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**Small Loans-Big Gains: Benefits and Repayment Performance of  
Microfinance Programs in Tgray, Mekelle**

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## **DECLARATION**

I, the undersigned, declare that this thesis is my own work and has never been presented in any other university. All sources of materials used for this thesis have been duly acknowledged.

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## CERTIFICATE

I certify that this thesis entitled **Small Loans-Big Gains: Benefits and Repayment Performance of Microfinance Programs in Tigray,Mekelle** is a bona-fide work of **W.ro Tsige G/egziabher ID No.CBE/PE/240/03** who carried out the research under my guidance. Certified further that to the best of my knowledge the work reported here in does not form part of any project report or thesis on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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## Acronyms

AAU	Addis Abeba University
ACSI	Amhara Credit and Saving Institution
ATE	Average Treatment Effect
ATT	Average Treatment Effect for the Treated
DECSI	Dedebit Credit and Saving Institution
MFI	Microfinance Institution
MU	Mekelle University
MDGs	Millennium Development Goals
NGO	Non Governmental Organization
PSM	Propensity Score Matching
REST	Relief Society of Tigray
RCST	Rural Credit Scheme in Tigray
MSEs	Micro and Small Scale Enterprises
GDP	Gross Domestic Product
CIA	Conditional Independence Assumption
ASA	Association for Social Advancement
BRI	Bank Rakyat Indonesia
MIT	Mekelle Institute of Technology
BoFED	Bureau of Finance and Economic Development

## **Abstract**

Microfinance is the provision of small amount of loans to those who have low income and could not have the access to credit from the formal banks. The study was conducted aiming to assess impact of programs in terms of poverty reduction, women`s empowerment, timely repayment and the livelihood of borrowers of Dedebit Credit and Saving Institution(DECSE), using primary data which has been collected through structured questionnaire in the study area. Data used for this study were collected as part of the MU-IUC collaboration program between Mekelle University and Flemish Universities.

A sample of 183 borrowers was selected randomly for the study. From the total sample respondents 71.58% are female and the rest 28.42% are male. Moreover, 108 are female headed households and the remaining 51 are male headed households. Therefore, from the sample clients female headed households are larger than male headed clients. Only clients who took at least two group loans are included in the study as members of the treated group. The control group, on the other hand, was made up of DECSE`s clients who took only one loan. It was found out in the study that, on average, female headed borrowers took significantly lesser amount of loan than their male counterparts. Members of the treated group in the sample enjoyed loan frequency ranging from 2-14 and it was found that the amount of loan they borrow (loan size) increased from time to time.

With regard to average profit the amount of profit on average obtained by male household headed borrowers is higher than their female household headed counterparts in

all the three loan periods (Current Loan period, Previous Loan period, and Before Previous Loan period).

To measure the impact of microfinance on the living condition of clients we use the Propensity Score Matching (PSM). Quasi-experimental samples which contain participants and non-participants have been used. We use household consumption expenditure as impact indicator.

The analytical findings indicate that microfinance loans of DECSI have improved the clients` wellbeing in their living standard. There is a significance difference between treated and control groups in terms of food and non-food expenditure which includes expenditure on personal care, durables and jewelry. The income of the clients has increases due to the fact that beyond their food consumption they possess durable goods like household furniture and jewelry such as gold and silver. However, we did not find significant difference between program participants and non-participants for total expenditure on education, utilities and other expenses like social contributions except that in only one method is significant. The increment of income is not only at household level but also total per capita of individual household members.

**Key Words:** microfinance, loan repayment, impact



# CHAPTER ONE

## 1. INTRODUCTION

### 1.1. Background

MFIs offer credit to the poor clients through different lending modalities including group-based lending. Lending is a risky enterprise because repayment of loans can seldom be fully guaranteed. The failure of a large number of state sponsored agricultural development banks in many developing countries was due, among other things, to their inability to ensure good repayment rates among their borrowers (Adams et al., 1984), (Yaron ,1994).

Microfinance Institutions (MFIs) have been established to provide loan and other services to the poor and lower income persons so as to help them alleviate their poverty and become self employed by making their business activities. This is in contrast to formal banks which provide loans to relatively better off members of the society on the basis of collateral. Microfinance can be considered as a development tool that provides financial as well as social intermediation including the provision of savings, credit and insurance services, while social intermediation involving citizens groups to voice their aspirations and raise concerns for consideration by policy makers and develop their self-confidence (Robinson, 2002).

Commercial banks in most developing countries commonly exclude the poor and hard core poor from credit facilities because of high transaction cost, their inability to fulfill the collateral requirements, their unstable income, and lack of marketable skills as well as high monitoring costs. Therefore they are considered as highly risky lending option (Prahalad, 2006).

Commercial banks, savings and loans companies and credit unions always grapple with the issue of credit risk because lending serves as the fulcrum around which the wheels of their operations revolve. (Adusei,2011).

The poor, following their exclusion from the formal banks, usually survive through involvement in micro business activities or informal activities that includes small scale agriculture, petty trade, small scale industries and others. These activities contribute to the employment opportunities and gross domestic product (GDP) of the country. Micro and small enterprises (MEs) have been recognized as a major source of employment and income in many countries of the third world. Nawai (2010). Unlike the conventional financial institutions like the commercial banks, MFIs strive for financial sustainability as well as empowerment of the poor women. MFIs usually have the following characteristics targeting the poor (especially the poor women), promoting small business activities, capacity building for the poor, extending small loans without collaterals, and combining credit with savings and charging commercial interest rates (Dejene,1998).

MFIs provide fund for start-up business or for working capital. In addition, some MFIs also provide funds for non business activities such as for education and emergencies purpose. In the credit market, agency problem, moral hazard and adverse selection exist because of information asymmetries. Information asymmetries are the main obstacle for MFIs to provide loans to clients. Financial institutions usually requires business proposal, borrower past credit information to mitigate agency problems, moral hazard and adverse selection and to replace the collateral requirement .In group-based lending, borrowers must form a group before applying for loans and they also are responsible to other loan members. If one member defaults, the others will be denied access for the next loans. (Nawai,2010).

The primary objective of microfinance institutions (MFIs) is to provide financial services like (credit & saving) to the poor in order to release financial constraint and help alleviating poverty. Each MFI tries to maximize its repayment performance, whether or not it is profit oriented. High repayment rates are indeed largely associated with benefits both for the MFI and the borrower. They enable the MFI to cut the interest rate it charges to the borrowers, thus reducing the financial cost of credit and allowing more borrowers to have access to it. DECSI is the microfinance service provider in Tigray region starting from 1994.

Improving repayment rates might also help reduce the dependence on subsidies of the MFI which would improve sustainability. It is also argued that high repayment rates reflect the adequacy of MFI's services to clients' needs. They limit the incidence of cross subvention across the borrowers. Last but not least, repayment performance is a key variable for donors and international funding agencies on which many MFIs still depend for their access to funds (Godquin, 2004).

As far as the repayment rates are concerned, high repayment rates are mainly associated with the advantages both to the MFIs as well as the borrowers. The first best level of repayment performance is a perfect (100%) on time repayment rate. If the maximum repayment rate the MFI can reach given its lending methodology is lower than the targeted 100%, the MFI will use second level strategies including the allocation of larger loans to borrowers with lower default probability and attempts to reduce the delay in repayment. The MFI will develop incentive mechanisms so as to meet these objectives (Godquin, 2004).

There is a substantial effort which aims lending the poor or credit access as well as improving their incentives to meet repayment obligations. One distinguishing feature of these efforts has been the formation of borrower group responsibility and peer monitoring as the core principles guiding financial transactions (Sharma & Zeller, 1997).

This paper questions the adequacy of loan allocations like loan size based on the comparison of the determinants of the repayment performance to the determinants of the loan size.

## **1.2. Statement of the problem**

The spread and success of MFIs in various countries around the world enabled access to millions of poor borrowers in different parts of the world. It is well known that formal banks, which act as creditors to most entrepreneurial activity in the modern world, have largely avoided lending to the poor. Instead, credit to the poor has been provided mostly by local moneylenders, often at higher rates.

Various approaches have been employed in alleviating poverty; of which provision of loan by microfinance institutions is where by the main target is the poor is the basic one. Many academics and practitioners agree that allowing the poor to have command over resource through credit can contribute towards poverty alleviation. Besides, the allocation of credit has an implication both at macro and micro level. There is no doubt about the crucial roles of credit on economic development.

The majority of the world's poor live in the Third World countries. Various approaches have been employed in alleviating poverty, of which provision of credit where its main focus is serving the poor which are participating in various business activities so that they will play their own role in alleviating poverty. But credit provision is such a risky business that, in addition to other reasons of varied nature, it may involve fraudulent and opportunistic behavior. The lender in the formal financial system is at a disadvantage of information on the borrower's behavior. Fortunately, group based micro financing system that involves peer pressure and joint liability has evolved to counter the problems of a conventional bank that provides a collateral based credit alienating the poor (Mengistu, 1997). The peer pressure on defaulters of the group members may lead to improve their repayment rates. Therefore, the members of the group select each other whereby each member knows the behavior of the other member properly. Group lending has many advantages beginning with mitigation of problems created by adverse selection. The key is that group-lending schemes provide incentives for similar types to group together *Morduch (1999). Peer monitoring and peer pressure inherent in the group lending methodology are believed to minimize the problems of adverse selection and moral hazard associated with information asymmetry and subsequently ensures better repayment performance by clients (Zaid, 2008).*

In this paper we focus on group lending where by the clients who could not offer collateral are required to form small groups and the group members are jointly liable for the loan individually as well as jointly and their repayment performance. On top of this, we have also focused on poor women clients of microfinance. Women are generally

poorer than men so a country's development strategy that fails to include and directly benefit to include women is only a partial strategy because women comprise at least half of the population. Enabling poor women to help themselves is a crucial element for the attainment of the Millennium Development Goals for poverty reduction.

Research has shown that women invest on health and nutrition of the family as well as the children's schooling hence, benefiting women has an impact on poverty reduction of the household. Women are not only better payers of loans, but also better savers than men, and more willing to form effective groups to collect savings and decrease the delivery costs of many small loans (Mayoux and Hartl, 2009).

In order for MFIs to be successful, they should be sustainable both financially as well as institutionally. On top of sustainability one has to include developmental effects like income on the target group as core measure of success. For agencies that are involved in the development or in assisting the development of a micro-credit institution, it is recommended that profitability and sustainability should be the final goals, and therefore the only indicators of success (Rudkius, 1994).

Loan default may also deny new applicants access to credit as the bank's cash-flow management problems augment in direct proportion to the increasing default problem. The problem of loan default reduces the lending capacity of the financial institutions not only this it also denies new borrowers from accessing the credit. This disturbs the normal inflow and outflow of fund a financial institution has to keep staying in sustainable credit market.

Clients borrow money from the MFIs for various purposes like to run their small business, purchase of animals, durable equipment and so on. Microfinance is the attempt to improve access to small deposits and small loans for poor households which are neglected by banks. Therefore, MFIs involve the provision of financial services like loans and savings to the poor people who are living in both urban and rural, who are not benefited from the formal banks. Therefore, based on all definitions given, it can be

concluded that microcredit is just a small credit given to the poor that are engaged in microenterprise or for the purpose of income generating activities. MFIs were established to fill the gap in the financial services sector by providing funds to the poor and lower income group and thus alleviating poverty and enhance their business activities. It is generally accepted that credit, which is put to productive use, results in good returns. If microcredit is extended based on the financial discipline, borrowers are expected to exert more effort so as to benefit from the loan as well as to pay their loans on time (Zaid, 2008).

The purpose of this paper is to investigate the timely loan repayment performance of Microfinance clients, and analyze if there are significant changes in the borrower's expenditure, women empowerment and their income status. Morduch (2005) reported that Grameen Bank shifted their focus from men to women due to repayment problems they encountered with the former studies made by Hossain (1988) Khandker et al (1995) favoring women. i.e., women are superior to men in terms of loan repayment. Moreover, the World Bank (2007) has observed that from past experience repayment is higher among female borrowers. Among the reasons is sensitivity of women to peer pressure and intervention of loan managers. Why lenders tend their money to women is that they are good credit risks, are less likely to misuse the granted loan and share the benefits with their family (Adusei, 2011)

Therefore, this research aimed at examining the timely loan repayment performance in Mekelle as there was no adequate study previously conducted on both repayment performance as well as the benefits of microfinance programs in Mekelle city.

