrower business income, collateral requirement, capital of borrower and membership duration of borrower. Thirdly, the credit supervision practices variables were borrowers per loan officer, operational cost per borrower, MFI's training sessions, timeliness of loan release, follow up measures and repayment period. Lastly, the credit collection policy variables tested were loan duration, interest rates, grace period and loan size. The table below shows brief results from the model and the conclusion undertaken respectively.

Tables 4.24 Summary of the Status of the results of the hypotheses tests

<table>
<thead>
<tr>
<th>Socioeconomic factors</th>
<th>Hypothesis</th>
<th>Studied Variable</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H₁: 1</td>
<td>Age of borrowers</td>
<td>Not rejected</td>
</tr>
<tr>
<td></td>
<td>H₁: 2</td>
<td>Sex; Male borrowers</td>
<td>Not rejected</td>
</tr>
<tr>
<td></td>
<td>H₁: 3</td>
<td>Education of borrower; Post sec non-university</td>
<td>Not rejected</td>
</tr>
<tr>
<td></td>
<td>H₁: 4</td>
<td>Marital status of borrowers; Married borrowers</td>
<td>Not rejected</td>
</tr>
<tr>
<td></td>
<td>H₆: 5</td>
<td>Family size of borrowers</td>
<td>Not rejected</td>
</tr>
<tr>
<td></td>
<td>H₆: 6</td>
<td>Business experience of borrowers</td>
<td>Not rejected</td>
</tr>
<tr>
<td>Credit application appraisal factors</td>
<td>H₇: 7</td>
<td>Borrower business income</td>
<td>Not rejected</td>
</tr>
<tr>
<td></td>
<td>H₇: 8</td>
<td>Collateral requirements; Social capital</td>
<td>Not rejected</td>
</tr>
<tr>
<td></td>
<td>H₇: 9</td>
<td>Capital of borrower</td>
<td>Not rejected</td>
</tr>
<tr>
<td></td>
<td>H₇: 10</td>
<td>Membership duration of borrower</td>
<td>Not rejected</td>
</tr>
<tr>
<td>Credit management strategies factors</td>
<td>H₁₁: 11</td>
<td>Number of borrowers per loan officer</td>
<td>Not rejected</td>
</tr>
<tr>
<td></td>
<td>H₁₁: 12</td>
<td>Operational costs per borrower</td>
<td>Not rejected</td>
</tr>
<tr>
<td></td>
<td>H₁₂: 13</td>
<td>Training sessions</td>
<td>Not rejected</td>
</tr>
<tr>
<td></td>
<td>H₁₂: 14</td>
<td>Timely loan release</td>
<td>Not rejected</td>
</tr>
<tr>
<td></td>
<td>H₁₂: 15</td>
<td>Follow up measures to borrowers</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td>H₁₂: 16</td>
<td>Repayment period</td>
<td>Rejected</td>
</tr>
<tr>
<td>Credit collection policy factors</td>
<td>H₁₇: 17</td>
<td>Loan duration</td>
<td>Rejected</td>
</tr>
<tr>
<td></td>
<td>H₁₇: 18</td>
<td>Interest rate</td>
<td>Not rejected</td>
</tr>
<tr>
<td></td>
<td>H₁₇: 19</td>
<td>Grace period of loans</td>
<td>Not rejected</td>
</tr>
<tr>
<td></td>
<td>H₈₉: 20</td>
<td>Loan size</td>
<td>Not rejected</td>
</tr>
</tbody>
</table>

Source: Researcher, 2016
CHAPTER FIVE
DISCUSSION OF FINDINGS

5.0 Introduction
This section provides a detailed discussion on the results from data analysis in chapter four. It discusses the findings of all objectives which were: the influence of socio-economic factors, the effect of credit application appraisal, effects of credit supervision practices and effect of credit collection policy on the portfolio performance of microfinance institutions in the study areas. In this discussion, numerous literature applied in chapter two may be considered for backing the arguments put forth in this part of the study.

5.1 Socio-economic factors
The discussion in this specific objective involved the variables which have been found significantly influencing portfolio at risk of microfinance institutions. There are five such variables, which are average age of borrowers, experience of borrowers, family size of borrower, sex of borrower and marital status of borrowers. Drawing from asymmetric information theory together with transaction cost theory (Coase, 1960; Akerlof, 1970), it is argued that credit risk management of microfinance institutions may have strategic influence to enable effective loan portfolio performance of microfinance institutions (Bichanga & Aseyo, 2013). In this study, the findings have shown that effective credit management of microfinance institutions contribute toward acceptable standard portfolio at risk for microfinance operation.

5.1.1 Average age of microfinance borrowers
The variable age of the microfinance borrower is found to influence significantly rate of portfolio at risk of microfinance institution. The findings have indicated linear relationship in which an increase in age of borrower renders decrease in the rate of portfolio at risk of the gross loan portfolio of microfinance institution. This generally suggests that microfinance institutions’ approach to provide loans to matured borrowers in the Districts of Ilala, Kinondoni, Temeke, Morogoro and Dodoma urban determines portfolio at risk among microfinance institutions in the study areas.
Microfinance institutions that have been extending loans to matured (older) borrowers than the youngsters put forth several justifications. These institutions considered matured (older) borrowers applying for loans to have reliable economic activities which enable them to earn a living. As such, the economic activities would enable them to be responsible to their households including microfinance institutions where they have secured loans. Therefore, microfinance institutions were more likely to endorse credits to such loan applicants. Matured loan applicants were trusted to have used effectively the credits into their investment projects and manage regular loan installments (Abafita, 2003; Nawai & Shariff, 2012).

Apart from that most microfinance institutions have been providing loans to matured borrowers because of their reliable experiences in businesses. They have shown commitment to running own and other business projects of their interest. This makes possible for the microfinance institutions extend credits to such loan applicants. Microfinance borrowers with experiences are likely to be committed in managing their business and be honest in servicing the borrowed amount as required (Moti et al., 2012). Similarly, microfinance managers are aware that borrowers with experience in their business cannot misallocate the offered loans, instead can be intensively invested in order to manage repayments. Microfinance institutions need to screen borrowers to avoid misuse of loans which they not only jeopardize borrowers’ business but also microfinance institution. Reta (2011) and Magali (2013) recorded the effects of age on portfolio microfinance performance that extended loans to matured borrowers with experience in business management. The record showed that matured borrowers had high loan repayment rate leading to reduction of portfolio at risk. Therefore, in order to minimize the problem of loan defaults, microfinance managers should extend loans to matured microfinance borrowers. They are capable to effectively manage their business and ensure regular loan repayment to MFIs.

Furthermore, consideration for credits to higher age borrowers were attributed to existence of permanent home residence attached to such loan applicants. Lenders may consider extending loans to clients with permanent residence since they are easily reachable when needed for follow up measures. Therefore, microfinance
institutions can provide loans to these borrowers because of permanence in residence which ensure loan repayment. In addition, recognition of microfinance borrowers’ stability in residence by the firm is an indication of confidence to the clients to have ability to cooperate with lending institutes; consequently, high repayment, low portfolio at risk to the microfinance institutions and sustainable services to majority of low income individuals.

Moreover, matured (order) loan applicants are associated to have reliable collateral required by MFIs. The existence of such assets attached to requested loan amount makes it easy for microfinance institutions to extend credits to these clients. Microfinance institutions were aware that matured borrowers with collateral are more likely to refinance their debts compared to youngsters who usually don’t posses any collateral. On the other hand, Howard and Thierry (2006) revealed that matured borrowers have been exposed to having collateral when accessing microcredit which contributes to higher loan recovery. The situation tends to be contrary when loans are offered to young age clients, since the lending institutes experience high default rates which threaten organisational performance.

Abafita (2003) observed that young age microfinance borrowers were recorded with less recovery rates achieved to the lending company. In this case, the matured microfinance borrowers were considered to be more creditworthy and could lead to high repayment and lower portfolio at risk and hence sustainable microfinance operation. Therefore, it is imperative for the microfinance entities to consider age of microfinance applicants when appraising their loan applicants. In so doing, the company would avoid extending loans to non-deserving clients particularly to youngsters causing problem of loan defaults and increased portfolio at risk.

5.1.2 Sex of borrower

The findings of this study revealed that sex of microfinance borrower significantly influences portfolio at risk of microfinance institution. Proportion of male category had positive coefficient and statistically significant. This suggests an increase in proportion of loans to male borrowers by microfinance institutions increases portfolio at risk of microfinance institution. This further means that compared to
microfinance institutions which provide loans to female borrowers, microfinance institutions that provide loans to most male microfinance borrowers are likely to increase risk of portfolio of institutions.

This study observed that microfinance institutions which provided loans to female borrowers recorded high repayment rates. Consequently, this helped to lower portfolio at risk compared to counterpart institutions extending microcredits to male microfinance borrowers. Armendariz and Morduch (2004) as well as Kevane and Wydick (2001) pointed out an improved performance resulting from loan repayment by women microfinance clients. Microfinance institutions attributed such an improved loan performance by women clients to have been triggered for several factors. Growth in numbers of women in self-employment and entrepreneurial activities increased demand for microcredit to them. It made women become loyal to lending institutes for ensuring sustainability of credit services in order to unlock themselves from circle of financial constraints they have been entangled in.

The influence of proportion of male microfinance borrowers on portfolio at risk arose because most male clients were not committed to actively servicing their loans timely. In addition, majority of male borrowers were reported to have more than one source of funds for meeting social and business needs. It made them uncommitted to regular repayment of borrowed funds to the microfinance institutions. This resulted in higher default rates and increased portfolio at risk of microfinance institutions. These results are in line with Bert D'Espallier et al. (2009); Papias and Ganesan (2009) which indicates microfinance institutions which provide loans to majority of male clients than to women, experienced low repayment rates, lower portfolio at risk and lower portfolio write-offs. In addition, Emran et al. (2006) as well as Angaine and Waari (2014) maintained the same observation that women are more likely to pay high interest rates required by many MFIs compared to male clients. Therefore, microfinance institutions need to be more conscious and ensure effective screening to identify reliable male clients prior to disbursement of funds to them.

Similarly, the positive influence of male microfinance borrowers on portfolio at risk, compared to female clients was attributed to the fact that majority of women clients
have been entangled by family issues including economic responsibilities. It therefore necessitated engaging in micro entrepreneurship activities in order to manage their households. These obligations made female borrowers loyal, committed and responsible in ensuring timely repayment to MFIs hence reduced risk of loan portfolios. Aghion and Morduch (2003) noted that microfinance institutions targeting their loan services to women have been performing relatively better as compared to male borrowers. Meanwhile, Feroze et al. (2011); and Hulme (1991) state significant contribution of female borrowers in loan repayment performance. Their findings recorded that 92 per cent of women were repaying their loans timely compared to 83 per cent for male borrowers. Moreover, Gibbons and Kasim (1991) found that 95 per cent of women in Malaysia repaid their loans timely compared to 72 per cent of men borrowers. The high rate of repayment among women clients indicates that rate of portfolio at risk is reduced which encouraged financial sustainability of the microfinance institution.

5.1.3 Marital status of borrowers
The findings of the category “married borrowers” showed negatively and statistically significant. This suggests that microfinance institutions that provide loans to married clients have more chance to reduce portfolio at risk of microfinance institutions. This study noted that reduced portfolio at risk as attributed by married borrowers reflected maturity and ability to assume responsibilities. As a result, microfinance institutions were in favour to extend loans to married borrowers since they were responsible for repayments with minimal supervision and follow ups. Moreover, married microfinance clients have several social and economic obligations to their families which necessitated being efficient to build trust, familiarity and confidence with the microfinance institutions. Mapesa (2012) observed that married household heads had a higher chance to joining microfinance institutions for accessing loan services than non-married individuals. Married household families represented family relationships that increased trustworthiness to the community and the microfinance institution. Therefore, provision of credits to married borrowers makes them responsible to repay resulting in reduced portfolio at risk of the microfinance institution.
Furthermore, microfinance institutions in the study areas of Ilala, Kinondoni, Temeke, Morogoro urban and Dodoma urban were confident to extend loans to married loan applicants than unmarried clients because, most married microfinance clients utilised funds into intended purposes. It therefore made loan beneficiaries manage repayment efficiently in the long run. The observed findings were supported by one of the study participants who argued that...

> We are providing loans to majority of married individuals because; these are more reliable in making regular monthly repayments. Married women do not miss repayments as they are worried of their husbands when they realise that they did not remit required amount as installments while was provided for by their husbands. That helps to reduce follow up costs on the part of the firm as compared to providing loans to unmarried microfinance borrowers....”

Therefore, extending loans to married borrowers seemed advantageous to the lending institution compared to unmarried ones. This motivated microfinance institutions for more outreach due to reduced loan defaulters and enhanced loan portfolio performance.

5.1.4 Family size of borrower

This study has revealed that there is a significant relationship between family size of borrower and portfolio at risk of microfinance institution. This suggests that number of households in family of borrowers in Ilala, Kinondoni, Temeke, Morogoro urban and Dodoma urban districts is among the determinants of microfinance portfolio performance. The justification of this relationship is that borrowers with many family dependants have higher family obligations. This results in being unable to manage regular loan repayment leading to high default rates and high portfolio at risk to the MFI.

Also, an increase of portfolio at risk of MFI resulting from high number of dependants in households was attributed to lack of proper plans on the use of family income available. These borrowers have many dependants in their households, they
were expected to have proper utilisation of their income and ensure loan installments were remitted as agreed. Instead, due to family commitment borrowers have been unable to maintain consistent saving in order to manage regular loan repayment. Their reluctance to manage loan installments causes increased portfolio at risk of the microfinance gross loan portfolio (Nguta & Huka, 2013; Berhanu, 2005).

Similarly, the study findings revealed that lack of saving habit existed among borrowers with many dependants. Mpogole et al. (2013) and Setargie (2013) asserted that microfinance borrowers having many dependants were unable to exercise saving culture on part of their disposal income. As a result, they failed to ensure that monthly loan repayments are remitted. On the other hand, Bichanga and Aseyo (2013) advised that borrowers with many dependants in their households may be allowed to access small loans from lending institutes due to challenges of family obligations. This makes them easily captured to misallocate funds into unintended business resulting in overall failure of the projects and unable to reimburse loans timely. Thus, microfinance institutions need to be highly concerned and consider various options of repayments from borrowers before extending loans to avoid bad performance loans and increase risk of loan losses.

5.1.5 Experience of borrower in business

Experience of borrower in running businesses was found negatively related and statistically significant. This implies that experience of borrower in running business is a determinant of portfolio at risk of microfinance institutions. The negative regression coefficient indicates an increase of borrowers’ business experience in study areas for the period results in decrease in portfolio at risk of microfinance gross loan portfolio. Furthermore, the discussion with the study participants on the existing relationship revealed that entrepreneurship skills acquired over long by borrowers in running businesses enable them to become competitive in market. It therefore enables them to widen markets base, increase sells and maintain regular installments hence reduction of risk of gross loan portfolios.

In addition, Tundui and Tundui (2013) observed that experience in business helps entrepreneurs manage their business well, increase business returns and become
negatively associated to repayment problems. This observation was in agreement to Magali (2013) and Shu-Teng et al. (2015) who commented that microfinance borrower having experience in business skills and knowledge in bookkeeping, marketing, planning and budgeting are capable of managing business to ensure prevention of loan defaults. For that reason, microfinance institutions need to identify loan applicants with substantial experience in managing their business effectively. It will ensure regularity in repayments and low rate of loan portfolio at risk of the microfinance institutions.

5.1.6 Post-secondary non-university microfinance borrowers

This study has established borrowers with post-secondary non-university to be negatively and significantly influencing portfolio at risk of microfinance institutions. This implies that the category determines microfinance performance of loan portfolios. Those institutions that provide loans to clients of post-secondary non-university education are capable of making regular loan repayment leading to reduced portfolio at risk of microfinance institutions. This category has maintained high repayment to MFIs since loan services have been so much of help in their business. These findings are in line with (Chaudray & Ishfaq, 2003) whose study in rural microfinance borrowers found higher repayment rates to educated borrowers as compared to non-educated clients. Higher loan portfolio of this category was attributed to lack of alternative sources of finance to facilitate their business projects and other social obligations, hence become loyal to foster for sustainable credit services in the long run.

5.2 Credit application appraisal factors

This is the second objective of the study, which involved four predictor variables tested against dependent variable (portfolio at risk). The variables were collateral requirement, membership duration, capital of borrower and business income of borrower. In this study all variables were statistically significant, except the category personal guarantee was observed insignificant.
5.2.1 Capital of microfinance borrower

The variable capital of microfinance borrower was found statistically significant and negatively associated to portfolio at risk of microfinance gross loan portfolio. This suggests that microfinance institutions that provide loans to borrowers with high capital assets results in decrease of the rate of portfolio at risk of the company. Put it differently, borrowers with high capital assets have higher commitment to loan repayments and reduced portfolio at risk of the microfinance institutions.

Microfinance borrowers with high capital have enough experience in running their business and ensure effectiveness in repayment of the borrowed amount. Besides, effective appraisal procedures undertaken by microfinance institutions aimed to make sure that loan applicants were reliable to make timely loan repayments. Hunte (1996) as well as Sharma and Kalra (2015) had similar observation in their studies that MFIs should take long assessing loan applicants to minimize delinquency and achieve acceptable portfolio at risk of the company. In other words, the longer it takes to assess and evaluate loan applicants’ financial position, the higher the likelihood of getting good borrowers in the MFIs.

The need for effective screening of loan applicants for credit worth was also noted in the study by Bigambah (1997 and Bayeh (2012) who established that it is necessary to thoroughly assess clients before loans are issued. Loan applicant must be screened and evaluated his credit worthiness. This should involve - the nature of business, financial ability to repay the loan and guarantee to secure the repayment of the loan, should the operation of the business fail. Therefore, microfinance institutions’ efforts in appraisal and effective collection strategies should result in reduced portfolio at risk and strengthen financial performance of the company.