### **1.3. General and Specific Objectives**

The general objective of this paper is whether microfinance clients are paying their loans timely and the impact of DECSI's microfinance services on the clients in Mekelle town.

## Specific Objectives

1. To investigate the factors influencing the timely loan repayment performance in the study area.
2. To assess the benefits of credit to the poor in general and women borrowers in particular.
3. To examine whether microfinance has a significant effect on the living condition of clients in the study area.

### **1.4. Research Hypothesis**

1. Women borrowers are more trust worthy compared to their male counterparts in credit repayment.
2. Microfinance credit has a direct impact on variables like income, food expenditures and ensuring women empowerment. Moreover, services provided by MFIs are expected to have a positive impact on the society.

### **1.5. Significance of the Study**

The banking sector is reluctant to serve the poor because they are unable to fulfill the bank's lending requirements and banks on the other hand had consider them as risky borrowers and involves high administrative costs. Thus, the main issue that has to be solved is the loan repayment problem. Therefore the analysis of loan repayment performance of microfinance clients would help policy makers to formulate appropriate credit policies and programs to alleviate the scarce resources to the development of basic sectors of the economy.

The findings of the research could also help the financial institute (DECSI) to critically evaluate its screening mechanisms and other researchers could make further study based on the outcomes of this finding.

## **1.6. Scope and Limitation of the study**

The scope of this paper is on microfinance mainly on credits and its benefits as well as loan repayment rates of DECSI's as indicated in the title. Furthermore, the study is limited to one specific area due to time and financial constraint.

This study focuses only on poor women and it excludes the rural areas. It focuses on loan repayment performance and the impact of microcredit based on the data obtained.

## **1.7. Outline of the paper**

The thesis has five chapters. Chapter one gives introduction part including background, statement of the problem, objective of the study, research hypothesis, significance of the study, scope and limitation of the study and organization of the study. The second chapter deals with literature review which includes both theoretical and empirical work done. Chapter three goes to data and methodology and estimation technique. Results and Findings of Descriptive analysis and Empirical Analysis will be presented in chapter four. Conclusion and policy implications will be on the 5<sup>th</sup> chapter.

## **CHAPTER TWO**

### **2. Literature Review**

#### **2.1. Theoretical Literature**

##### **2.1.1. Concepts and Definitions**

###### **Microcredit and Microfinance**

Nawai (2010) defined Microcredit as follows. Microcredit or micro lending is defined as an extremely small loan granted to the poor so that they will be self employed and improve the borrowers` living standards. The loan characteristics are too small, short term credit (a year or less), no collateral, required weekly repayment, poor borrower and mostly women who are not qualified for a conventional bank loan. Usually the loan pays high interest rates because of the high cost in running microcredit program. Microcredit is also used as the extension of very small loans to those who are in poverty that designed to spur entrepreneurship and help them out from poverty group. These individuals lack collateral, steady employment and verifiable credit history, which therefore, cannot even meet the most minimal qualifications to gain access to traditional credit.

The Grameen Bank defined microcredit as small loans given to the poor for undertaking self-employment projects that would generate income and enable them to provide for themselves and their families. The target population comprising women microenterprises from the low income households and the loans have no collateral.

However Microfinance is defined as the provision of financial services to low income clients, including consumers and the self-employed, who traditionally lack access to banking and related services (Gonzalez-Vega 2008). Microfinance is a place for the poor and near poor clients to get access to a high quality financial service which includes not just credit but also savings, insurance and fund transfer. Microfinance, according to Otero (1999) is the provision of financial services to low income poor and very poor self-employed people. These financial services according to Ledgerwood (1999) generally

include savings and credit but can also include other financial services such as insurance and payment services.

Microfinance is a development approach that provides financial as well as social intermediation. The financial intermediation includes the provision of savings, credit and insurance services. While social intermediation involves organizing citizens' groups to voice their aspirations and raise concerns for consideration by policy makers and develop their self-confidence (Robinson, 2002).

Conroy (2002) stated that microfinance is the provision of a broad range of financial services such as deposits, loans, payment services, money transfers, and insurance to poor and low income households and their MEs. The term evolved from the concepts of "microcredit" and "microenterprise" financing, to include the importance of savings as well as borrowing. Although the terms are used interchangeably, microfinance represents the field as a whole, while the other two terms are more technical and refer only to credit provision (Maria, 2004).

The World Bank defines microfinance as "...small scale financial services- primarily credit and savings provided to people who farm or fish and who operate small enterprises or microenterprises where goods are produced, recycled, repaired, or sold; who provide services; who work for wages or commissions; who gain income from renting out small amounts of land, vehicles, draft animals, or machinery and tools; and to other individuals and groups at the local levels of developing countries, both rural and urban (Robinson,2001).

Therefore, based on all definitions given, it can be concluded that microcredit is just a small credit given to the poor that engaged in microenterprise or for the purpose of income generating activities. On the other hand, microfinance encompasses broad financial services given to the poor and low-income group for many reasons and not only just for income generating activities.

**Credit:** is borrowing money today promising for future payment.

**Loan repayment:** paying back the money or debt according to the contractual agreement with the lender.

**Default:** is the failure to pay a loan according to the schedule at the right time.

### **2.1.2 The Need for Microfinance Institutions**

Microfinance Institutions (MFIs) were established to fill the gap in the financial services sector by providing funds to the poor and lower income group and thus alleviating poverty and enhance their business activities. The MFIs provide funds for start-up business or for working capital. In addition, some MFIs also provide funds for non-business activities such as for education and emergencies purpose. In the credit market, agency problem, moral hazard and adverse selection exist because of information asymmetries. Information asymmetries are the main obstacle for MFIs to provide loans to clients. Financial institutions usually requires business proposal, borrower past credit information and collateral before approving the loan. MFIs offer credit through group-based lending method to mitigate agency problems, moral hazard and adverse selection and to replace the collateral requirement. In group-based lending, borrowers must form a group before applying loans and they are also responsible to other group members. If one member default, the others will be responsible to pay the loan or they will be denied access for the next loans (Nawai, 2010).

Many of the MFIs started as development support institution, with the vision of improving the quality of life of the poor and underprivileged, through intervention in various social activities. Their experience in working with the poor helped them in offering micro finance services to their clients. Besides from providing credit, some of them offered other services like training facilities and marketing arrangement to their clients.

### **2.1.3. Repayment Performance in Group Lending**

In group lending borrowers who do not have access to offer collateral to secure the loan as well as to minimize adverse selection and moral hazard forming a peer group is a possible solution. The members of the group accept to take joint liability for a loan.

Since group members who participate in the program are formed voluntarily, the members have a lot of information about each other.

**Peer selection** is the most important mechanism in group lending. If one of the group member defaults the other members of the group has to pay the loan because they are jointly liable for the loan granted.

**Peer monitoring** in group lending peer monitoring increases repayment rates because if one of the group member does not repay the loan he/she will be excluded socially by the society.

As Aghion and Goller (2000) stated, in addition to repaying their share of the loan, each group member must accept to repay the obligations of their defaulting peers otherwise the entire group is denied access to future refinancing. As Van Tassel (1999) has analyzed group lending in a similar information environment and has obtained some similar results on its effect on the formation of groups and repayment rates.

Godquin (2004) found in his study that the use of nonfinancial services has a positive impact on microfinance repayment performance but that group homogeneity and social ties among group members are not always associated with a better repayment performance. Individual based lending methods use continuous follow-up, repayment incentives, collateral and dynamic incentives (allocation of larger loans overtime to borrowers with a group repayment performance), some of which are also used by group lending to ensure higher repayment rates. Although with group lending MFIs usually used dynamic incentives and nonfinancial services (such as health services, adult literacy or training) when they increase the amounts granted to a specific borrower as credit is renewed, and condition the allocation of fresh loans to previous repayment behavior.

Godquin (2004) studied the explanatory power, social ties, group homogeneity, and the dynamic incentives mechanisms on the group repayment performance. He also noted a negative effect on the social ties between group members on the repayment. The group homogeneity does not affect the repayment performance. MFIs are striving for high repayment rates so as to be sustainable in the long run and be independent of subsidy.

Group lending may not ensure higher repayment rates at all times. When loans are received on the basis of joint liability, the risk of loan default by particular member is shared by his/her peers. Hence a member may choose to finance a riskier project than he/she would when liability is not shared with others. This is because the individual borrower may strategically decide to let other members who are keen on securing future loans for themselves (Sharma and Zeller, 1997).

Wydick (1999) in his study in Guatemala reported that the social ties among group members have rather a negative impact on repayment rates. He analyzes the effect of peer monitoring, social ties, and group pressure on the provision of intra-group insurance, mitigation of moral hazard within borrowing groups, and group repayment performance. He finds that neither social ties nor group pressure have an effect on repayment rates.

Ghatak and Guinnane (1999) show how group lending can take advantage of each group members information that only borrowers have about each other to draw in relatively safer borrowers and thus mitigate the adverse selection problem. Varian(1990) analyzes how borrowers mutually monitor each others` projects to ensure the success of financed projects while Stiglitz (1990) shows that group lending, via monitoring, alleviates the moral hazard issues involved in lending to those with no collateral.

One of the earliest empirical papers by Wenner (1995) studies group lending as a means of transmitting information on borrower creditworthiness. He finds that groups using a written internal code of regulations for screening and limited access to alternative credit options have a better repayment performance.

As Ben Soltane Bassem (2008) cited it microfinance institution provided micro credits to borrowers who did not reach commercial banks and without requiring collateral. Group

lending is an innovation that makes it possible, where the poor borrowers act as guaranties each other by joint liability. While exploiting the local knowledge that members have on each other, group lending solved several problems of information asymmetry between borrowers and creditors.

The findings of empirical studies concerning the determinants of repayment rates in group lending are controversial. Khandker et al., (1995) use the registers of Grameen bank to extract the determinants of repayment performance; their survey shows that the rate of non repayment increases with the period of activity of the branch. They suggest that the formation of members that can be associated to non financial services had a positive influence on repayment.

#### **2.1.4. Repayment Performance in Women Borrowers**

MFIs enable women borrowers to have an opportunity to control over resources such as land, asset, capital, and have access to education, health, nutrition and other services. It also empowers women in making decisions both at house hold level and at community levels. Microfinance empowers women by putting capital in their hands and allowing them to earn an independent income and contribute financially to their households and communities. The economic empowerment is expected to generate increased self-esteem, respect and other forms of empowerment for women beneficiaries.

Any review of microfinance is incomplete without a discussion of its impact on women. Yunus (2006) stated that 95 percent of the Grameen Bank`s current clients are women.

Microfinance financial services granted for poor people have been celebrated for its ability to reach out to women and enhance their welfare. Morduch (1999) argues that one of the main reasons for the success of microfinance is due to the fact that targeting of women.

As Roy Mersland (2009) stated it a number of studies find that women borrowers consistently outperform men in terms of their repayment performance. Morduch (2005) reported that in its initial stage the Grameen Bank also included men as customers.

However, the bank decided to move over with little concentration on women due to repayment problems related to male customers. Hossain (1988) reported that in Bangladesh 81 percent of women encountered no repayment problems compared to 74 percent of men. Khandker et al (1995) find that 15.3 percent of Grameen`s male borrowers had repayment problems compared to only 1.3 percent of the women. Also from Bangladesh, Sharma and Zeller (1997) report that credit groups with higher percentage of women had significantly better repayment rates. Finally, in a study from Guatemala Kevane and Wydick (2001) report that female borrowers perform better than male borrowers.

On the other hand, a number of studies find that there is no significant relation between gender and repayment. In Bangladesh, the analysis made by Godquin (2004) indicates that there is a positive correlation between gender and repayment but not significant. The work done by Berhanu and Fufa (2008) also leads to a similar conclusion. Finally, the most popular MFI found in Indonesia, BRI has never had any specific focus on women but still has achieved nearly perfect repayment rates for many years. (Aghion and Morduch, 2005, P.139).