Similarly, reduced portfolio at risk from borrowers with high average capital assets was because such borrowers were proven trustworthy and consistent in their business operations. In addition, borrowers exposed their security assets before the microfinance institutions. Therefore, in order to rescue their assets from being confiscated by the lending firm, they have to be consistent and committed in repaying their loans timely. Aballey (2009) and Okurut (2006) noted that
microfinance institutions must ensure that loan applicants are screened before being offered loans, where emphasis should be on total assets of prospective borrowers. Amount assets invested in the business of borrower is an indication of how much risk the respective borrower is capable to undertake should the business cease operation. In this regard, microfinance institutions must be concerned about borrowers’ financial position of their capital for sustainable and outreach microcredit delivery.

5.2.2 Membership duration of microfinance borrower
The membership duration of microfinance borrower has been recorded to be negatively and significantly influencing portfolio at risk of microfinance institution. These findings mean that the duration the microfinance borrower has been in contact with microfinance company decrease rate of portfolio at risk to respective microfinance institutions. In other words, microfinance institutions which provide loans to borrowers that have stayed long with them and use loan services are committed to reimburse such credits and enhance financial performance of the microfinance institutions than otherwise.

The findings indicate that when the borrowers’ character is known by the lending institutes, it raises possibility to establish trust and confidence between the MFI and the clients. This promotes commitment on the part of borrowers to ensure high repayment and later reduction of portfolio at risk which then improves performance of the lenders. Kuhn and Darroch (1999) as well as Levin (2012) revealed that borrowers who have not stayed long with the firm benefiting from credit services were more likely to be high loan defaulters. On the contrary, clients whose membership with the microfinance institution has been for long and used the loan services react positively with microfinance institutions. Therefore, the extent to which microfinance institution grows with their borrowers, influence positive repayment performance and drive down portfolio at risk of the microfinance company. Moreover, existence of various loan products to cater for demands of microfinance clients, has encouraged borrowers maintain membership with microfinance institution. Consequently, borrowers have been cooperative and loyal
to ensure high repayments to enable access to future loan services from the microfinance institutions (Addo & Twum, 2013).

5.2.3 The business income of microfinance borrower
The business income of microfinance borrower was found to be negatively correlated and statistically significant. This means microfinance institutions that extend loans to borrowers with higher business income, experience decreased rate of portfolio at risk of microfinance institution. Put it differently, microfinance clients with higher annual business income are capable of financing their loans and influence positive financial performance of the microfinance institution.

The effectiveness in repayment by borrowers with high annual business income was a result of experiences endowed in performing their business projects. These borrowers have been engaged in various business activities which enabled them earn income and ensure that borrowed funds are repaid as guaranteed. In addition, clients were worried of being denied future loan in case they have not made regular repayment and completed their installments timely.

Quayes (2012) as well as Ahmed and Malik (2015); Baiyegunhi et al. (2010) noted in order to ensure high repayments from SMEs and low-income microfinance clients. Microfinance institutions should evaluate their business incomes and all alternative options of the borrowers before the loan is issued. In so doing, would avoid failure to repay and impact gross loan portfolio of the firm. The high annual average business income of borrower was said to be a function of effective operation, coupled with relatively high experience in meeting customer demands for products. Thus, it is necessary for lending institutes be satisfied with borrowers’ financial performance in order to ensure low default rates from microfinance loan beneficiaries.

Furthermore, microfinance borrowers were worried of losing reputation of their business resulting from failure to service the borrowed funds timely. This made them ensure compliance with the microfinance lending agreement without legal reactions from the microfinance institutions. As one of the respondents added that…
Most of borrowers with considerable income from their business had been repaying their loans with minimal follow ups; because they were afraid of embarrassment from the respective microfinance institutions which would results in losing their business reputation for not servicing their loan balance as agreed.

This therefore contributes to low rate of portfolio at risk of the microfinance companies, leading to enhanced financial performance and increased outreach services.

5.2.4 Social collateral of microfinance borrower

The findings from the linear regression indicated that social collateral had negative regression coefficient and statistically significant values. This implies that this category influences portfolio at risk of microfinance institutions. Social capital (group lending approach) as requirement to enable loan provision to borrowers is considered vital in reducing loan losses than other types of collateral requirements.

The use of social collateral as lending methodology has been preferred by most microfinance institutions. This methodology has been reliable since borrowers identify themselves and form groups that are known to each other. This helps them monitor themselves and ensure that each member utilises borrowed funds for intended purposes. More importantly, each member of a group becomes liable for timely repayment because when one of the group members is noted irresponsible to repay, the rest of the group members assumes that responsibility. This leads to low default rates and enhances portfolio microfinance performance. Armendariz and Morduch (2000); Lilay (2015); as well as Kono and Takahashi (2010) reported that group meetings facilitate education and training useful for clients with small experiences. Also, it helps them improve loan repayment, decreases risk of borrower defaults and enhances financial performance of the microfinance institution.

Moreover, the effectiveness of social collateral condition to successful repayment and healthy loan portfolios are a result of follow-up measures by microfinance staff. Microfinance institutions have been keen to ensure that loan officers frequently visit
and provide education on the importance of maintaining their group solidarity. They also provide skills on effective use of borrowed funds to intended purposes. Studies by Madajewicz (2011) argued the use of social collateral helps to mitigate the risks associated with information asymmetry. It also gives group members an incentive to monitor each other in the course of their actions. In so doing, clients collectively increase loyalty to the microfinance institution by consistently repaying their loans. Thus, results in decrease in portfolio at risk and improved financial sustainability of the microfinance companies.

5.3 Credit Supervision practice factors

In this third objective of the study, there are four variables which have significant influence on portfolio at risk of MFIs. These were training sessions, timely loan release, number of borrowers per loan officer and operational cost per borrower. The discussion of these significant variables is done hereunder as follows:

5.3.1 Training of microfinance borrowers

The analysis of the linear regression model on training of microfinance members shows that the variable is negatively and statistically significant. This means there is sufficient evidence to suggest that the variable is a determinant of portfolio at risk of the microfinance institutions. Microfinance institutions that provide frequent training sessions to its borrowers, experience decrease in the rate of portfolio at risk of microfinance gross loan portfolio. The possession of skills enables borrowers to operate effectively and efficiently hence generating profits to service their installments required.

Furthermore, this study has noted that poor records keeping by majority of small and medium entrepreneurs contributes to underutilisation of borrowed funds, including diversion of funds from intended purposes. The absence of reliable records from microfinance beneficiaries was not only affecting the borrowers but also microfinance institutions. It was difficult to estimate the overall business income and at times determine average running costs of the borrowers’ business. Edgcomb and Barton (1998) as well as Ibtissem and Bouri (2013) observed that provision of training develops economic ability of borrowers to repay their loans including
making relationship with MFIs of value to them. In addition, Abebe (2012); as well as Bichanga and Aseyo (2012) found that provision of training to microfinance clients increased repayment performance and improved quality of portfolio of the microfinance institution. Therefore, microfinance institutions that provide training to their clients have contributed to reduced portfolio at risk of their companies.

5.3.2 Timely loan release to microfinance borrowers

Timely loan release to borrowers was found positively and statistically significant. This implies that there is sufficient evidence to suggest that the variable was a determinant of portfolio at risk of microfinance loan portfolio. The findings further mean that microfinance institutions which take more days to process and release loans contribute to increase in portfolio at risk. In order for the microfinance institutions to drive down risk of microfinance loan portfolio, they have to ensure that it takes few days to process and extend credits to the needy clients.

The study recorded that most microfinance institutions reported to have employed few loan officers for undertaking screening, appraising and selecting required loan applicants prior to loan disbursement. As a result, institutions took many days to complete all necessary procedures of appraising clients. Such a delay is considered to make borrowers fail to utilise the requested funds for the planned investment. Consequently, microfinance institutions experience long time of payback periods from their clients, and at times fail to manage repayments causing increased loss of gross loan portfolio. Crabb and Keller (2006); Gyamfi and Boateng (2013); as well as Tundui and Tundui (2013) added that among the factors contributing to problems in financial performance of most microfinance companies was loan disbursement lag. This was due to institutions taking long time to scrutinise and release amount of funds required by their prospective borrowers. Such behaviours discourages borrowers to implement their planned businesses, social obligation hence fail to make repayments on time which threaten organisational loan portfolio performance.

Moreover, some microfinance institutions were forced to take long time to process and disburse credits to clients due to financial constraints. The delay to extend funds to loan applicants was a result of institutions’ failure to acquire enough funds for
extending loans to their borrowers. Put differently, some microfinance institutions failed to maintain liquidity threshold to enable them meet customers’ loan demands timely. Therefore, they were forced to take long time to process loan applications in order to raise funds for providing loans to their borrowers. As a result, institutions delayed to extend credit to respective borrowers which negatively affected borrowers’ plans for use of requested funds. Consequently, borrowers became unable to manage interest rates charged on loan amount leading to high portfolio at risk and unsustainable financial performance of the lending company.