Khandker (2003) finds that a 100 percent increase in the volume of borrowing by a women would lead to a 5 percent increase in per capita household nonfood expenditure and a 1 percent increase in per capita household food expenditure, while a 100 percent increase in borrowing by men would lead to just a 2 percent increase in nonfood expenditure and a negligible change in food expenditure. Thus, evidence shows that serving women turns out to have stronger impacts on households. Serving women and this seems to accord well with the dual objectives of maintaining high repayment rates and meeting social goals.

### **2.1.5. Group Lending**

As Sengupta and P.Aubuchon (2008) states it, the success of microfinance in generating higher repayment rates led many economists to investigate the reasons behind this success. The mid-to-late 1990s witnessed that the number of journal articles on group lending contracts has increased; economists try to explain how microfinance “succeeded”

where traditional forms of lending had failed. Joint liability contracts helped to improve repayment rates. MFIs use a variety of lending techniques, such as dynamic and progressive loans, frequent repayment schedules, and nontraditional collateral to ensure high repayment rates among poor. These mechanisms were either introduced independently or in conjunction with joint liability programs such as Grameen's case.

As Lehner (2009) stated it even though individual loans account for a large portion of microfinance loans, the literature is heavily biased towards the analysis of group loan contracts. Individual lending schemes have only very recently attracted the interest of researchers.

In 2006, the Nobel peace prize was awarded to Mohammed Yunus since he found the Grameen Bank in Bangladesh by providing small loans to the extremely poor, the Grameen Bank offers these recipients the chance to become entrepreneurs and earn sufficiently high income to break themselves free from the cycle of poverty.

Various theoretical papers have addressed the positive effects of group lending mechanisms. Ghatak and Guinnane (1999), Ghatak (2000) as well as Van Tassel (1999) show that group lending achieves self selection of borrowers and acts as screening device. Stiglitz (1990) outlines the role of peer monitoring in group lending schemes, which transfers the monitoring role from the financial institution to the borrowers and acts as an incentive device.

Moreover, there are certain drawbacks of group lending. Gine` and Karlan (2006) stated that the demand for credit within a group may change overtime, forcing clients with small loans to be liable for larger loans of their peers. Furthermore the growth of group lending programs may slow down when new borrowers with looser social ties enter and consequently, the group lending mechanism loses some of its power.

Group lending or joint liability contract is the most celebrated lending innovation by the Grameen Bank. Under this contract members who belong to the group can help mitigate the problems encountered to the financial institutions like moral hazard and adverse

selection besides, there is a situation where the promise of future credit depends on the timely repayment of all group members.

In group lending programs screening, monitoring and repayment are basically transferred from the bank to the group members. Group members have adequate information such as asset ownership of the loan applicants, indebtedness and others at a lower cost. They can also easily monitor individual efforts made towards ensuring repayment performance. On top of this, groups may have also a comparative advantage in enforcement of loan repayment. Group members can employ social sanctions Basley and Coate (1995). Moreover, group members have a better access to assess the reason for default (Zeller, 1998).

### **2.1.6. Individual Lending**

The success of microfinance in generating high repayment rates led many economists to investigate the reasons behind this success. The mid-to-late 1990s witnessed a large increase in the number of journal articles on group lending contracts, as economists sought to explain how microfinance “succeeded” where traditional forms of lending had failed. Joint liability contracts were seen as the break from traditional lending mechanisms and economic theory was used to readily explain how these contracts helped to improve repayment rates. The growth of the literature on group lending contracts in the mid-1990s offers the impression that all MFIs operate as such, but the reality is that MFIs use a variety of lending techniques, such as dynamic and progressive loans, frequent repayment schedules, and nontraditional collateral to ensure high repayment rates among poor, underserved borrowers. These mechanisms were either introduced independently or in conjunction with joint liability programs such as Grameen’s case (Sengupta and Aubuchon, 2008)

Individual lending scheme typically focuses on the crucial role of closely monitoring microfinance clients. (Morduch, 2000) point out the importance of monitoring borrowers in individual lending programs. Recently researchers have been interested in comparing group lending programs to individual lending scheme. Gine and Karland (2006)

conducted a field experiment in Philippines. They find out that by offering individual loans, a MFI can attract relatively more new clients. Yet, both lending schemes do not differ in repayment rates.

As the study made in Philippines (field experiment) stated it, in recent years, however, some micro-lenders, such as the Association for Social Advancement (ASA) in Bangladesh or the Bank Rakyat Indonesia (BRI), have expanded rapidly using individual liability loans. Others, like Bancosol in Bolivia and the Grameen Bank, have converted a large share of its group liability in to individual liability lending.

### **2.1.7. Factors Affecting Repayment Performance**

The main factors influencing the loan repayment performance are related to information asymmetries, to adverse shocks that affect the borrower or low performance of institutions. Information asymmetries arise due to lack of information in relation to behavior of the borrower and it is costly to the MFI. Information asymmetries generate problems of adverse selection that is granting of loans to borrowers with undesirable characteristics like inability to take advantage of the granted loan as well as moral hazard that borrowers make little or insufficient effort to take advantage of the loan or use it for unproductive purposes. The effect of adverse selection and moral hazard is it increases the proportion of borrowers who cannot repay their loans on time. (Godquin, 2004)

Basley and Coate (1995) argue that the whole group may default, even when some members would have repaid under individual liability. This situation happens when the number of defaulting borrowers is so large that the remaining members of the group cannot afford the repayment of defaulters, along with their own repayment. In this situation, borrowers that could repay their loans have little incentive to do so because access to future loans will be denied. As a result, they will strategically decide to default.

According to Nawai (2010), the factors that affect loan repayment performance of MFIs can be divided in to four factors namely:

- ✚ Individual/borrowers factors
- ✚ Firm factors
- ✚ Loan factors and
- ✚ Institutional/lender factors.

Several studies show that when the loan is not repaid, it may be a result of the borrowers' unwillingness and/ or inability to repay. Stiglitz and Weiss (1981) recommend that banks should screen the borrowers and select the "good" borrowers from the "bad" borrowers and monitor the borrowers to make sure that they use the loans for the intended purpose. This is important to make sure that borrowers can pay back their loans.

a) Individual/borrower characteristics

Looking at a borrower's past track record whether the client is having a clean loan record (repaying the loan on time) and economic prospects to determine whether the borrower is likely to repay or not. Besides characteristics of the borrowers, collateral requirements, capacity or ability to repay and condition of the market should be considered before giving loans to borrowers. Gender and educational level also affect the loan repayment performance.

b) Firm characteristics

Godquin (2004) suggests that the provision of non-financial services such as training, basic literacy and health services has a positive impact on borrowers' repayment performance. Roslan and Mohd Zaini, (2009) found that borrowers that did not have any training in relation to their business have a higher probability of default.

According to Tedeschi (2006) there are two possible reasons for default: strategic default or default due to a negative economic shock. The lending contract provides incentives to discourage strategic default, but default due to an economic shock is unavoidable. In contrast, Hulme and Mosley (1996) argue that the important factors contribute to loan repayment performance are the design features of the loan. They categorize the designed features into three categories namely access methods, screening methods and incentive to pay. Access methods generally ensure that poor people access the loans not the richer

people and the features include maximum loan ceilings and high interest rate. Screening methods are used to screen out bad borrowers.

c) Institutional/lender characteristics

A few researchers also found that loan characteristics play an important role in determining repayment performance Roslan and Mohd Zaini (2009) found that defaults generally arise from poor program design or implementation, not from essential problems with the borrowers.

d) Loan characteristics

According to Derban et al. (2005), causes of non-repayment could be grouped in to three main areas: the inherent characteristics of borrowers and their businesses that make it unlikely that the loan would be repaid. Second, are the characteristics of lending institution and suitability of the loan product to the borrower, which make it unlikely that the loan would be repaid? Third, is systematic risk from the external factors such as economic, political and business environment in which the borrower operates? Vigenina and Kritikos (2004) find that individual lending has three elements namely the demand for non-conventional collateral, a screening procedure which combines new with traditional elements and dynamic incentives in combination with the termination threat in case of default, which ensure high repayment rates up to 100 percent.

Roslan Abdulhakim et al. (2007) in their study conclude that close and informal relationship between MFIs and borrowers may help in monitoring and early detection of problems that may arise in non repayment of loans. In addition, cooperation and coordination among various agencies that provide additional support to borrowers may help them success in their business.

Nawai (2010) find out that repayment problem is one of the critical issues of MFIs that concerns all stakeholders where high loan default rate is the primary cause of the failure of MFIs. The agency problem, adverse selection and moral hazard that appear as a result of information asymmetries are the main reason why these happened. This is because lenders cannot observe the behaviors of their clients whether they are honest or dishonest.

The lenders can only observe the outcome of their loans either the clients repay or not. Therefore, to mitigate the repayment problems, a close relationship between lender and borrower can be applied through monitoring, business advisor and regular meeting. Besides that, the lender can introduce reward system to those that paid on time such as discount. Moreover, the loan repayment performance can also be influenced by loan size, use of loan and repayment period.

### **2.1.8 Microfinance in Ethiopia**

As the findings that serve as back ground for the development of Sida`s country strategy for Ethiopia by Jennefer Sebstad (2003) stated it, a key component of Ethiopia`s development strategy is the establishment of sustainable microfinance institutions serving large numbers of poor people. While non-governmental organization (NGO) credit schemes and informal source of finance have existed in Ethiopia for many years, the government instituted a legal and policy frame work for MFIs in 1996 through proclamation 40/1996. Since then, 20 MFIs have registered with the National Bank of Ethiopia and operate under the auspices of this proclamation. As at the end of June 2007, twenty-seven microfinance institutions operate in the country, obtaining license from National Bank of Ethiopia (Befekadu, 2007).

Like other microfinance approaches found in the world, MFIs in Ethiopia focus on group based lending and promote compulsory and voluntary savings. They use joint liability, social pressure, and compulsory savings as alternatives to conventional forms of collateral. MFIs in Ethiopia provide both agricultural and non-agricultural loans. While both loans are provided through group lending methodologies, agricultural loans generally require a one-time payment at the end of the loan term. While other loans are paid on a weekly or monthly basis. A few MFIs manage remittances for about 100,000 pensioners each month.

The objectives of MFIs are quite similar across organizations. They play a role in reducing poverty and vulnerability of the poor by increasing agricultural productivity and income, diversifying off farm sources of income, and building household assets. They achieve these objectives by expanding access to financial services through large and

sustainable microfinance institutions. The strategies of MFIs in Ethiopia involve community and participatory approaches, encourage the participation of women, promote saving mobilization, and emphasize in long-term sustainability.

The Ethiopian microfinance industry has undergone tremendous growth and development in a very short period of time. The credit delivery in Tigray was established as Rural Credit Scheme in Tigray (RCST) by local NGO in 1994 and later named as Dedebit Credit and Saving Institution (DECSI) in 1997, by introducing the Grameen Bank model providing financial services mainly to rural clients in the region (Zaid 2008). As of December 2000, DECSI was the fourth largest MFI in Africa, in terms of total number of clients (187,470). Amhara Credit and Saving Institution (ACSI) was the sixth largest with 143,520 clients. Only eight MFIs in Africa had more than 100,000 clients Sebstad (2003). DECSI and ACSI take more than 65 percent share in serving clients in the market. Similarly, in outstanding loan provision also these institutions take the loan share (62 percent) in the market (Befekadu, 2007)

The main suppliers of financial services to the poor in Ethiopia are commercial banks, microfinance institutions, credit unions, government projects, NGOs, cooperatives, informal, and semiformal, institutions (Wolday, 2000). In Ethiopia formal banks (commercial banks and development banks) are not in a position to deliver loan to the poor due to high transaction costs for the loans which are very small in size and collateral requirements. According to the study made by Dejene (quoted in Asmelash ,2003) the informal finance in Ethiopia accounts for 78 percent and the informal sector consists of three indigenous financial institutions, namely Equb(an Ethiopian rotating credit and saving associations), Edir (an indigenous insurance scheme), and money lenders.

### **2.1.9 Microfinance in Tigray**

According to the Booklet prepared by DECSI in 2011, the foundation of DECSI was stated as follows. After years of civil war, drought, and conflict, the Tigray Regional State suffered from service hardship during the mid-1990s. According to research on its socioeconomic status in 1993, a staggering 89% of the population depends on food aid. In this situation the Rural Credit Scheme of Tigray, as one development wing of REST was

established in 1994 in order to provide microfinance service to the poor in Tigray region. This was later called as a share holding company, Dedebit Credit and Saving Institution (DECSI), when microfinance institutions became legal entities in 1997 in Ethiopia. DECSI has been working for the impoverished population of Tigray both in urban and rural widely for the last 18 years.