5.3.3 Microfinance borrowers per loan officer

The findings of this study have revealed that variable ratio of borrowers to loan officer influence positively portfolio at risk of microfinance institutions. This suggests that there is sufficient evidence to conclude that microfinance institutions which maintain higher ratio of borrowers to loan officer increase risk of loan portfolios. Thus, in order for microfinance institutions to experience low risk in loan portfolio, it is necessary to have reasonably lower ratio of borrowers to a loan officer. In so doing would guide to effectively monitor and provide necessary trainings to borrowers resulting in proper utilisation of loans and ensure regular repayments.

Furthermore, microfinance institutions which had high ratio of borrowers to loan officer were reported to fail to manage effective appraisal of loan applicants and lack proper analysis of borrowers’ information. Not only that other effect recorded from most microfinance institutions associated with insufficient number of credit officers include: failure to undertake financial trainings to their clients and inability to follow up clients for repayments. This resulted in allocation of loans to non-deserving customers, increase of delinquency which negatively influenced financial sustainability of the microfinance institutions (Pasha, & Negese, 2014; Olomola, 1999).

On the other hand, Kariuki (2010) and Mwangi (2016) pointed out the role of loan officers in the microfinance context to include a major role in screening potential customers. In addition, they also play the key role in the decision-making process of allowing the credit including being responsible for follow up of repayments.
Moreover, other responsibilities involve generating new business (identifying new customers), analysing the loans applications, monitoring and following-up the active loans and generating reports and statistics. Therefore, in a situation where microfinance management maintains higher clients per loan officer ratio it is obvious that their capability to perform all the mentioned functions would be reduced resulting in high delinquency and increased portfolio at risk of the microfinance institutions.

5.3.4 Microfinance operational cost per borrower
The operational cost per borrower was revealed to influence portfolio at risk of microfinance institutions. The variable was found negatively correlated and had significant statistics p-values. These findings suggest that an increase of microfinance institutions’ budget for carrying out overall supervisory and general credit supervision of individual microfinance borrower results in decrease of portfolio at risk of the microfinance institution. This is to say that for microfinance institutions to have reduced risk of gross loan portfolio, there has to be a clear understanding and a well-established overall budget for managing each microfinance borrower. In so doing would ensure efficient and profitable loan service delivery to the needy low-income customers.

The microfinance institutions in the study areas have been aware of the need to ensure that required budget is needed to operationalise lending to low-income clients. In this regard, cost per borrower of microfinance institution has to be established for smooth functioning of financial and non-financial credit supervision of microfinance institution. Among the activities requiring attention of reasonable budget per borrower includes training of borrowers, transportation costs of loan officers for appraising loan applicants, various paper works requirements and general proper records management of borrowers. Therefore, microfinance institutions need to be informed of setting reasonable budget so that credit appraisal, supervision and collection are done effectively and in a sustainable manner (Kinde, 2012; Anduanbessa, 2009).
Studies by Ameyaw-Amankwah (2011) as well as Rahman and Mazlan (2014) observed similar results in which MFIs with sufficient budget to cater for costs per borrower were able to undertake effective appraisal procedures, followup client’s business hence high loan recovery. In addition, effective allocation of budget in microfinance operation helps the firm to be aware in advance of the status of problem loans and establish efforts to loan renegotiations when customers get into difficulties. Warue (2012) noted that microfinance institutions that allocate reasonable operations cost for credit management do so as the monitoring system that highlights that repayment problems will be quickly identified for actions. More importantly, it is possible for credit officers and their supervisors to focus on specific delinquency before it gets out of hand.

Beatriz and Morduch (2005) opined that credit supervision greatly influences success or failure of financial institutions. Institutions that fail to effectively manage large quality of loans may result in piling of risky assets which negatively impair microfinance institutions’ financial sustainability. Bhatt and Tang (2002) as well as Javid and Abrar (2015) in their study found that financial institutions needed to set realistic operation budget for undertaking credit management practices. A working budget helps the firm to follow up problematic clients in order to remedy problems associated with losses by proper governance of cash flow and portfolio. Also, helps in creation enabling environment with competent employees for ensuring discipline of the customers as well as appropriate communication with numerous key actors of microfinance institution.

5.4 Credit collection policy factors
There were four variables which made up the fourth objective. Three of them were statistically significant; these were interest rate charged to borrowers, grace period of loans and loan size to borrowers.
5.4.1 Interest rate charged to microfinance borrowers

The variable interest rate was found in the OLS regression model to have positive regression coefficient and statistically significant. This means that the variable determines rate of portfolio at risk of microfinance institution. Therefore, microfinance institutions that have been charging higher interest rates to their borrowers resulted in an increase of portfolio at risk of microfinance institutions. As such in order for these institutions to experience reduced portfolio at risk in their operations, the management of microfinance institutions need to set affordable interest rates that would attract client’s access and manage loan repayments until maturity.

Papias and Ganesan (2009) and Swain and Varghese (2013) commented that microfinance entities charging high interest rates activated highest degree of underperformance and poor repayment of loans. The findings also added that despite strong credit appraisal and supervision practices of loan applicants, if the interest rates charged to borrowers are so high, it may result in high default of repayment and high rate of portfolio at risk of the MFIs. Additionally, Mwangi (2016) argued that financial entities attract more lenders to devote the resources in riskier program for the sake of generating high profit.

Furthermore, Cull et al. (2007); as well as Kar and Swain (2014) pointed out that microfinance institutions that charge interest rates above a certain threshold could aggravate problems of adverse selection and moral hazards. These actions are likely to result in borrowers’ loan repayment problems and institutional underperformance. Ndichu (2013) observed similar results, where interest rates spread had a positive effect on portfolio at risk of the lending institution. It therefore goes without saying that as interest rates charged to borrower increase, the risk on loan portfolio also increases. Consequently, borrowers are unable to bear the cost of the borrowed amount, causing financial distress and unsustainable organisational financial performance.
5.4.2 Grace period of microfinance loans

The findings from linear regression analysis reveal that the variable is negatively and statistically significant. This shows that there is sufficient evidence to support that the variable (grace period) is a determinant of portfolio at risk of microfinance institutions. It is clear that the provision of grace period to the customers reduce portfolio at risk of the microfinance entities.

The variable grace period on loans given to borrowers helps them utilise funds effectively into existing and new business investments opportunities. This makes borrowers to find it easy to respect their repayment schedules through the profits gained from their investments than otherwise. It therefore enables them to make timely repayments hence reduced default rates and retain acceptable portfolio at risk for sound financial performance of the company (Field et al., 2009).

Abreham (2002) revealed that borrowers with grace period have an opportunity of repaying the loans timely than those amid of grace period hence remedying of the risk rooted in the microfinance loan portfolio. Moreover, Ngahu and Wagoki (2014) commented that entities which provide grace-period to their customers activate borrowers’ entrepreneurship skills and ability capability to invest into various business investment options. Studies by Korankye (2014) and Setargie (2013) observed that microfinance clients with grace period of loans become more responsible of repaying borroweded funds compared to microfinance institutions that do not offer grace period to their clients. As such, when microcredit clients are offered time for preparing themselves prior to making agreed and regular repayments or exempted from interest rates charges, they are likely to reorganise economically, socially and psychologically to carry out their loan obligations until maturity leading to increased financial performance.

5.4.3 Microfinance loan sizes

The loan size of microfinance borrower was found negatively and statistically significant. This implies that microfinance institutions which provide large and efficient loan sizes contribute to reduced portfolio at risk of microfinance institutions. Large loan size offered caters for borrowers’ expectations to meet social
and economic investment plans intended. This observation was in line with recommendations put forth by some study participants that….

*Microfinance institutions must design loan products which attract borrowers and encourage them to find it easy to continue for the next loan after successful loan completion...*

Therefore, microfinance institutions loan product types exert a great influence to making borrowers behave positively to repayment schedules, reduce loan defaults and risk of gross loan portfolio accordingly. Pische (1991) as well as Crabb and Keller (2006) argued that the performance of the customers in-terms of the repayment of loans is influenced by the size of loans. Similarly, microfinance entities that provide huge amount of loans to their clients entail respective borrowers to have proven experience in managing business and showed commitment in servicing previously given loan effectively.

The findings of this study are in agreement with Adongo and Stork (2006) and Nyamsogoro (2010) that profitability of microfinance institution relates to selling bigger loans to clients. They encourage borrowers to properly utilise funds in business, acquire higher returns and effect repayments to the microcredit company. On the other hand, Cull *et al.* (2007) reported contradictory findings that extending small loans to their customers, experienced profitability on average compared to those which provide bigger loans.

Therefore, it is imperative for the microfinance entities to design loan sizes that encourage borrowers access them and benefit from the loan products, hence manage regular loan repayments to the firm.
CHAPTER SIX
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction
This research report presented and discussed the findings of an investigation on the implication of credit risk management on portfolio performance of microfinance institutions in Tanzania. The general introduction and the problem setting were presented in Chapter One. Chapter Two of this study has reviewed and discussed literature relating to the problem under investigation. The research methodology which was about sampling procedures, data collection techniques and analysis procedures had been detailed in Chapter three of this thesis. Similarly, the presentation of the findings of this study was done in Chapter Four, while Chapter Five dwelt on the discussion of the revealed study findings. This Chapter then involves summarising the study including providing the conclusions and recommendations of the study. The same Chapter also provides suggestions for further research.