### **Vision**

The vision of DECSI is to see poverty eradicated not only in Tigray Regional State but also in the country through the provision of high quality financial services by establishing a competent, strong, efficient, stable and sustainable financial institution our continent.

### **Mission**

The mission of DECSI is to improve the wellbeing of those individuals operating in the areas of subsistence agriculture, micro, small and medium enterprises by increasing their income and wealth through provision of quality and sustainable microfinance services.

### **Objectives:**

- Improve food security at household level both in the rural and urban areas of the region.
- Create job opportunities for the unemployed parts of the population by promoting micro, small and medium enterprises in the region.
- Stimulate the local economy by offering adequate and efficient financial services to the poor.
- Build financially sound and sustainable institution.

### **2.1.9.1. Accomplishments of DECSI**

DECSI operates in rural and urban Tigray by giving due attention on the part of society who are productive but poor who lacks to finance their business activity like handicraft, trade and small scale industry or agricultural productivity. Up to now more than 6 billion

birr loan is disbursed out of which about 4 billion birr is delivered to the agricultural sector.

### **2.1.9.2. Impact of DECSI in Tigray**

The Booklet prepared by DECSI, 2011 indicates that there was an impact assessment conducted by twice by a group of researchers from Norway and Ethiopia, so the services delivered by DECSI have the following impacts.

- Has played important role in the increase of agricultural production.
- Has also played pivotal role in familiarizing and expanding the culture of credit and saving services to the community.
- DECSI clients are able to select new business and markets, and acquainted themselves with trading and factory products, food and drinks, carpentry and others.
- Increase financial management and planning skills.
- Generally in comparing clients with non-clients, clients of DECSI have better living standard, greater increase in wealth, positive change in feeding habit, less vulnerability to disasters, and better access to health and education services.

## **2.2 Empirical Evidence**

Several studies have been conducted in developing countries with regard to microcredit performance in relation to loan repayment and impact on the poor especially women clients. We begin by those who focus on female empowerment.

### **2.2.1. Impact of Microfinance in terms of Female Empowerment**

Women particularly benefit from microfinance and many microfinance institutions target female clients. Microfinance services lead to women's empowerment by positively influencing women's decision-making power and enhancing their overall socio-economic status. By the end of 2006, microfinance services had reached over 79 million of the poorest women in the world. As such, microfinance has the potential to make a

significant contribution to gender equality and promote sustainable livelihoods and better working conditions for women. (*Microcredit Summit Campaign Report, 2007*)

Seventy percent of the world's poor are women. Yet traditionally women have been disadvantaged in access to credit and other financial services. Commercial banks often focus on men and formal businesses, neglecting the women who make up a large and growing segment of the informal economy. Microfinance on the other hand often targets women, in some cases exclusively. Female clients represent 85 percent of the poorest microfinance clients reached. Therefore, targeting women borrowers makes sense from a public policy standpoint. The business case for focusing on female clients is substantial, as women clients register higher repayment rates. They also contribute larger portions of their income to household consumption than their male counterparts. There is thus a strong business *and* public policy case for targeting female borrowers.

Children of women microfinance borrowers also reap the benefits, as there is an increased likelihood of full-time school enrolment and lower drop-out rates. Studies show that new incomes generated from Microenterprises are often first invested in children's education, particularly benefiting girls. Households of microfinance clients appear to have better health practices and nutrition than other households. Positive environmental impact is also achievable as microfinance programs may support green jobs and renewable energy systems. Microfinance therefore makes a strong contribution to the realization of the Millennium Development Goals.

Although the positive impact of microfinance on women's empowerment is evident, microfinance providers must also be cautious to avoid possible negative outcomes. Studies have shown that women sometimes have little or no control over their loan, with the husband or male family member making all decisions. Moreover, differences in literacy, property rights and social attitudes about women may limit impact outside of the immediate household. Residents of rural areas specifically continue to have difficulties in accessing microfinance.

Women may also struggle with the heavier workload created by the responsibility for loan repayment. Changes in the access to finance influence the distribution of working time between men and women in the same household and between activities yielding different returns. Evidence suggests that up to a point microcredit increases the workload of women and girls, perhaps offset by more equality in household decision making.

MFI women's groups should be utilized to promote and strengthen women's networks and not merely as a means of lowering program costs. Women's groups are useful vehicles for non-financial service delivery, such as literacy and health programs. Groups also encourage linkages between women and other active community associations and the larger civil society network as a whole. (*Microcredit Summit Campaign Report, 2007*)

Usually the marginalized women among the poor are the primary loan recipients of microfinance. Women are the gateway to household security due to the fact that they invest more in the well being of their family than the men. This comprises the expenses for education, health care, clothing and house hold equipment. They are also best savers thus; women are an appropriate target group for alleviating poverty.

Empowerment of women is one of the very important issues in developing countries. As women are integral parts of society, their status as well as participation in decision making and participating in economic activities is very low. Therefore, microfinance plays a vital role in the improvement of decision making by contributing in economic activities.

As Sara Noreen (2011) has found out women borrowers contribute to national income of the country and maintain a sustainable livelihood of the families and communities throughout the world. Women face many socio-cultural attitude, legal barriers, lack of education and personal difficulties. Traditionally women have been marginalized and they are rarely financially independent as well as more vulnerable members of the society. About 70 percent of world's poor are women but they do not have access to

credit and other financial services. Microfinance often target women and it is a critical tool to empower women from poor household.

Kabeer (1999) stresses that women`s empowerment is the process to acquire the ability from which those who have been denied in the ability to make the strategic life choices. Microfinance services lead to women empowerment influence their decision making power positively and the overall socioeconomic status.

Although the positive impact of microfinance on women`s empowerment is evident, microfinance providers must also be cautious to avoid possible negative outcomes. Studies have shown that women sometimes have little or no control over their loan, with the husband or male family member making all decisions. Moreover, differences in literacy, property rights and social attitudes about women may limit impact outside of the immediate household. Residents of rural areas specially continue to have difficulties in accessing microfinance.

A majority of microfinance programs target women with the explicit goal of empowering them. However, their underlying premises are different. Some argue that women are amongst the poorest and the most vulnerable of the underprivileged. Others believe that investing in women`s capabilities empowers them to make choices, which is valuable in it, and also contributes to greater economic growth and development. Another motivation is the evidence from literature that shows that an increase in woman`s resources result in higher well-being of the family, especially children. Finally, an increasing number of microfinance institutions prefer women members as they believe that they are better and more reliable borrowers thereby contributing to their financial viability

In an insightful reflection on the measurement of women`s empowerment, Kabeer (1999) explains that women`s empowerment refers to the process by which those who have been denied the ability to make strategic life choices acquire such ability. This ability to exercise choice incorporates three inter-related dimensions: resources which include access to and future claims to both material and social resources; agency which includes

the process of decision-making, negotiation, deception and manipulation; and achievements that are the well-being outcomes.

Measuring women empowerment by constructing indices is an inappropriate technique as it allows the use of arbitrary weights. Most researchers, for instance, will agree that impact of a women's decision to buy cooking oil for the family is different in nature from her participation in a decision to buy a piece of land. Both these decisions have different implications and magnitude of impact on her empowerment. As such giving equal weight to both these decisions does not make sense. At the same time suggesting an arbitrary weight for these decisions is also inappropriate, as it is not for the researchers to decide the factor by which the latter decision contributes more to women empowerment.

Microfinance can affect women's empowerment with regard to the use of contraceptives. Especially in Bangladesh, microfinance has been promoted as a way to limit the number of children, and positive impacts have been found on contraceptive. This means microfinance increases the opportunity cost of women's time. This effect may be reinforced by peer pressure as women are urged to reduce family size in order to increase education and health expenditure, and to better manage the ability to repay (Aghion and Morduch, 2005). When women control decisions regarding credit and saving, they will optimize their own and the household's welfare.

### **2.2.2. Is Microfinance an Important Tool for Poverty Alleviation?**

MFIs supports mainly to clients who participate in the activities often have a low return and low market demand and women engaged in informal activities. Even though microfinance has been the focus of development and poverty reduction activities for decades, development practitioners still know relatively little about the extent of poverty reduction possible through microfinance activities (Khandker, 2005).

Moreover, efforts to assess the impact of microfinance programs can be biased by non random program placement and participation. Antipoverty programs such as the Grameen

Bank are often placed in areas where the incidence of poverty is high. Thus simply comparing the incidence of poverty in program and non program areas may lead to the mistaken conclusion that microfinance programs have increased poverty. Similarly, those who participate may self select in to a program based on unobserved traits such as entrepreneurial ability. In that case, simply comparing such outcomes as per capita consumption or the incidence of poverty between program participants and nonparticipants may lead to the mistaken conclusion that the programs have a high impact on poverty reduction, when the effects are due to the unobserved abilities of participants. Thus the estimated effects may be under or overestimated depending on the type of analysis (Khandker, 2005).

If MFIs successfully serve the poor clients, then those clients should be able to use their loans to lift themselves out of poverty. Because of the nature of progressive and dynamic loans, successful borrowers earn access to larger loans, helping them break free of poverty even faster.

### **2.2.3. Loan repayment performance**

Zeller (1998) findings focuses on the diversification of the joint asset and enterprise portfolio among members of the same group, and social cohesion among members, can augment the repayment performance in group lending schemes. It also analyses on the effects of program design, community and group characteristics on the repayment performance of groups, using a data set on groups from six different lending programs in Madagascar employing tobit model. The results show that socially cohesive groups pool risks by diversifying the members` asset portfolio so that their repayment performance is improved even in communities with high risk exposure.

According to Meehan`s findings as (Daba, 2003 quoted it), the impact assessment was made on the performance of DECSI. The study was based on both primary and secondary data to analyze the impact of the services of the institution. Respondents were asked to assess the impact of DECSI`s financial services on their household income then majority

of respondents reported a considerable change in their household income, a few of them reported relatively modest increases in their household income, few of them said there had been no change in their household income.

Several studies have attempted to measure the effect of participation in credit programs specifically on food security and nutrition. Sharma and Zeller (1997 ) reported that in many countries the poor spend as much as 91 percent of their income on food and also that most loans taken, especially in the informal sector, were used for the purpose of financing consumption related expenditure. However, when the effect of program participation on food security and nutrition was measured, the results were mixed. Positive effects were found on household caloric availability in the studies conducted in Bangladesh, China and Madagascar.

## **CHAPTER THREE**

### **3. Data and Methodology**

#### **3.1. Data Type and Source**

Data source for the study were collected from a sample of 183 active members of DECSI's loan groups. Of the total sample, 140 clients took two or more loans and are considered as members of the treated group, while the remaining 43 are made up of those clients who took only one loan and hence make up the control group. Only clients who took at least two loans were included in the sample as members of the treated group to ensure that they have completed at least one loan round and stayed active with the MFI for some time. Hence, data for this study was gathered from DECSI's regular loan clients. Data used for this study were collected within the framework of the MU-IUC collaboration program between Mekelle University and Flemish Universities in Belgium.

#### **3.2. Sampling Technique and Data Collection**

Sample clients were selected randomly from the files of two sub-branches found in Mekelle which is the capital city of Tigray Region. DECSI has two sub-branch offices in Mekelle. In urban areas DECSI's women group loan clients are larger than those of male clients Zaid, (2008). Accordingly, we have in our sample 183 clients (borrowers and non-borrowers) of which 131 are female and 52 male.

Data were collected in October/November 2006 by financial support of VLIR with collaboration of MU-IUC using a structured questionnaire. Enumerators were given an intensive two days training followed by a one day pilot testing in a town different from the places where actual data collection was made.

With regard to impact evaluation, it involves a comparison of outcomes among treated and non-treated groups. There is no problem in identifying those who participate in the program (treated), the problem is with those eligible nonparticipants when there are no clearly defined and measurable targeting mechanisms. In this study, taking households who are not borrowers of DECSI as potential control group members may lead to including rich households in to our treatment group while microcredit is for the poor ones. On the other hand lack of data on those who are potentially eligible households makes it difficult to identify a proper control group. One way of solving this problem as recommended by Barnes and Sebstad (2000) is the use of new entrants to the microfinance credit programs as control group. Clients who have applied to the MFIs but not yet served can be used as potential members of the control group. Therefore comparison between new and veteran clients can show the actual impact of microcredit on program participants.