6.1 Summary of the findings of the study
In this study, an attempt was made to investigate the implication of credit risk management on portfolio performance of microfinance institutions in Tanzania. This aimed at to recommending strategies for enhancement of the provision and growth of the microfinance sector in this country. The study was stirred by the notable problems associated with inadequate management of credit risk among microfinance institutions in developing countries including Tanzania. In order to achieve the main objective of the study, four specific objectives and research questions as outlined in section 1.4.2 of Chapter One were formulated to focus on this study. Having collected the required data for this study, both descriptive statistics and multiple linear regression model analysis were undertaken to accomplish this task. In the summary discussion that follows, the main observation from the study on each objective is presented along with the variables used for testing them.
### 6.1.1 The influence of socio-economic factors

In this study, the socio-economic variables involved were sex of borrower, age of borrower, education level of borrower, marital status of borrower, business experience of borrower and family size of borrower. The findings of this study revealed that some variables were significantly influencing portfolio at risk of the microfinance institutions, while others were not. The analysis of the multiple linear regression model indicated that the variable sex of borrower and family size of borrower were positively and significantly determining portfolio at risk of microfinance institutions in the study areas. While the variables age of borrowers, marital status of borrowers and experience of borrower in business were negatively influencing the rate of portfolio at risk of the microfinance institutions at 5% level of significance. However, regarding the variable education level of borrowers, the analysis showed that only the category post-secondary non-university was statistically significant while the rest had insignificant influence on response variable.

### 6.1.2 The effect of credit application appraisal factors

The microfinance portfolio performance was observed to be influenced by four credit application appraisal variables. These variables were membership duration of borrower, capital of borrower, business income of borrower and category social capital of borrower. These variables were tested and observed to be negatively affecting portfolio at risk of the microfinance institution at 5% statistical significance level. Specifically the results showed that microfinance institutions that extended loans to borrowers who have stayed long since they joined the firm (membership duration); to borrowers with high capital and to borrowers with high business income and to borrowers who used social capital; had higher rate of loan repayments which resulted in reduced portfolio at risk of microfinance institutions. However, the category personal guarantee of the variable collateral requirement was found to positively correlated with PaR but have no significant influence on the explained variable. This suggested that microfinance institutions that provided loans to borrowers through personal guarantee were likely to increase risk of the loan portfolio of MFIs.
6.1.3 The effects of credit supervision practice factors
In this third objective on credit supervision practice of the study, the model tested hypotheses of all six variables. The findings revealed that two variables which were timeliness of loan release and borrowers per loan officer were positively correlated and statistically significant at level of 5%. This implied that microfinance institutions which were taking long days to process and release loans to borrowers and those that had higher ratio of borrowers to loan officers increased rate of portfolio at risk of microfinance institutions. On the other hand, the variables training session of borrowers and operational cost per borrower, were found negatively and significant at 5% level. This means that microfinance institutions that increased provision of training to borrowers and those institutions which increased budget for meeting cost per borrower were capable of reducing risk of the microfinance loan portfolio. However, variables of follow “up measures” and “convenience of repayment period” were found to have insignificant influence on PaR of MFIs. This may indicate that, the said variables do not have sufficient information that could explain influence of PaR of non-member based microfinance institutions in the study areas.

6.1.4 The effect of credit collection policy factors
The variables involved in addressing this objective of the study were, loan duration, interest rates, grace period and loan sizes. The variable loan duration was tested in the multiple linear regression model and noted that there was no sufficient evidence to conclude that it had influence on portfolio at risk of microfinance institutions. With regard to the remaining three variables: the variable interest rate was observed to have positively affecting portfolio at risk of the microfinance institutions. Microfinance institutions that charged higher rate of interest experienced increased risk of loan portfolio of their lending institutes. However, the variables; grace period and loan size of microfinance institutions, were found negatively correlated and statistically significant. Thus, these factors of loan sizes and grace period were the determinants of the portfolio at risk of microfinance institutions in the study areas.
6.2 Conclusion
This thesis has attempted to assess the effectiveness of credit risk management practices on performance of microfinance institutions in Tanzania. The study was carried out in three regions, namely Dar es Salaam, Morogoro and Dodoma, focusing on the factors contributing to effectiveness of credit risk management practices on portfolio performance of microfinance in the mentioned areas. Based on the empirical evidence from the multiple linear regression model, the findings of this study have mainly supported the hypothesis that socio-economic factors, credit application appraisal, credit supervision practice and credit collection policy do influence portfolio at risk of the microfinance institutions.

Various empirical evidences have shown that microfinance lending services have faced challenges to reach the majority in rural areas; among others is due to reduced capacity resulting from ineffective credit risk management embedded to these institutions (Muhoho & Layda, 2016; Tchakoute-Tchuigoua, 2012; Feroze, et al., 2011; Polio & Obuobie, 2010). On the other hand, this study contributed to preceeding literature in that if the observed factors which influence effective management of credit risk are dealt with; concerned microfinance institutions are likely to enhance their capacities in terms of outreach services thereby improving access of financial services to the disadvantaged and unbanked individuals in community.

The section that follows provides key conclusions as guided by the themes drawn from each specific objective and hence the research questions of the study basing on the theoretical and empirical support of the significant factors.

6.2.1 Conclusion from the effects of socio-economic factors on portfolio at risk of MFIs
Based on the multiple linear regression analysis conducted, the variables that were found to significantly influence portfolio at risk of MFIs in Tanzania were sex of borrower, marital status of borrower, age of borrower, business experience of borrower, family size of borrower and the category post-secondary non-university borrowers. These variables were tested through the mentioned model, at 5 percent
significance level and there were sufficient statistical evidence that; they influence are portfolio at risk microfinance institutions in Tanzania. However, the findings from the model of analysis revealed that categories, secondary level education and university level of education borrowers, were noted to have statistically insignificant influence on portfolio at risk of microfinance institutions.

From the model results, the variables which were negatively correlated and significant at 5% level were married borrowers, age of borrowers, experience of borrower in business and category post-secondary non-university education level. These findings implied that microfinance institutions which provided loans to matured (older) borrowers, married borrowers, business experienced borrowers and post-secondary non-university borrowers contributed to reduced portfolio at risk of microfinance institutions. Reduction in portfolio at risk of microfinance institution is an implication of higher collection coupled with effective customer appraisal procedures used by microfinance management team.

On the other hand, the variable, male borrowers and family size of borrowers, were found positively correlated and significant at 5% level. These findings mean that microfinance institutions which extended loan services to male microfinance borrower together with borrowers with many dependants in household increased rate of portfolio at risk of the microfinance institutions. This further means that microfinance institutions that proceed with the extension of loans to the identified group of borrowers are likely to face high loans delinquency and poor collection from their customers. Consequently, increase of portfolio at risk of the microfinance institution. Therefore, microfinance institutions in the study areas need to be concerned with the factors that influence portfolio performance of their institutions.

6.2.2 Conclusion from the effect of credit application appraisal factors on portfolio at risk of MFIs

The theoretical and empirical literature reviewed proposed the variables that affect portfolio at risk of MFIs which were business income of borrowers, collateral requirements, capital of borrowers and membership duration of borrowers. These variables were tested in the linear regression model and the findings showed that
variables of capital of borrower, business income of borrower, membership duration of borrower and the category social capital of borrower, were found to have negative relationship with portfolio at risk of microfinance institutions.

These findings indicate that microfinance institutions that provide loans to borrowers with high average capital, borrowers with high business income, borrowers with long membership duration with MFIs and borrowers using group lending can reduce portfolio at risk of microfinance institutions. The mentioned microfinance clients are proven to have low delinquency rate that enabled MFIs experience high loan recovery from them. However, the category, personal guarantee, in this objective was found to have insignificant relationship with portfolio at risk of MFIs. This means that there was no enough evidence to consider this category as determinant of portfolio at risk of the microfinance institutions.

In view of the above research findings, microfinance institutions in study areas of Ilala, Kinondoni, Temke, Morogoro urban and Dodoma urban districts, are advised to be aware of the use of identified variables for improved portfolio at risk of their microfinance institution.

6.2.3 Conclusion from the effects of credit supervision practices on portfolio at risk of MFIs
Based on the theoretical and empirical reviews conducted in this study, it was argued that credit supervision practices affect portfolio at risk of the MFIs. In order to analyse this relationship through the multiple linear regression model, there were six variables used in developing hypotheses of this study. The variables were number of borrowers per loan officer, timely loan release, training sessions of MFIs, operational cost per borrower, repayment schedule and follow up measures.

The empirical evidence obtained from the linear regression analysis confirmed that the variables of number of borrowers per loan officer and timely loan release to borrowers had significant positive relationship with portfolio at risk of MFIs. This implied that these variables are determinants of portfolio at risk of the microfinance institutions. In this regard, microfinance institutions which take longer time to process and release borrower’s loans together with those institutions that maintain
high ratio of borrowers per loan officer increase portfolio at risk of the microfinance institutions. An increase of portfolio at risk of microfinance institution is an indication that there are inadequate efforts from the microfinance institutions’ management to effectively collect revenues from their customers. In so doing, it threatens the growth and efforts to further provide micro financial services to the needy low-income individuals.

Moreover, the regression model also shows that variable training sessions of MFIs and operational cost per borrower were found negatively correlated and statistically significant at level of 5%. This implied that microfinance institution which provides frequent training sessions to their borrowers and those which set aside reasonably big budget for credit management per borrower reduced portfolio at risk of the microfinance institutions. Therefore, MFIs may control the risk of loan portfolios if they can effectively employ identified variables for sustainable loan service provision to their clients.

On the other hand, the variable follow-up measures and convenience to repayment period had insignificant relationship with portfolio at risk of MFIs. This means that there was no sufficient evidence to suggest that these variables are determinants of portfolio at risk of microfinance institutions. Therefore, in order for the microfinance institutions in the studied areas to have effective portfolio at risk of their outstanding loans portfolios, it is important to take consideration of the identified variables that have been confirmed to influence portfolio at risk of microfinance institutions.

6.2.4 Conclusion from the effect of credit collection policy on portfolio at risk of MFIs in Tanzania

This study intended to determine the effect of credit collection policy on portfolio performance of microfinance institutions in Tanzania. There were four variables involved which were: interest rates charged to borrowers, loan duration, grace period and loan size to borrowers. The multiple linear regression analysis model was used to test hypotheses on the relationship between each variable and the portfolio at risk of microfinance institutions.
The findings of this study concluded that loan size to borrowers and grace period of loans had significant and negative relationship to portfolio at risk of MFIs. This means that there is sufficient evidence to consider that these variables are determinants of portfolio at risk of MFIs. Therefore, microfinance institutions which provide loan sizes that meet borrowers’ business requirements, together with institutions which provide grace period to their clients do affect portfolio at risk of the microfinance institutions.

On the other hand, the interest rates variable showed positive and significant relationship on portfolio at risk. This implied that microfinance institutions that charge higher interest rates to borrowers lead to an increased rate of portfolio at risk of microfinance institutions. In this regard, although microfinance institutions need compensations on loans extended to borrowers through interest rates charged. It is necessary that action should be done with caution in order to minimize portfolio at risk of microfinance institutions. MFIs need to note that an increase of interest rates for financial gain should not weaken ability of borrowers to carry the loan to maturity. Lastly, variable loan duration was observed in the model to have insignificant relationship with portfolio at risk. The study therefore considered it not a determinant of portfolio at risk of microfinance institutions.

Therefore, there is need for the microfinance institutions to consider the identified factors that determine portfolio at risk to ensure low default rates and sustainable financial performance. Improved gross loan portfolio of microfinance institutions guarantees broader financial inclusion to those excluded from banks. Also, it enables reduction of poverty among low-income individuals hence leading to sustainbale development to all individuals in the country.

6.3 Recommendations

The preceding section presented conclusions of the study findings; this part focuses on the policy recommendations to resolve the drawbacks to the adoption of effective credit risk management on portfolio performance of microfinance institutions. It is believed that the suggested policies may provide a series of options which can act as efforts to help microfinance institutions in Tanzania reach their full capacity of
managing credit risk that influence quality of portfolios. Therefore, based on the major findings of this study, the following policy recommendations which emanate from this study can be put forth to the attention of the MFIs and other interested parties.

6.3.1 Training on business concepts
In this study, the variable training sessions was noted to be an important determinant on portfolio at risk of MFIs. Microfinance institutions should actively incorporate business-related trainings as crucial aspect to their borrowers prior to provision of loans. Disbursement process should be preceded with relevant training to clients to ensure effective utilisation of the given funds. In addition, MFIs have to design a package that would comprise basic financial literacy skill training, training on business development skills, business diversification training including book keeping and financial planning and management. The training should be made compulsory to each microfinance client before being offered any loan amount. The findings of this study have affirmed that microfinance institutions which have been frequently providing business training to their borrowers, have experienced high rate of loan repayment which is the prerequisite to reduced portfolio at risk for sustainable financial performance and broader outreach of services.

6.3.2 Monitoring borrowers and loan disbursement procedures
Microfinance institutions need to consider increasing number of clients in correspondence to the number of loan officers responsible for managing them. This study observed disproportionate number of borrowers per loan officer among MFIs. This has resulted in inability of the loan officers to effectively monitor and provide necessary orientation and information required to borrowers. The information would be useful to enable them to utilise given funds accordingly and become responsible in loan repayment. Therefore, microfinance institutions are advised to maintain recommended and manageable of the ratio in number of clients to loan officer for effective follow up of their customers. The study has noted that some borrowers were able but unwilling to service their loans unless they were reminded for repayment. In such situation, microfinance institutions’ loan officers need to make follow up and
identify such borrowers. More importantly, they can even take appropriate procedures including legal action to ensure the borrowed amount is recovered.

Similarly, from the study findings it is advised that microfinance institutions have to supervise effectively the processes involved prior to loan disbursement to their clients. The study has realised unnecessarily long duration to process and release clients’ request for loans. These delays of extending loans timely to borrowers result in diversion of loans from intended purposes leading to poor repayment from clients. Thus, effective supervision and monitoring system of MFIs would also help to minimize possibility of borrowers to have multiple loans. Also, they contribute to borrowers’ timely repayment, low default rates and reduction of portfolio at risk of the MFIs.

6.3.3 Gender and marital status of microfinance borrowers
The empirical findings of this study have observed that male microfinance borrowers are high defaulters than females. This is similar to variable unmarried microfinance clients which renders high PaR. However, married and female clients as observed in this study have indicated to have high repayments and low defaults to these borrowers. Consequently, reduced portfolio at risk of the respective microfinance institutions. Therefore, MFIs are advised to pay much attention to male and unmarried loan applicants. There has to be effective screening and existence of collateral, where necessary, prior to extension of loans to these groups of borrowers. In so doing, this may contribute to making clients responsible in repaying their loan amounts timely. MFIs should note that ineffective screening and approving of loans to non-deserving customers causes significant financial distress on loan portfolios of MFIs performance.

6.3.4 Microfinance loans pricing procedure
The findings from the study have indicated that interest rates charged to borrowers positively influence portfolio at risk of the MFIs. As such, microfinance institutions in Tanzania need to be concerned about the consequence of charging high interest rates to borrowers. Increased interest rates beyond manageable spread to clients contribute to loan defaults, poor repayments and raising portfolio at risk of the MFIs.
Therefore, microfinance institutions and other indirect suppliers of funds to low-income borrowers need to price loans products in such a way that it does not discourage borrowers to carry the loan to maturity. The lending institutes need to encourage clients to manage regular repayments, build confidence with the firm and maintain membership with the company.

Apart from that microfinance institutions are advised to segment the market of their borrowers based on economic capability and the rates of interest manageable to them. It would help provide financial services based on individual needs and financial ability. Thus, it is important that rate of interest charged need to ensure borrower’s ability of making regular loan repayments. In so doing, customers are likely to appreciate for the loans offered and the risk of loan portfolio is reduced leading to sustainable financial performance.

6.3.5 Establishing financial base of clients

This research has led to an understanding that there is need for microfinance institutions to establish procedures that would help accessing actual financial capacity information of borrowers. That would contribute to ensuring effective loan repayment and reduction of portfolio at risk of MFIs. Some borrowers have been providing misleading information to credit officers about their financial capacity in order to be offered higher loan amount. The findings show that such misleading information has been among the main causes of financial underperformance in microfinance institutions. Therefore, this study advises MFIs to establish a framework in order to determine loan applicants’ financial status. It will aid in assessment of borrowers’ financial ability to manage the requested funds and its repayment conditions. Moreover, microfinance institutions in Tanzania should incorporate other institutions that would help provide information on loan applicants prior to funds release. Therefore, vibrant credit appraisal that encompasses proper customer selection, robust credit analysis including proactive monitoring and follow up by MFIs must be done thoroughly to borrowers to enable reduction of portfolio at risk of MFI.
6.3.6 Provision of grace periods to clients
Microfinance Institutions in Tanzania should pursue a balanced approach in provision of grace periods of loans to their borrowers. The provision of grace periods helps clients evaluate the payback of their investment before repayment begins. This study has observed that majority of microfinance clients were in favour of grace periods on loans from their lenders. Microfinance institutions that provide grace period to their borrowers have encouraged high loan repayments and reduction of portfolio at risk of microfinance institutions. Microfinance institutions in Tanzania need to put in place a clear policy framework that addresses issues related to provision of grace period to their customers. It would encourage and broaden borrowers’ option to select manageable loan terms that fit their needs and ability to manage repayments for institutional performance.