Inclusion of dropouts in the treated group is advisable to obtain realistic estimates because the dropouts got better off because of the loans they took from the microfinance program, its impact will be captured. Dropouts are also selected randomly from ex-clients who dropped out of DECSI for two or more years and the dropouts can again rejoin the program and take loans despite the fact that they may not have an outstanding balance (Zaid, 2008).

Observations for both treated and control group have been selected randomly from the list of DECSI's branch office in Mekelle. The treated group also contains the dropouts (ex-clients who drop out of DECSI for two or more years) and the control group is composed of new entrants who have taken their first loan. Therefore our sample comprises three groups of observations: active group loan clients who took at least two loans, new group loan clients who took their first loan, and ex-clients who dropped out for at least two years. Note that drop outs are considered as members of the treated group.

### **3.3. The Study Area**

Mekelle is one of the largest cities in Ethiopia and capital city of Tigray region and selected for the study. Tigray is one of the nine federal states located in the northern part of Ethiopia.

Mekelle city is located in the northern part of the country at a distance of 780km from Addis Abeba having a total population 215,914 of which 104,925 are male and 110,989 are female (CSA, 2010).

Mekelle city is located at the foot of a steep cliff, Endayesus escarpment on the east. According to Mekelle city Administration annual report (2008), the administrative territory of the city is divided in to seven lowest officially and formally recognized units like Hawolti, Adi-haki, Kedamay weyane, Hadinet, Ayder, Semien and Quiha.

The city has expanded tremendously from time to time which emanated from rural-urban migration, industry oriented investment, expansion of business and government services.

Due to the inflow of inhabitants for various purposes, life leading pattern of the society of Mekelle typifies 52.3% in trade, 30.7% in service, and the remaining is engaged in different skill related activities (BOFED, 2009)

Mekelle city owns one University (Mekelle University), Mekelle Institute of Technology (MIT), and Ten private colleges.

### **3.4. Microcredit Impact Study**

As Judy (2000) indicated impact evaluation is intended to determine whether the program had the desired effects on individuals, households, and institutions as well as whether these effects are attributed to the program intervention. Impact evaluation can explore either positive or negative consequences of a program.

Impact evaluation must estimate the counterfactual, that is what would have happened had the participation in microfinance never taken place or what otherwise would have been true. Therefore to determine the counterfactual, it is implemented by comparison of treated or participating in microfinance and control group those who do not participate in the program. Control groups are selected from the sample population as the program participants. Whereas the comparison is more simply the group that does not receive the program under investigation. Both the comparison and control groups should resemble the treatment group in every way, the only difference between groups being program participation (Judy, 2000)

When we measure the impact of microcredit for a borrower we should be sure enough that the borrower does not borrow from other source so that the result would be reliable and could not be over estimated. it is very difficult to separate the borrower`s funds in an impact assessment because the funds are mixed if borrowers have already invested the money in their business (Hulme, 2000)

Selection bias and endogeneity of the program placement occurs when the microcredit impact study compares a treated group (borrowers) and the control group (non-borrowers) in order to see whether there is a difference in their living standards between the two groups. The objective of this study is to test whether the clients perform better than non-clients or vice versa.

This study examines the impact of microcredit loans on borrowers of DECSI uses a control group who are found in a similar location, economic and social environment. If the researcher fails to meet these criteria, selection bias will occur and the comparison among the treated and non-treated would not be fair. In this approach, borrowers were asked whether the impact of DECSI`s credit is positive or negative and to what extent is positive or negative after they receive the loans.

In terms of the impact on women`s empowerment the following variables were measured, Client`s control over resources, their self-esteem i.e., power and status in their family as well as within the community and decision making capacity. The control over resources

is measured by examining the women borrower`s influence in making decisions to allocate resources with regard to their business activities. In the survey they were asked whether they made decisions on their own or on their spouse or partner. In the descriptive part the majority of the women borrowers reported that they use the loan they took from the microfinance on their own decision.

### **3.5. Research Methodology**

#### **3.5.1. Analysis Method**

For this study, both descriptive using simple statistics and econometric model based on propensity score matching approach is used to get the understanding of the data. A summary of statistics and tabulation on field data were used to examine the impact of DECSI's intervention on the welfare of participants in microfinance with regard to empowerment of women in making decisions with regard to their business activities and on consumption or expenditure.

The analysis includes comparison of expenditure of borrowers and non-borrowers on food, education, personal care, utilities, durables and other expenditures.

##### **3.5.1.1. Descriptive Analysis**

**Descriptive statistics** will be used to draw a clear prior understanding of the study. Participants and non participants will be compared based on Socio-economic and demographic characteristic indicators using a pair T-test for binary categories. To understand the difference in outcome between participants, mean difference in outcome will also be compared supported by T-test. Moreover, the descriptive statistics includes such as mean, frequency, percentage, standard deviation, maximum and minimum.

### 3.5.1.2. Econometrics model

In the **econometric analysis**, in order to address the second objective an impact analysis with a dependent variable of participation dummy if treated=1 and control(not-treated)=0 and outcomes like income, expenditure and women empowerment will be the dependent variables in the impact evaluation model part and the explanatory variables will include **household characteristics** (like sex, age and education of household head), Participation in micro credit institution is expected to positively affect income generation, expenditure and empowerment.

Impact evaluation is measuring the outcome of the treatment or intervention. Intervention refers to adoption of technology, policy changes, training programs, application of medicine and others. The outcome to be measured differs from intervention to intervention including changes in income or expenditure, empowerment, or poverty reduction.

If treatment is randomly assigned, the outcome of untreated individuals can be a good estimate of the counterfactual. However, if households that are treated have characteristics that differ from the ones that are not treated, comparison of the outcome between the two groups will yield biased estimates. According to Judy L. Backer (2000) bias arises due to two distinct sources. First it arises due to difference in observables, i.e. there may not be common support and second it arises due to unequal distribution of observable characteristics within the region of the common support, sometimes called selection biased. Addressing this potential problem of bias in general and problem of selection bias in particular is a prerequisite to unbiased outcome of an intervention in impact evaluation assignment. Then if this is the fact, it is better to apply selection bias controlling mechanisms to study the impact of participating in loan credit on income, expenditure and empowerment of participants. There are a number of controlling mechanisms of selection bias like randomization, propensity score matching, instrumental variable estimation, difference in difference.

According to Carolyn Heinrich, Alessandiro Maffilo and Gonzalo vázquez (2010), the greatest challenge in evaluating any intervention or program is obtaining a credible estimate of the counterfactual: what would have happened to participating units if they had not participated? Therefore identification of the counterfactual is the pillar of a valid impact evaluation. In order to assure this situation, this study mainly employs propensity score matching (PSM) which helps to randomize the assignment of households to the treatment. If comparison groups are statistically identical except the fact that one of them received the treatment (credit use) then, the impact of MFI credit can be estimated as the mean difference in mean outcomes between groups.

Estimation of the average treatment effects on the treated (ATT) using matching methods relies on two key assumptions. The first is the Conditional Independence Assumption (CIA), which implies that selection into the treatment is solely based on observable characteristics (selection on observables). In a randomized program treatment, participation and outcome are known to be conditionally independent given control variables ( $X_i$ 's). Matching on every covariate is difficult to implement when the set of covariates is large. To solve this dimensionality problem, we estimate the propensity score i.e., the conditional probability  $[P(T_i = 1|X_i)]$  that is the  $i^{\text{th}}$  individual is subjected to the treatment conditional on observed characteristics ( $X_i$ ); where  $T_i = 1$  is when the  $i^{\text{th}}$  individual is subjected to the treatment, and  $T_i = 0$  otherwise. The second assumption is the common support or overlap condition. The common support is the region where the balancing score has positive density for both treatment and comparison units. The matching process is performed in two steps. First, a probit model is regressed against observable covariates to estimate the propensity score (probability of participation in MFI), and in the second step, the ATT, conditional on the propensity score is estimated using the four matching algorithms such as Nearest Neighbor matching, Radius Matching, Kernel Matching, and the Stratification or Interval Matching (Rosenbaum and Rubin, 1983).

Estimation of ATT using PSM involves three basic steps: computing the propensity score, matching on the basis of propensity score and obtaining the treatment effect as a

difference of the mean outcomes of participants and non-participants from the matched observations.

$$P_i = E(T_i=1/X_i) = \alpha_0 + \beta_i X_i + \epsilon_i$$

Where  $\alpha_0$  is intercept (constant term)

$T_i$  Dummy variable for participation in MFI

$\beta_i$  Is vector of coefficients of the explanatory variables

$X_i$  Represents vector of explanatory variables such as household characteristics, and institutional factors etc. and

$\epsilon_i$  is the error term

Denoting participation in MFI by  $T_i$ , (where  $T_i = 1$  indicates treated, and  $T_i = 0$  indicates none treated), Average Treatment on the Treated (ATT) for the population can be computed as:

$$ATT = E(Y_{1i} - Y_{0i} / T_i = 1) \dots\dots\dots 1$$

This is the same as;

$$ATT = [E(Y_{1i} / T_i = 1) - E(Y_{0i} / T_i = 1)] \dots\dots\dots 2$$

The sample equivalence is given by:

$$ATT = 1/n \sum_{i=1}^n (Y_{1i} - Y_{0i} | T_i = 1) \dots\dots\dots 3$$

This is the same as;

$$ATT = 1/n \sum_{i=1}^n [(Y_{1i} | T_i = 1) - (Y_{0i} | T_i=1)] \dots\dots\dots 4$$

Where;

$(Y_{1i} | T_i = 1)$  indicates what has happened with participation in MFI (observable)

$(Y_{0i} | T_i=1)$  indicates what would have happened without participation in MFI (Non observable)

For the robustness of the results, the researcher applied four methods of matching. These are Nearest Neighbor matching, Radius Matching, Kernel Matching, and the Stratification or Interval Matching.

## CHAPTER FOUR

### 4. Results and Findings

#### 4.1. Descriptive Statistics

##### 4.1.1. Characteristics of Sample Respondents

This section discusses the characteristics of sample borrowers in DECSI and the discussion is based on the data collected from the questionnaire.

At the time of survey there were two weredas in Mekelle and from debub wereda are 70 female and 32 male a total of 102 borrowers and from semien 61 female and 20 male a total of 81 borrowers.

**Table 4.1 Sample Size in the study area by sex**

wereda	Sex of Sample		Total
	Female	Male	
Debub	70	32	102
Semien	61	20	81
<b>Total</b>	131	52	183

A sample of 183 borrowers was selected randomly for the study. From the total sample respondents 131(71.58%) are female borrowers and the rest 52(28.42%) are male. From the table below we can observe that the proportion of female borrowers is larger than male borrowers.

**Table 4.2 Sample by Gender**

Sex	Freq.	Percent	Cum.
Female	131	71.58	71.58
Male	52	28.42	100
<b>Total</b>	183	100	

The mean age of borrowers is around 44.9 years with the minimum and maximum being 19 and 74 respectively. The mean age for male is 48.7 years which is larger than female (43.42) with the minimum and maximum 23 and 74 respectively. The study shows that male borrowers are on average older than their female counterparts.

**Table 4.3 The average age of the sample by Gender**

Gender	mean	min	Max	sd
Female	43.41985	19	70	12.24868
Male	48.71154	23	74	13.33628
<b>Total</b>	44.9235	19	74	12.75658

With regard to the borrowers educational background, the number of female borrowers 75 (57.25%) who could not read and write is larger than their male counterparts 10 (19.23%).

**Table 4.4 Literacy**

Read & Write	Gender		
	Female	Male	Total
No	75	10	85
Yes	56	42	98
<b>Total</b>	131	52	183

Among the 183 sample respondents, 108 are female headed households and the remaining 51 are male headed households therefore, from the sample clients female headed households are larger than male headed clients (see Table 4.6).

**Table 4.5 Household heads by Gender**

Gender	sum	mean	sd
Female Headed	108	0.824428	0.381917
Male Headed	51	0.980769	0.138675

The Table below (4.6) shows that 86% of the clients were trained formally which help them to keep their financial records and to run their business in a better way and the remaining 14% do not receive training. Capacity building programs aimed at educating female borrowers on how to appropriate loans could help improve the repayment performance of female clients (Adusei, 2011)

**Table 4.6 Receiving formal Training**

Receive Training	Freq.	Cum.
Yes	86	86
No	14	100
<b>Total</b>	100	

### 4.1.2. Loan Characteristics

The mean loan amount is birr 1578.57 with minimum and maximum amount being birr 200 and 2500 respectively. There were respondents who took loan as 14 times in the loan period.

**Table 4.7 First loan amount borrowed from DECSI**

Variable	Obs	min	max	mean	sd
First Loan Amount	140	200	2500	1578.571	780.9592

The study result indicated that borrowers had a range of 1-13 family size that is dependent economically or not contributing an income to the households. This implies that family heads of households are obliged to support large family members. The mean age of female household members is 4.71 and that of male is 5.85 which is higher than female, where the National average for family size is 5 members (see Table 4.8).

**Table 4.8 Total number of household members by Gender**

gender	sum	mean	sd
Female	618	4.717557	1.950443
Male	304	5.846154	2.261221
<b>Total</b>	922	5.038251	2.100147

As shown in Table 4.9 below, on average, female borrowers take smaller loans than their male counterparts. i.e., the average loan amount taken by female clients is birr 1412 and that of male borrowers is birr 1995.

**Table 4.9 t-test on Average Loan Size by Gender**

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Female	100	1412	77.47636	774.7636	1258.27	1565.73
Male	40	1995	100.1249	633.2456	1792.478	2197.522
combined	140	1578.571	66.0031	780.9592	1448.072	1709.071

Degree of Freedom = 138

t= -4.23

p=0.000

As explained earlier only clients who have taken at least twice are included in the sample. We can say that borrowers who have taken more loans from DECSI must have repaid their previous loans this is because unless they repay the current loan they will not be given the subsequent loan. Moreover, as the clients take more frequently they will gain more skill and experience to run and manage their business. The Table below (4.10) summarizes the number of loans taken by sample clients. Accordingly, the highest loan times are 14 times and the least is twice and the highest frequency is 26 (19%) and the lowest is 1(0.72%).

**Table 4.10 Loan Frequency of the Treated Group**

Loan times	Freq.	Percent	Cum.
2	26	18.71	23.02
3	23	16.55	39.57
4	16	11.51	51.08
5	14	10.07	61.15
6	6	4.32	65.47
7	6	4.32	69.78
8	12	8.63	78.42
9	5	3.6	82.01
10	17	12.23	94.24
11	3	2.16	96.4
12	1	0.72	97.12
13	3	2.16	99.28
14	1	0.72	100
<b>Total</b>	139	100	

### 4.1.3. Treated versus Control Sample

From the total respondents 140(76.5%) are treated or borrowers of microfinance and 43(23.5%) are controlled group. In terms of sex, 100 are treated female and 31 are not treated female and the remaining 40 are treated and 12 are non treated male borrowers.

**Table 4.11 Treated and Control clients of DECSI borrowers.**

	Gender		
	Female	Male	Total
Treated			
No	31	12	43
Yes	100	40	140
<b>Total</b>	131	52	183

As Table 4.12 indicates, the mean family size of the participants in microfinance is 5.23 and that of non-participants is 4.32 which are lower than the treated ones.

**Table 4.12 Mean family size of treated and control**

Respondents	Number	Mean family size
Treated	140	5.23
Control	43	4.32
<b>Total</b>	183	4.78

With regard to the literacy among the 140 treated clients 67 of them are illiterate who cannot read and write while 73 of them can read and write. Hence majority of the participants can read and write. On top of this, among the 43 control group 18 are illiterate and 25 are literate. Moreover, among the 183 respondents 85 are illiterate and the remaining 98 can read and write so we can say that relatively majority of the sample respondents can read and write.

**Table 4.13 Literacy of Treated and Control**

Literacy	Treatment		Total
	Control	Treated	
Illiterate	18	67	85
Literate	25	73	98
<b>Total</b>	43	140	183

As mentioned earlier only clients who borrow at least two group loans are included in the study. Current loan refers to the recent period where the year the survey was conducted (2006) if the loan term was one year, the previous loan is if the term of the loan was two years, the before previous loan is the loan taken accordingly. As can be seen from the table below, the average loan taken by sample borrowers, there is a significant difference (at 1% level of significant) among Male headed households and female headed households i.e., on average female headed borrowers take significantly lesser amount of loan than their male counterparts. This may be due to the fact that female borrowers do not want to take risks and do not have enough experience to run their business. As can be seen in Table 4.14 below the first loan amounts on average birr 1995 for male headed households and birr 1412 for female headed households, the current loan is birr 3545.45 for male headed households and birr 2552.98 for female headed households, in the previous loan amount was birr 2787.88 for male headed households and birr 2123.13 and

with regard to the before previous loan amount is birr 2662.11 for male headed households and birr 1995.64 for female headed households. The total average loan taken by male headed households amounts birr 9016.92 and that of female headed households is birr 5642.6. There is quite significance difference among them at 1% significance level except the before previous loan which is not significant. As can be seen from the Table below, the trend indicates that the amount of loan they borrow (loan size) increases from time to time therefore we can say that the money they borrow is really utilized by the clients.

The study result indicated that borrowers had a range of 1-13 family size that is dependent economically or not contributing an income to the households. This implies that family heads of households are obliged to support large family members. The mean age of female household members is 4.71 and that of male is 5.85 which is higher than female, where the National average for family size is 5 members (see Table 4.14).

**Table 4.14 Average Loan taken by borrowers**

Loan Type	MHH		FHH		t-test
	Obs	Avg. Loan	Obs	Avg. Loan	
First Loan	40	1995	100	1412	0.0000***
Current Loan	33	3545.455	67	2552.985	0.0003***
Previous Loan	33	2787.879	67	2123.134	0.0015***
Before Previous Loan	27	2662.111	55	1995.636	0.1549
Overall Loan	40	9016.925	100	5642.6	0.0000***

\*\*\*= significant at 1% level, MHH=Male Household Head, FHH=Female Household Head

The average profit summarizes the profit obtained by sample clients from the business activities made within the period where the loan has to be repaid fully, for group loans

was 12 months but some loans are delivered for 24 months. Accordingly, the amount of profit on average obtained by male headed household borrowers is higher than their female household headed counterparts in all the three loan periods (see Table 4.15). As mentioned above the average loan size of male borrowers is also higher than that of the female borrowers so it is not amusing if their profit is also greater than the female clients though this is not always true. There is a significant difference of profit as can be observed from the t-test (probability) among the male and female headed families.

**Table 4.15 Average profit of sample respondents**

Loan Type	Average Profit		t-test
	Male headed Households	Female headed Households	
Current Profit	1461.75	858.76	0.0595*
Previous Profit	1716.25	980.5	0.0228**
Before previous Profit	1415.25	822.69	0.0579*
Overall Profit	4593.25	2661.95	0.240**

\*=significant at 10% level and \*\*=significant at 5% level

As Table 4.16 Indicates, in the current loan period only male headed households made a loss of (birr 125) and the female headed households made no loss in all the three loan periods.

**Table 4.16. Average Loss of sample respondents**

Loan Type	Average Loss		t-test
	Male headed households	Female headed households	
Current Loss	125	0	0.1142
Previous Loss	0	0	-
Before previous Loss	0	0	-
Over all Loss	125	0	0.1142

The most important activities for which borrowers have taken loans were petty trade which is (86.43%), handicraft (2.86%), household food consumption (2.14%), agriculture like farming, raring of animals (4.29%) and (4.29%) for social affairs like (wedding, tsebel, teskar) The majority of client`s activities imply that the borrowers are business oriented.

**Table 4.17 Use of the first loan granted to borrowers**

First loan use	Freq.	Percent	Cum.
petty trade	121	86.43	86.43
Handicraft	4	2.86	89.29
Household food consumption	3	2.14	91.43
Agriculture (farming, animals...)	6	4.29	95.71
Others	6	4.29	100
<b>Total</b>	140	100	

As Table 4.18 indicates, the clients were asked whether the loan amount is enough or not. Accordingly, 4(4%) of the sample clients respond the granted loan is more than enough, 54(54%) of them said good enough, 32(32%) also smaller than required and the rest 10

(10%) respond it is very small. Hence, above 50% of the sample clients reported that the loan delivered by DECSI is good enough for the business activities they made.

**Table 4.18 Sufficiency of the granted amount (Loan Size) of Borrowers**

Loan size	Freq.	Cum.
More than enough	4	4
Good enough	54	58
Smaller than required	32	90
Very small	10	100
<b>Total</b>	100	

Table 4.19 Shows whether the borrowers repay their loans from the benefits they obtain from the activities they made. Accordingly, majority of the borrowers i.e., 70% reported that they have paid fully from the benefit they get, 18% of them mostly from the benefit they get, 11% of them paid some part of it from the benefit they obtained and 1% pay the loan from other sources fully. Therefore this implies majority of the borrowers pay their loan from the business they make and on time without delay.

**Table 4.19 Loan Repayment with regard to the benefit they obtain**

Is the Repayment from the Benefit	Freq.	Cum.
yes, fully	70	70
yes, mostly	18	88
yes, some part of it	11	99
no, i repaid from other sources fully	1	100
<b>Total</b>	100	

As Table 4.20 below indicates 80% of the clients were taking their subsequent loans due to the fact that the result obtained from the previous loan/loans was good so that believing to do more with the next loan, 14% reported they found their life improving as the result of the loan they are taking, 1% responds that the previous loan was not as such good but now they want to do more or better on the subsequent loan, 1% reported to help their group members or other people, 2% said to have money and use it for other

purposes with no specific reason. Therefore majority of the sample clients are taking loans repeatedly due to its positive impacts on their income.

**Table 4.20 Incentives for taking the Subsequent Loan**

Reason for Taking the Subsequent Loan	Freq.	Cum.
The result from previous loan was good	80	80
The previous loan was not good	1	81
I found my life improving	14	95
To have money and use it for my needs	2	97
To help my group members or other people	1	98
No specific reason	2	100
<b>Total</b>	100	

Since the credit delivery mechanism of DECSI is also group based that relies on peer monitoring and social sanctions between the group members, respondents were asked about their preference towards group loan or individual loan. 23% prefer group loan where as 77% prefer individual loan. various theoretical papers addressed the positive effects of group lending methodologies like Ghatak & Guinnane (1999) that evidenced group lending helps to monitor each member but in this study as can be seen in the table 4.21 below the majority of the borrowers do not prefer group lending mechanism due to the fact that they will be forced to be liable for the loans of their peers.

**Table 4.21 Preference of borrowers towards Group Loan or Individual Loan**

preference	Freq.	Cum.
Group Loan	23	23
Individual Loan	77	100
<b>Total</b>	100	

As can be seen in the Table 4.23 sample respondents were asked about their feeling towards group loan therefore 17% reported they hate group loan, 35% respond they do not like group loan this may be due to the reason explained in the literature review that group members do not like to be liable for the loss made by the group members, 39% respond group loan is alright and the remaining 9% indicate they like it very much which are few in number.

**Table 4.22 Response about group loan**

Feeling about group loan	Freq.	Cum.
I hate it	17	17
I do not like it	35	52
It is alright	39	91
I like it very much	9	100
Total	100	

#### **4.1.4. Credit worthy versus Non-credit worthy Borrowers**

Table 4.23 shows whether a member of a group makes a default or repayment problem or not. Therefore, according to the descriptive statistics, 11 borrowers make a default of which 3 are female and 8 are male but majority of them (88) pay their loan on time as can be shown in the table below where by 63 are female and the rest 25 are male this indicates female borrowers make less default than their male counterparts.

**Table 4.23 Loan repayment of Group members**

Default	Gender		Total
	Female	Male	
Yes	3	8	11
No	63	25	88
<b>Total</b>	66	33	99

Table 4.24 Indicates that, 90% of them make some profit and the remaining 10% do not make any profit or suffer from loss.