6.3.7 Establishing appropriate loan products
This study has revealed that microfinance institutions that develop efficient loan products which suffice diverse client’s needs influence positively the rate of loan repayments. Also, the approach contributes to reduction of portfolio at risk of the microfinance institution. This implies that there is need for MFIs determine appropriate loan sizes that cater for demand and investment requirement of SMEs and poor household individuals. Besides the selling of more micro-loans to borrowers, lenders need to ensure effective follow up for assessing utilisation of the borrowed funds to enhance timely repayments. Institutions may arrive at lower portfolio at risk and higher liquidity to enable meeting any contingency arising from operations of the lending company.

Furthermore, the findings of this research have indicated that age of borrower influences portfolio at risk of microfinance institutions. Extension of loans to majority of matured borrowers leads to low portfolio at risk of their loans portfolios. This means that matured (older) borrowers are more capable of undertaking their responsibility on loan repayment than the youngsters. Therefore, this study recommends to MFIs not to exclude the young age borrowers from provision of loans. However, there has to be purposeful efforts to provide special attention to those borrowers through deep appraisal, continuous follow up and supervision. Also,
they have to provide them with education to realise the need to become responsible in managing the use of the borrowed funds so that they can effect loan repayments timely as per agreement made when borrowing.

6.3.8 Government input on microfinance services
This study has revealed some challenges in the operation of MFIs which requires attention of the government. Majority of microfinance borrowers’ businesses have limited market facilities, inaccessible and unsuitable production places. In addition, they have limited legal and technical supports to enhance their skills on established business projects. Moreover, there is lack of infrastructures and national wide efforts to provide business management skills to SMEs and poor households. Therefore, the government is advised to provide support to microfinance borrowers with markets for conducting business and encourage MFIs to provide business education to their clients. It will help in effective use of funds into planned investment projects, improve income and reduction of poverty among Tanzanians. Therefore, it is important for the government and other stakeholders including development partners to ensure that efforts are put in place and implemented for improving SMEs and poor households’ economic position in the country.

6.4 Implications of the Findings
This study offers both, theoretical and policy implications.

6.4.1 Theoretical Implications of Findings
The findings of this study especially from asymmetric information theory suggest an alternative way of looking at the existing relationship between parties. While over time it has been considered lack of effective communication between stakeholders’ results in one party experience financial loss or low quality services in business. This study has guided even if there exists effective and reliable communication between lenders and borrowers in business. There may rise possibility of one part experience reduced services quality and or financial loss in the course of its operations. In this study, the third objective guides that, despite existing institutions’ access to reliable information from borrowers, but if there is absence of effective inbuilt supervision procedures, it is likely to fall into underperformance. Evidence of the variables such
as timely loan release and manageable ratio of borrowers to loan officer shows the respective microfinance institution may experience inefficiency consequentlly increasing portfolio at risk and unsustainable microfinance performance. Therefore, the findings of this study extend valuable inputs on the mentioned theory in relation to its influence in addressing credit risk management in microfinance institutions.

6.4.2 Policy Implications of Findings

This study provides information to policy makers and planners such as the Ministry responsible for Finance and Planning and other regulatory bodies so that they may positively intervene and regulate the operations of microfinance institutions in Tanzania. Clear understanding of factors which influence portfolio at risk of microfinance institutions will assist the government design policy intervention that enhances improvement of the microfinance sector in the country. Also, established policies may widen financial inclusion to low income individuals towards involving the community into production of the economy and poverty reduction.

In addition, the National Microfinance Policy (2017) has identified the challenges facing most microfinance institutions including “inadequate liquidity and capital growth, overdependence on external sources of fund, poor coordination and linkage of government economic empowerment funds and programs to microfinance service providers”. Therefore, this study has contributed to highlighting areas which the government needs to consider for effective and sustainable microfinance business operation. The financial performance improvement of the microfinance sector is likely to enhance achievement of the National Strategy for Growth and Reduction of Poverty II, including implementation of the policy for the property and business formalisation programme (2005 – 2025). Therefore, operationalisation of these policies would help in effective use of resources to improve standard of living among low-income communities.

6.4.3 Implication of Findings to Microfinance Institutions

The outcome of the study on implication of credit risk management practices on performance of MFIs indicates that loan portfolio risk has a significant impact on financial reputation of the non-member-based microfinance institutions. In the light
of the major role microfinance institutions play in poverty reduction and provision of financial support services to poor entrepreneurs in the economy; it is advised that the lending institutes can benefit from independent explanatory variables used in the study for enhanced quality of financial performance of the microfinance industry.

Moreover, in order for microfinance institutions to reduce inefficiency in credit administration including managing microfinance client delinquency/defaults. MFIs are advised to widen financial inclusion to their borrowers by engaging effective appraisal and extend credit to most trust worthy clients. This will enable non-member-based microfinance institutions increase loan outreach provision, but more importantly inviting other sectors of the economy. In so doing will result in loan diversification, cost and management efficiency. The widespread of loans across all sectors of the economy by microfinance institutions will minimize concentration of risks they encounter, resulting from focusing on small segment of borrowers having weak economic base.

6.5 Future Research Direction
This study investigated the effectiveness of credit risk management practices on portfolio at risk of MFIs in Tanzania. Four credit risk management practices were analysed, which were socioeconomic, credit application appraisal, credit supervision practices and credit collection policy factors, as independent variables and portfolio at risk of MFIs being a dependent variable while controlling for some factors.

Further research is recommended to engage on longitudinal study to establish the extent of outreach of non-member-based microfinance institutions and performance on poverty reduction strategies in Tanzania.

Moreover, this study has engaged non-bank formal microfinance institutions; future studies may be conducted to involve informal microfinance institutions impact on income of individual community members in Tanzania.

A study can also be conducted on other kind of risks facing non-bank formal microfinance institutions and their effects on microcredit delivery and poverty reduction in Tanzania.
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APPENDICES

Appendix: 1

Semi – Structured questionnaire

Dear Participant,

I am a Student at Mzumbe University – Tanzania, pursuing studies for a PhD degree. I would like to kindly request you to participate in this PhD research titled “Implication of Credit Risk Management Practices on Performance of Microfinance Institutions in Tanzania”. The main objective of this study is to assess the way MFIs in Tanzania manage credit risk and their performance. You are kindly requested to provide relevant information that will help to achieve objectives of this study. This study covers institutions that have been in operation for not less than three years. The success of this study greatly depends on your participation. I assure you that the information so extracted will be treated in a strictly confidential manner and the names of companies or institutions will not be included in the final report. Should you be interested in the findings, the final report may be availed to you on request. It is estimated that you will take between 15 and 20 minutes to fill this questionnaire.

I thank you in advance for accepting to participate.

(A) Summary Information

1. Please indicate the Region
   (i) Dar es Salaam [ ] (ii) Morogoro [ ] (iii) Dodoma [ ]
2. In which District is your microfinance institution located?
   (i) Ilala [ ] (ii) Kinondoni [ ] (iii) Temeke [ ] (iv) Morogoro Urban [ ]
   (v) Dodoma Urban [ ]
3. What is the type of your microfinance institution?
   i) Microcredit Company [ ] ii) Financial NGO [ ]
   iii) Company limited by shares [ ] iv) Company limited by guarantee [ ]
   v) Others specify ………………………..
(B) Socio-economic characteristics information

4. Please mention the total number of microfinance borrowers that you have been saving for the year 2015 ………………….

5. What is the average age of microfinance borrowers that you have been serving in your institution/company for the year 2015? …………………

6. (a) What is the proportion of male and female borrowers of your microfinance institution?

<table>
<thead>
<tr>
<th>Sex</th>
<th>Year 2015</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) Which sex of borrower in your experience has been on average accessing more loans in your MFI?

i) Male    [  ]  (ii) Female  [  ]

7. (a) What is the proportion of borrowers in each level of education has been accessing loans of your microfinance institutions?

<table>
<thead>
<tr>
<th>Education category</th>
<th>Year 2015</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i)No formal education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ii)Primary education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(iii)Secondary education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(iv)Post-secondary non-University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(v)University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(b) Which category of educational level of borrowers has been accessing more loans from your MFI?

i) No formal education

(ii) Primary education

(iii) Secondary education

(iv) Post-secondary non-University

(iv) University [   ]

8. (a) What is the proportion of married and unmarried borrowers of your microfinance institutions?

<table>
<thead>
<tr>
<th>Marital status</th>
<th>Year 2015</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Married borrowers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(ii) Unmarried</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) Which category of marital status of borrowers has been accessing more loans from your microfinance institutions?

(i) Married borrowers [   ]

(ii) Unmarried [   ]

9. (a) What is the average number of dependants of your borrowers that access loans to your microfinance institution? ..............................

(b) Which category of borrowers have been accessing more loans to your MFI?

(i) Borrowers without dependants [   ]

(ii) Borrowers with dependants [   ]

10. (b) For how long have your borrowers been taking and repaying loans to your microfinance institutions for running their business? .................

(a) Which kind of loans are mostly accessed by borrowers in your MFIs?
(i) Business loans [ ] (ii) Emergency loans [ ] (iii) Others 

(C) Credit application appraisal information

11. (a) What is the average annual business income in Tshs of the main business of borrowers in your microfinance institution?

………………………………………………

(b) What challenges do majority of microfinance borrowers face to ensure effective operation with their business?