**Table 4.24 Making profit or Loss from the loan**

Description	Percent	Cum.
Yes, i made some profit	90	90
No profit, no loss	10	100
<b>Total</b>	100	

Table 4.25 indicates that 2% of sample clients do not repay on time always, 7% do not repay timely sometimes and majority of them 90% always repay their loan on time. We can conclude from the statistics that majority of the sample borrowers of DECSI repay their loans timely according to their contractual agreement.

**Table 4.25 Timely repayment of sample borrowers**

Not repaying on time	Freq.	Cum.
yes, always	2	2
yes, sometimes	7	9
No, I always repay on time	90	99
<b>Total</b>	99	

Majority of the sample respondents as (Table 4.26) indicates 39(58%) of female borrowers and 24(75%) of male borrowers respond that women and men are equally good at using their loans (i.e., it may differ from person to person, but it has nothing to do with gender), 22(33%) of female clients and 2(6%) of male borrowers believe that women are much better in utilizing their loans more effectively compared to men, 5(7%) of women borrowers and 5(16%) of male borrowers reported that men are much better in utilizing their loans more effectively compared to women, and the rest 1(1%) of female clients and 1( 3%) of male clients suggest that women are slightly better in utilizing their loans more effectively compared to men.

#### **4.1.5. Credit versus Women**

**Table 4.26 Response of clients who makes better use of loans effectively: Men or Women?**

Response	Observations		
	Female	Male	Total
Women are much better in Utilizing their loans more effectively compared to men	22	2	24
Men are much better in Utilizing their loans more effectively compared to women	5	5	10
Women are slightly better in Utilizing their loans more effectively compared to men	1	1	2
Women and men are equally good at using their loans (i.e., it may differ from person to person, but it has nothing to do with gender)	39	24	63
<b>Total</b>	67	32	99

Studies suggest that many microfinance programs have attained their objectives by reaching a large number of clients with small amounts of resources. Women are believed to be the main participants and beneficiaries of microfinance programs in many countries. Yet, many women lack enough power within households to use their loans to improve productivity and welfare Goetz and Gupta (1996). In this study, 25(35%) of the female borrowers have spouse where as 47(65%) do not have a partner (see Table 4.27)

**Table 4.27 Sample clients having a husband/ partner**

Response	Freq.	Percent	Cum.
Yes	25	34.72	34.72
No	47	65.28	100
<b>Total</b>	72	100	

As shown in Table 4.28 below, 85% of the borrowers reported that they do not give the loan they borrowed from DECSI to their husbands they use it for themselves and 7.41% reported that they give it all or part of it to their partner. As Sara Noreen (2011) has stated it women will be empowered when they will have full control over their own life.

**Table 4.28 If borrowers use the credit for themselves or for their husband.**

Description	Freq.	Percent	Cum.
Yes, I give it all to my husband	2	7.41	7.41
Yes, I give part of the loan	2	7.41	14.82
No, I use all on my own way	23	85.18	100
<b>Total</b>	27	100	

#### 4.1.6. Descriptive Impact Assessment

As Table 4.29 indicates majority of the borrowers i.e., 35.3% after they take loan from DECSI their power and status in their family has increased slightly, 30.9% increased very much and 29.4% reported that there is no change. Microfinance services lead to women empowerment by positively influencing women's decision making power at household level and their overall socioeconomic status (Sara Noreen 2011).

**Table 4.29 Impact of loan in increasing power and status in their family.**

Impact of Loan on Power and Status in family	Freq.	Percent	Cum.
yes, very much	21	30.88	30.88
yes, slightly	24	35.29	66.17
No change	20	29.41	95.58
Has rather decrease	2	2.94	98.52
I just live alone	1	1.47	100
<b>Total</b>	68	100	

But with regard to community 39.47% reported that there is no change in having respect and power, 34.21% of the sample clients have slight increase, 23.68% increased their power very much and 2.64% reported that they decrease their acceptance. Moreover, majority of the sample clients do not have a change in their acceptance and power at community level.

**Table 4.30 Power and acceptance with regard to community**

Impact of Loan on Power, Acceptance and Status in Community	Freq.	Percent	Cum.
Increased very much	18	23.68	23.68
Slight increase	26	34.21	57.89
No change	30	39.47	97.36
Decreased	2	2.64	100
<b>Total</b>	76	100	

As can be seen from Table 4.31 below the borrowers were asked about the impact of the loan on their household's life. Accordingly, the respondents reported as follows. 36% of the sample borrowers respond that it has very big positive impact (i.e., long term and permanent positive impact), 45% of them said it has good impact (mainly temporary benefit, but some permanent impact), 17% respond it has very small positive impact (small temporary benefit) and the remaining 2% react it has partly positive, partly negative (i.e., mixed with the overall impact being almost zero).

**Table 4.31 The impact of DECSI's credit and saving services on the household's life.**

Impact of DECSI	Freq.	Cum.
Very big positive impact	36	36
Good impact	45	81
Very small positive impact	17	98
Partly positive, partly negative	2	100
<b>Total</b>	100	

The Table 4.32 below indicates the reduction of the level of poverty over the last three years on household level showing 37% respond there is big reduction in the level of poverty, 58% (of course the majority of clients) said small reduction in level of poverty and the rest 5% said there is no change in their living standard. Generally we can conclude that financing the poor play a role in at least slight change in poverty reduction.

**Table 4.32 Impact on poverty reduction**

Level of poverty	Freq.	Cum.
Big reduction in level of poverty	37	37
Small reduction in level of poverty	58	95
Remained the same	5	100
<b>Total</b>	100	

## **4.2. Descriptive Data on Expenditure**

### **4.2.1. Average Expenditure on different items of Borrowers**

Both an expenditure and consumption (they can be used interchangeably) of food and non-food is used for the analysis. When we say food it includes cereals, fruits and vegetables, pulses and oilseeds, spices and cooking items, animal products and drinks. Non-food consumption is categorized in to the following parts, the expenses includes on clothing, education, cleaning and personal care, firewood and fuel, housing and jewelry items and other expenses such as medical expenses, church contributions for the study month.

The overall household monthly food consumption of the sample household clients is birr 1090.68 for male headed households and birr 914.02 for female headed households and this indicated male borrowers spend more than their female counterparts which is significant at 10% level and with regard to non-food consumption for male headed households is birr 1261.76 and that of female headed households is birr 1254.11 which does not have a significant difference among the male and female households. Generally the total consumption of food and non-food items is birr 2352.44 for male headed households and birr 2168.13 for female headed households there is as such a significant difference. The per capita expenditure for male headed households is birr 190.72 and that of female headed households is birr 196.6. From the data the share of non-food consumption is higher than the food consumption i.e., the ratio of food consumption of male borrowers to female borrowers with reference to their total expenditure is 46.36% and 42.16% respectively and that of non-food consumption of male and female clients is 53.64% and 57.84% respectively. The overall average amount of per capita total expenditure of food and non-food is birr 190.72 and birr 196.6 for male household headed and female household headed respectively (see Table 4.33).

**Table 4.33 Expenditure on food and non-food items**

Type of Expenditure	Household		t-test (probability)
	Male Headed	Female Headed	
Food Consumption	1090.68	914.0165	0.0989*
Education	176.15	145.993	0.2644
Personal care	424.47	415.47	0.9217
Utilities	139.94	174.92	0.1310
Durables	246.20	298.17	0.7500
Other Expenses	275	219.57	0.2125
Total non-food expenditure	1261.76	1254.11	0.9748
Total Expenditure	2352.44	2168.13	0.5430
Per capita Expenditure	190.72	196.6	0.7685

\*Significant at 10% level

#### **4.2.2. Expenditure of Treated and Control**

The Table below (4.34) indicates the household food consumption for treated is birr 964.49 and for control is birr 697.48 where there is a significant difference at 1% level those who participate in microfinance spends more this is due to the fact that their income has increased. Similarly, the total non-food consumption of treated is birr 1256.30 and control is birr 856.37 the same is true for the increased amount of expenditure on non-food items which have a significant difference at 10% level. Moreover when we see the total food and non-food expenditure of participants and non-participants is birr 2220.79 and birr 1553.85 respectively with a significant level of 5%. With regard to per capita

income, total food and non-food expenditure of treated and control is birr 194.92 and birr 180.28 respectively where there is no a significant difference among them.

**Table 4.34 Expenditure of Treated and Control**

Type of Expenditure	Household		t-test (probability)
	Borrowers	Non-borrowers	
Food Consumption	964.4918	697.4802	0.0043***
Education	154.6093	133.564	0.4179
Personal care	418.0379	294.9907	0.1210
Utilities	164.9236	143.243	0.3056
Durables	283.3204	106.2035	0.1915
Other Expenses	235.4071	178.3721	0.1472
Total non-food expenditure	1256.298	856.37	0.0515*
Total Expenditure	2220.79	1553.85	0.0103**
Per capita Expenditure	194.9217	180.28	0.4190

\*\*\*=significant at 1% level;\*\*=significant at5% level;\*=significant at 10% level

### 4.3. Empirical Analysis

#### 4.3.1. Propensity Score Matching (PSM)

Propensity score is the probability of treatment on treated (participants) or control (non-participants) based on observed characteristics. The propensity score gives a room to analyze an observational or non-randomized so as to match the particular characteristics of controlled and treated subjects.

The basic idea behind propensity score matching (PSM) is to match each participant with an identical non-participant and then measure the average difference in the outcome variable between participants and non-participants. The first step in PSM is to determine the propensity score and satisfy the balancing property.

Matching is a technique which deals with selection bias that estimates the unobserved outcome participants from those who are not participants in the program of course who have similar characteristics on their observable characteristics. The objective of matching is finding a closest comparison group among program participants and non-participants. Closeness is measured interns of the observable characteristics.

### **I. Obtaining the Propensity Score**

As Zaid (2008) has indicated estimation of ATT using PSM involves three basic steps.

- Computing the propensity score.
- Matching on the basis of propensity score and,
- Obtaining the treatment effect as a difference of the mean outcomes of participants and non-participants from the matched observations.

According to Ravallion (2001), the main steps in matching based on propensity scores are as follows:

Step1. To have a representative sample survey of eligible non-participants and pooling the two together. Data on participants and non-participants should be collected from the same questionnaire, same interviewer, same training, and same survey period and so on.

Step2. Pool the two samples and estimate a logit or probit model of program participation as a function of all the variables in the data that are likely to determine participation.

Step3. Create the predicted values of the probability of participation for each participant and non-participant.

Step4. Some of the non-participant sample may have to be excluded at the outset because they have a propensity score that is outside the range (typically too low) found for the

treatment sample. The range of propensity scores estimated for the treatment group should correspond closely to the non-participants.

Step5. Matching observations based on their propensity score. Here observations in the treatment sample are matched with observation in the control sample with the closest propensity score. How close should the propensity score depend on the type of matching preferred as described below.

Step6. Calculate the mean value of the outcome of the treated and control units once matching is executed. The difference is the estimate of the gain due to the program for that observation.

Step7. Finally, averaging the mean of the individual effects and obtaining the overall average treatment effect on the treated.

There are four propensity score methods to match the observations. These are stratification matching, nearest neighbor matching, radius matching, and Kernel matching. Zaid (2008) has defined these methods as follows.

*Stratification (interval) matching:* in this method the dataset is divided into intervals with each interval having on average the same propensity score. Treated and control units within that interval of propensity score will be placed under one block and the mean difference of the outcome between the treated and control units will provide the treatment effect for that block. The average difference of all blocks will finally provide the ATT for the entire sample. However, blocks without treated or control observations will not be considered for computing the ATT.

*Nearest neighbor matching:* in this matching method the treated observation is matched with a control observation that has the closest propensity score. Hence, for each treated unit there is a nearest neighbor of control unit in terms of its value of propensity score. There is a possibility that a control unit can be a nearest neighbor for more than one treated observation. After matching each treatment unit with a control unit, the mean difference in outcome is calculated and obtains the ATT for the whole sample in the study.

*Radius matching:* in this method each treated observation is matched with those control observations that fall within a pre-specified neighborhood (radius) of the propensity score of the treated observation. The size of the radius plays a vital role in this method. If it is set to be very small some treated observations may not be considered because they may not found a match from the control units. But better matches may be produced with smaller sizes of the radius.