…………………………………………………………

12. (a) What is the proportion of the kind of collateral required by your microfinance institutions for providing loans to borrowers?

<table>
<thead>
<tr>
<th>Kind of collateral</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Physical collateral</td>
<td></td>
</tr>
<tr>
<td>(ii) Social collateral</td>
<td></td>
</tr>
<tr>
<td>(iii) Personal guarantee</td>
<td></td>
</tr>
</tbody>
</table>

(b) What type of collateral requirement is mostly needed by your institution, for the borrower to be considered for a loan?

(i) Physical/traditional collateral [ ] (ii) Social/group collateral [ ]

(iii) Personal guarantee [ ]

13. (a) What is the average amount of capital in Tshs of the main business of borrowers in your microfinance institution? …………………………………………………

(b) Do you provide loans to applicants without a required minimum capital of a borrower? (i) Yes [ ] (ii) No [ ]
(c) What other requirement for a microfinance borrower without required capital to be considered for the loan from your MFI


14. (a) Are your microfinance borrowers interested in accessing loan services after the completion of their current loan amount? (i) Yes [ ] (ii) No [ ]

(b) What is the average membership duration in months of borrowers that have been accessing loans from your MFIs? …………………………

(D) Credit supervision practices information

15. (a) How many microfinance loan officers are in your MFI, saving loan applicants and continuing clients?……………………………………

(b) How many microfinance borrowers on average are supervised by a loan officer in your MFI? …………………………………

<table>
<thead>
<tr>
<th>Members</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borrowers</td>
<td></td>
</tr>
<tr>
<td>L/Officers</td>
<td></td>
</tr>
<tr>
<td>Borrowers/L/Officer</td>
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</tbody>
</table>

16. (i) Are your microfinance clients involved to repay their loans without followups?

   (i) Yes [ ] (ii) No [ ]

(ii) What is the average operational cost per borrower of your microfinance institution in the 2015 …………………

17. (a) Do you provide training to your microfinance borrowers?

   i) Yes [ ] (ii) No [ ] If No, Give reasons……………………………………
(b) How many training sessions on average have you conducted to your borrowers by the year 2015? ..........................................

18. (a) How many days on average does it take to process and release loans to borrowers in your microfinance institutions?..........................................

(b) Do your MFI receive any dissatisfactions from borrowers on time lag of releasing loans to needed by clients? (i) Yes [ ] (ii) No [ ]

19. (a) How many times on average do your MFI make follow ups (tracking) to borrowed clients until completion of their loan installments?..........................................

(b) Does your MFI consider follow up to borrowed clients important for loan repayment? (i) Yes [ ] (ii) No [ ]

20. (a) What is the average number of days of the MFI for regular loan instalments from borrowers? ……………………

(b) Do the microfinance borrowers respect and repay their dues without frequent followup?

i) Yes [ ] ii) No [ ]

(E) Credit collection policy information

21. (a) How many days on average do microfinance borrowers take to have fully recovered their loans? ……………………

(b) What is the average rate of loan repayment from your microfinance borrowers? ……………………………

22. (a) What is the average interest rates on total loan amount charged to borrowers of your microfinance institution? ……………………………
(b) What challenges do you face in determining the rate of interest for your borrowers? ..............

...........................................................................................................................................

23. (i) Do you provide grace period to borrowers of your microfinance institution?

   (i) Yes [ ]   (ii) No [ ]

   (ii) How many days on average do you provide as grace period to your borrower? 


24. (a) What is the average loan size offered to borrowers of your MFIs?.................

   (b) Do you receive any complaints from loan applicants about dissatisfactions of types of loan products to them? (i) Yes [ ]   (ii) No [ ]. If Yes, how do you handle them?

........................................................................................................................................

(F) Loan Portfolio information

25. What is the average portfolio at risk >90 days, of your microfinance institution by the end of your financial year (2015)? .........................

26. Please, provide a copy of financial statements (portfolio quality reports) on portfolio quality performance of your microfinance institution by the financial year ending 2015?

27. Please provide loan portfolio information by answering the following questions in the table below (i – iii)

   (i) How much loan amount was disbursed to your borrowers in the year 2015?

   (ii) How much loan amount disbursed in 27 (i) was outstanding loan past due above 90 days?

   (iii) How much is the outstanding balance of all loans disbursed in 27 (i) above?
(H) Other Information

28. May you please specify the education qualification of the owner-manager of the MFIs

   (1) Secondary education [ ] (2) Technical education [ ]

   (3) University education [ ]

29. May you state as for how long have you been managing this microfinance institution?

   ...........................................................................................................

30. For how long does your MFIs been in operation since its establishment? ...........

31. What do you consider to be the MFIs size in total assets in Tsh?......................

   Thank you very much for your cooperation.
Appendices: 2
Semi-Structured Interview

Target group: Key Informants

- Which type of collateral requirement is mostly preferred by majority of MFIs?
- Do the microfinance institutions provide grace period to their clients?
- What is the average number of days for MFIs borrowers to complete loan repayments?
- How do you rate the repayment of loans between male and female borrowers?
- Which level of education do you consider to have been accessing/ use more microfinance loans?
- What do you consider to be the average annual business income of majority MFIs borrowers?
- What do you consider to be the ratio of borrowers per loan officer in most microfinance institutions providing loans in Tanzania?
- What is the average operating cost per borrower for sustainable functioning of a microfinance institutions?
- What should be the optimal interest rates to be charged by MFIs? Does the interest rate influence quality performance of MFIs?
- Do the provision of training to borrower influence portfolio at risk of MFIs?
- What is the average portfolio at risk above 90 days of the majority of microfinance institutions in Tanzania?

Note: Additional follow-up questions were asked, as appropriate, with each participant.
Appendices: 3
Interview Summary Form

Interviewee: Date of Interview:
Place: Time of Interview;

Duration of Interview:
Where did the interview take place? Was the venue suitable? Does anything need to be changed for future interviews?

How easy was it to establish rapport? Were there any problems and how can this be improved for next time?

Did the interview schedule work well? Does it need to be altered or improved?

What were the main themes which arose in the interview? Did any issue arise which need to be added to the interview schedule for next time?

Is the interviewee willing to be contacted again? Have I promised to send any information or supply them with the results or copy of the transcript?
### Variance Inflation Factor: Objective One

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<th>VIF</th>
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Source: Researcher, 2016
**Appendix: 5**

**Variance Inflation Factor: Objective Two**

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Source: Researcher, 2016
Appendix: 6

Variance Inflation Factor: Objective Three

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Source: Researcher, 2016
### Appendix: 7

#### Variance Inflation Factor: Objective Four

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Source: Researcher, 2016
Appendix: 8

Objective One

Model summary

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a. Predictors: (Constant), Age of borrower, Business experience, Sex of borrower, Family size of borrower, Borrower sec, Post sec, Borrower univ, Marital status, MFI size, MFI age, Manager experience, Manager sec and Manager univ.

b. Dependent variable: Portfolio at risk of MFIs.

ANOVA

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<th>Model</th>
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a. Dependent variable: Portfolio at risk of MFIs

b. Predictors: (Constant), Age of borrower, Business experience, Sex of borrower, Family size of borrower, Borrower sec, Post sec, Borrower univ, Marital status, MFI size, MFI age, Manager experience, Manager sec and Manager univ.
Appendix: 9

Objective Two

Model summary

<table>
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<th>Adjusted R Square</th>
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a. Predictors: (Constant), Log capital of borrower, Personal guarantee, Membership duration, Log income of borrower, Social capital, MFI size, MFI age, Manager experience and Manager sec and Manager university

b. Dependent variable: Portfolio at risk of MFIs.

ANOVAa

<table>
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a. Dependent variable: Portfolio at risk of MFIs
b. Predictors: (Constant), Log capital of borrower, Personal guarantee, Membership duration, Log income of borrower, Social capital, MFI size, MFI age, Manager experience and Manager sec and Manager university
Appendix: 10

Objective Three

Model summary

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a. Predictors: (Constant), Repayment schedule, Training sessions, Borrowers per loan officer, Follow up period, Timeliness of loan release and Log operational cost per borrower, MFI size, MFI age, Manager experience, Manager sec and Manager univ.

b. Dependent variables: Portfolio at risk of MFIs

ANOVA

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a. Dependent variable: Portfolio at risk of MFIs

b. Predictors: (Constant), Repayment schedule, Training sessions, Borrowers per loan officer, Follow up period, Timeliness of loan release and Log operational cost per borrower, MFI size, MFI age, Manager experience, Manager sec and Manager univ.
Appendix: 11

Objective Four

Model summary

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a. Predictors: (Constant), Log loan size, Interest rates, Grace period of loans and Log loan duration, MFI size, MFI age, Manager Experience, Manager Sec and Manager Univ.
b. Dependent variable: Portfolio at risk of MFIs

ANOVA\(^{a}\)

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a. Dependent variable: Portfolio at risk of MFIs
b. Predictors: (Constant), Log loan size, Interest rates, Grace period of loans, Log loan duration, MFI size, MFI age, Manager Experience, Manager Sec and Manager University.