*Kernel matching:* considers all treated and control observations. All treated observations are matched with a weighted average of all control observations with weights that are inversely proportional to the distance between the propensity scores of treated and controls.

## **II. Impact Analysis**

### **4.4. Results and Findings**

The first step before computing average treatment effect on the treated (ATT) is to estimate the propensity score for each observation. As stated earlier, it measures the probability of being participated in microfinance given a set of control variables. In this case, the control variables are those household characteristics not affected by program participation. Hence, the probability is estimated using the control variables. Accordingly, the propensity score for treated and control observations is estimated using the probit model as can be seen in the Table below. Some of the control variables are individually statistically significant and the whole model is significant as well as indicated by the chi-square test and the R2 (measurement of goodness of fit)

**Table 4.1a Probit Estimation of the Propensity Score**

Control Variables	Coeff.	Std.err	Z	P> Z
Age	0.0180984	0.0089196	2.03	0.042**
Female HH	0.2150785	0.2421108	0.89	0.374
Tot HH mem	0.1246252	0.0579256	2.15	0.031**
Literacy	0.0380716	0.2373256	0.16	0.873
Constant	-0.8220066	0.5490815	-1.50	0.134

No. of Observations = 182

LR  $\chi^2(4) = 12.22$

Prob> $\chi^2 = 0.0158^{**}$

Pseudo  $R^2 = 0.0614$

After running the probit model it was found out that the balancing condition is satisfied and hence we can proceed to the next steps of estimating the treatment effect.

Following the computation of propensity score, we have to check whether the balancing condition is satisfied or not before matching the observations according to their scores. In our case the balancing property is satisfied. Thus, if the balancing condition is satisfied, observations having the same propensity score will have the same distribution of observable and unobservable characteristics irrespective of treatment. This implies that with the help of the propensity score, treatment is virtually randomized and, as a result, treatment and control group members will on average be observationally identical (Becker and Ichino, 2002).

In the model, we have dependent variable the participation dummy, i.e.,  $T_i=1$  for the treated and 0 to the control groups. the control variables which are included in the model are 'age' of the borrower, 'femaleHH' a dummy variable indicating if the borrower is

female household head or otherwise, 'totHHmem' indicating the total number of persons in the household, 'literacy' which is dummy variable showing if the borrower is literate assigned 1 otherwise 0.

The basic idea behind propensity score matching (PSM) is to match each participant with an identical non-participant and then measure the average difference in the outcome variable between the participants and non-participants.

Table 4.1b below shows the estimated results of ATT for household expenditures. The household expenditure consists of different categories like food expenditure, educational expenditure, personal care, utilities, durables and jewelry, and other expenditure. Other expenditure items include medicine, payment for house servants, as well as social or religious contributions for the study month September 2006. The summation of all the expenditure categories will give total expenditure for the study month. ATT estimates are provided for food expenditure, non-food expenditure and per capita expenditure.

ATTs for the above mentioned expenditure categories are estimated through matching of treated and control observations. In all the matching methods, the number of observations for the treated is 139 and that of control is 41 except for the nearest neighbor matching which contains 33. ATTs of the individual expenditure categories like food consumption and expenditure, expenditure on personal care expenditure on durables, and per capita expenditure (only the stratified method is insignificant in the per capita expenditure). On top of this, expenditure on utilities (Electricity, Water, and Telephone), educational expenditure and other expenditure (only the ATT in nearest neighbor is significant) do not have significant ATTs. Even though the three individual items which are categorized under non-food expenditure have insignificant ATTs, the ATT of total food and non-food expenditure is quite significant. Surprisingly ATT is significant on durables and jewelry. We can safely conclude that DECSI's loan had a significant impact on the borrowers. Household income has increased as a result they have purchased household furniture like table and similar items, bed, TV and tape recorder as well as jewelry including gold and silver.

Figuratively, those who participated in microfinance have gained in food consumption expenditure ranging between birr 260.77 and birr 290.08. The gain of expenditure for personal care on average ranges from birr 142.16 to birr 190.97. ATT estimates are statistically significant on expenditure of durables and jewelry and the clients of DECSI enjoyed an average gain ranging between birr 179.42 and birr 211.61 resulting from the loan.

In general, the ATT estimates of the total non-food expenditure are quite significant and the average gain obtained ranges from birr 424.03 to birr 453.53. Moreover, DECSI's clients obtain an average gain on total food and non-food expenditure that ranges between birr 684.81 and birr 736.52 which is statistically highly significant. The ATT estimate of per capita total expenditure is statistically significant except for the stratified method and the average gain ranges from birr 38.34 to birr 47.98.

To sum up, the analytical findings indicate that the loans taken from DECSI has improved the clients' wellbeing in their living standard of course that can be expressed in terms of the expenditure on food and non-food which includes expenditure on personal care, durables and jewelry. The income of the clients has increases due to the fact that beyond their food consumption they possess durable goods like household equipment and jewelry such as gold and silver. However, we did not find significant difference between treated and control groups for total expenditure on education, utilities and other expenses like social contributions except that in only one method (Nearest Neighbor) is significant. The increment of income is not only at household level but also total per capita of individual household members. For detailed results, see the tables below.

**Table 4.1b Impact Evaluation Estimates on Food and Non-food Consumption**

## 1. Food Expenditure

Matching method	Treated	Control	ATT	Std.err	t-value
Nearest Neighbor	139	33	290.086	102.134	2.840***
Stratified	139	41	260.779	74.061	3.521***
Radius	139	41	282.986	78.689	3.596***
Kernel	139	41	270.767	73.581	3.680***

## 2. Educational Expenditure

Matching method	Treated	Control	ATT	Std.err	t-value
Nearest Neighbor	139	33	3.094	45.345	0.068
Stratified	139	41	26.754	27.880	0.960
Radius	139	41	7.870	30.324	0.260
Kernel	139	41	6.157	29.077	0.212

## 3. Personal care Expenditure

Matching method	Treated	Control	ATT	Std.err	t-value
Nearest Neighbor	139	33	120.923	88.300	1.369
Stratified	139	41	142.166	63.538	2.238**
Radius	139	41	190.972	67.561	2.827***
Kernel	139	41	180.585	49.907	3.618***

\*\*=significant at 5% level \*\*\* significant at 1% level

#### 4. Expenditure on Utilities

Matching method	Treated	Control	ATT	Std.err	t-value
Nearest Neighbor	139	33	5.125	32.717	0.157
Stratified	139	41	20.155	20.753	0.971
Radius	139	41	19.932	22.434	0.888
Kernel	139	41	18.502	27.040	0.684

#### 5. Expenditure on Durables

Matching method	Treated	Control	ATT	Std.err	t-value
Nearest Neighbor	139	33	211.610	90.981	2.326**
Stratified	139	41	179.425	89.106	2.014**
Radius	139	41	181.468	92.222	1.968**
Kernel	139	41	182.563	73.142	2.496**

#### 6. Other Expenditures

Matching method	Treated	Control	ATT	Std.err	t-value
Nearest Neighbor	139	33	87.065	46.686	1.865*
Stratified	139	41	55.534	34.851	1.593
Radius	139	41	53.292	37.387	1.425
Kernel	139	41	50.404	39.133	1.288

7. Total Non-food Expenditure

Matching method	Treated	Control	ATT	Std.err	t-value
Nearest Neighbor	139	33	427.817	188.207	2.273**
Stratified	139	41	424.033	149.919	2.828***
Radius	139	41	453.534	157.668	2.877***
Kernel	139	41	438.212	168.745	2.597***

8. Total Expenditure(food +non-food)

Matching method	Treated	Control	ATT	Std.err	t-value
Nearest Neighbor	139	33	717.903	252.545	2.843***
Stratified	139	41	684.813	196.837	3.479***
Radius	139	41	736.520	208.016	3.541***
Kernel	139	41	708.978	160.492	4.418***

9. Per capita Expenditure

Matching method	Treated	Control	ATT	Std.err	t-value
Nearest Neighbor	139	33	47.987	26.379	1.819*
Stratified	139	41	19.638	17.178	1.143
Radius	139	41	38.340	18.534	2.069**
Kernel	139	41	41.137	15.665	2.727***

## **CHAPTER FIVE**

### **5. CONCLUSION AND POLICY IMPLICATION**

#### **5.1. Conclusions**

In this study an attempt was made to assess the loan repayment performance of DECSI's women borrowers in comparing with their male counterparts and to evaluate the impact of microcredit on the economic and living conditions of the borrowers. Moreover both descriptive statistics and econometrics analysis were employed to assess the above mentioned facts.

The descriptive statistics shows that majority of the sample borrowers are female which is higher than their male counterparts and this is in line with the mix of regular group loan clients in urban areas. This shows that more is done on the microfinance institution towards women empowerment. Regarding literacy almost half of the sample borrowers cannot read and write and this will have an effect on their business activity. For sure literate borrowers can make their business activities in a better way than those who are illiterate. Formal training was given that helps the borrowers undertake the kind of business they are involved. Accordingly 86% has received the formal training which is given by DECSI and the remaining by other organs like Micro and Small Enterprise Promotion Agency, Bureau of Agriculture and others. DECSI has trained the clients and deliver the loan so this helps the borrowers to perform their business wisely starting where to invest the loan so that they will make profit so that they will repay their loans timely. Therefore, training has a positive impact on repayment performance.

Loan amount is crucial that affects the repayment performance of borrowers i.e., both under financing and over financing have problems. The loan amount should be delivered based on the kind of business they are involved. In our study the minimum amount of loan was birr 200 and maximum birr 2500 on average the minimum is birr 193.81 and the

maximum birr 3148.44 during different loan periods. In the study 58% (of which 4% reported that the loan amount is more than enough and 54% the loan amount is good enough) therefore about 58% of sample borrowers respond the loan given by DECSI is sufficient to make their business. Despite they are more in number female borrowers take loans on average birr 1412 which is lower than their male counterparts amounting birr 1995. This is due to the fact that they are involved in small business like shop, local drinks (Tella, Tej). On top of this, they do not want to take risks. However the profit they make is also smaller than their male counterparts but with regard to loss female borrowers make smaller loss even there was a loan period that do not make any loss (see Table 4.10). Therefore 100% of the borrowers have settled their first loan timely according to their contractual agreement made with the lending institution.

The clients of DECSI have made their repayment performance from the benefit they obtain fully (70%). The loan frequency of borrowers ranges from 2-14 meaning there are borrowers who have taken 14 times and this frequency implies that they are performing well because unless they repay their current loan they will not get the subsequent loan according to DECSI's lending criteria. The incentives for taking the subsequent loan (as can be seen in Table 4.20) is due to its positive impact i.e., 80% of them is the result of the previous loan was good so they want to take again, 14% of them also due to the improvement of their living condition. Generally we can conclude that the loan is used for productive purposes and the borrowers are paying their loan on time from the benefit they get without any difference in sex not as stated in Hypothesis 1 female borrowers are more trust worthy in credit repayment than their male counterparts. Hence, microfinance clients in this study area are credit worthy and they fulfill their repayment obligation on time.

With regard to Hypothesis 2, DECSI's credit service has a positive impact on income, food expenditure and empowerment of women both at household as well as at community level. Generally, there is an improvement in the borrowers well being. In this study majority of the women borrowers make financial and business decisions by themselves hence, they use the loan by themselves. However, microcredit loans have a

positive impact on women decision making at household level only on those female clients who utilize their loans for themselves.

As the title of the thesis indicates the small amount of loans taken from DECSI by the borrowers have larger impact on their living standard.

## **5.2. Recommendations**

Based on the findings obtained from descriptive and econometrics analysis of the study, the following recommendations are derived.

1. Microfinance institutions should be strengthened and support the poor women and should provide trainings to the borrowers before they deliver the loan because this is likely to enable them to have some level of managerial ability in their business.
2. As the policy of the government supports to empower women, the microfinance institutions has to do more to rise the amount of loan which is the economic determinant so that empowerment will be beyond at household or community level.
3. A microfinance institution has to enable the women borrowers to invest in other profitable business activities that encourage them to develop their new entrepreneurial skills rather than continuing the existing business where they make it traditionally.
4. The finding of this study indicates that most respondents of DECSI do not like group lending. Hence, the institution might need to reassess this group lending methodology so that the members of the group who perform well should not be affected by those who do not perform to be served in the next loan period.

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