Journal of Poverty, Investment and Development
ISSN 2422-846X An International Peer-reviewed Journal
Vol.10, 2015

Factors Affecting Group Loan Repayment Performance: A Case of Dedebit Credit and Saving Institution (DECSI), Mekelle, Ethiopia

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Abstract
This study was an attempt to analyze the factors influencing the loan repayment performance of group borrowers. Primary data was collected from sample respondents (selected by using simple random sampling technique) through questionnaire. From the total 87 questionnaires distributed, 83 that are 95% (response rate) were collected. The study has applied explanatory type of research. Chi-square test statistics was employed to test the association of each explanatory variable with group loan repayment performance (dependent variable). 15 explanatory variables were considered in the Chi-square test. Out of which seven variables (loan purpose, group members know the monthly sales of the group members, group members' regularly visits other group members, group members' help, group members knew the other group members before the group was formed, group members put pressure on other members to repay, and penalty) were found to have statistically significant association with loan repayment performance. Thus, to improve the group loan repayment performance, DECSI should consider those statistically significant explanatory variables and take corrective actions accordingly.
Keywords: Chi-square, DECSI, Ethiopia, Factors, Group Loan, Mekelle, MFIs, MSEs.

1. INTRODUCTION

In many developing economies majority of the people live in great poverty. Lack of having access to external finance is one of the reasons why many people in developing economies remain stuck in poverty. Usually, the poor have no access to loans from the formal banking system because the poor in general cannot meet the collateral requirements stipulated by the banks and the inherently high cost to banks to assess the risk type of potential borrowers (screening), to ensure that the loan, once made, is utilized productively (monitoring) and to ensure the repayment of loans if borrowers are unwilling to do so (enforcement) may all contribute to the exclusion of the poor from the credit market. Recently, however, the poor in both rural and urban areas of these economies have succeeded in gaining increased access to loans. An important contribution to make this possible is made by so-called group lending programs (Al-Azzam & Sudipta, 2007).

Joint liability group lending was the original model of Grameen Bank, and it is one that some micro financing organizations still offer (Gine & Kalran, 2008). During the past few years group lending programs have been introduced in many developing economies (Hermes, Lensink, & Mehrteab, 2005).

Under joint liability group lending, borrowers come together to take out individual loans for which they are jointly responsible. In group lending, if one member cannot meet his or her repayment obligation, other members must bear the repayment of the defaulter otherwise all borrowers in the group will be responsible and denied future access to loans from the program. Therefore, group lending mechanism creates incentives for individual group members to screen out risky borrowers, monitor each other's' actions and enforce repayment (Al-Azzam, Hill, & Sarangi, 2008). Joint liability group lending mechanism tackles three major problems which affect the repayment performance of the self-help groups (SHGs) problem of adverse selection, i.e., to ascertain what kind of a risk the potential borrower is (Charlotte & Lodewijk, 2003). Problem of moral hazards, i.e., it makes sure of proper utilization of loan so that a borrower is in a position to repay within the due date, and problem of enforcement, i.e., pressure mechanism is operative on willful defaulters (Verhelle & Berlage, 2003).

Micro finance Institutions (MFIs) have two major lending methodologies; group and individual lending. Group lending involves lending to a group of borrowers who are jointly liable for a loan. However, individual lending often requires collateral that the poor borrower can pledge; the value of the collateral and the loan size may not be closely related. A common characteristic of group lending is that the group obtains a loan

under joint liability, so each member is made responsible for repayment of loans of his or her peers (Huppi & Feder, 1990). There are also two modalities of group lending. One , a lender may provide funds to a group or a collective entity such as a cooperative or a village bank which then disburses the loan to individual members according to agreed criteria. In such a case, the group is jointly liable for the entire amount of the loan. Second, funds may be lend to members individually who are organized in groups , in which case the group jointly guarantees all loans or simply provides information about individual participants (Huppi & Feder, 1990).

The National Bank of Ethiopia (NBE) supervises MFIs in Ethiopia. The Ethiopian government has laid down a regulatory framework for the establishment of MFIs by issuing proclamation No. 40/1996 that provides for the licensing and supervision of MFIs. Since the issuance of this proclamation in July 1996, today, there are 31 MFIs registered with the National Bank of Ethiopia serving clients (Ebisa, Getachew, & Fikadu, 2013). Dedebit Credit and Savings Institution (DECSI) is one of those micro finance institutions (MFIs) in Ethiopia, which is inaugurated in Tigray region. By considering the criteria that the poor were denied by conventional banks, i.e., the difficulty to secure traditional collateral, DECSI designed group (groups of 3-7 members) based loans by taking lessons from the Grameen Bank.

MIFs such as DECSI are facing financial constraints to sustain loan provision to the poor due to problems in loan repayment performance. Thus, this study was conducted to examine the factors that determine the performance of group loan repayment of DECSI, Mekelle - Tigray.

2. LITERATURE REVIEW

Micro finance refers to the provision of financial services to low-income clients, including consumers and the self-employed (Ledgerwood, 2000). The word microfinance refers to small-scale financial services primary credit and savings provided to people who operate small enterprises, provide services, fish farm or herd, and to other individuals or groups at local level of developing countries both rural and urban areas (Robinson, 2001).

Degene (2001) also described microfinance based on its main characteristics: its directing of the poor, promoting small business, building capacity of the poor, extending small loans without collaterals, combining credit with savings, and charging commercial interest rates.

Generally the term microfinance refers to the provision of financial services to low-income clients; however some microfinance organizations also provide insurance and payments. In addition to financial intermediation, many microfinance institutions provide social intermediation services such as group formation, development of self-confidence, and training in financial knowledge and management capabilities among members of a group. Furthermore, microfinance is not simply banking; it is a development tool as well and as such, its activities also involve provision of small loans, typically for working capital; informal evaluation of borrowers and their investments; collateral substitute, such as group collateral or compulsory savings, secured savings products (Ledgerwood, 1999).

Based on the above concept of micro financing, it is clear that the primary objective of microfinance institutions (MFIs) is to provide financial (credit and saving) and non-financial social intermediation services (such as group formation, development of self-confidence, training in financial knowledge, and management capabilities among members of a group) to the poor in order to release financial constraints and help alleviate poverty.

Group lending is an innovation that makes it possible, where the poor borrowers act as guaranties each other by the joint liability. While exploiting the local knowledge that has members on each other, group lending solved several problems of asymmetry of information between borrowers and creditors (Bassem, 2008).

Since 1970s, group lending programs have been promoted in many developing countries (Zeller, 1996).In group lending programs screening, monitoring and enforcing repayments problems are solved by providing loans to an individual borrower, who is a member of a borrowing group. The group of borrowers is made responsible for the repayment of the loan: all group members are jointly liable. Non-repayment by the group also means that all borrowers in the group will be denied future access to loans from the program.

The principle of joint-liability creates an incentive mechanism in which each group member has an interest in screening and monitoring the other members, and to enforce repayment if necessary, since the non-repayment of one of the other members will be costly for her/him and, additionally, may cut off access to loans in the future. Thus, individual borrowers are stimulated to select credible members to group with, to monitor the other members' activities once the loan is received, and to enforce repayment in case a group member fails to pay her/his obligations (Ghatak, 1999).

In this case, joint liability lending microfinance institutions can lessen the three major problems facing formal credit institutions in lending to the poor. These problems are: (a) to ascertain what kind of a risk the potential borrower is (the problem of adverse selection), (b) to make sure she/he will utilize the loan once made, properly, so that she/he will be able to repay it (the problem of moral hazard) and (c) to find methods to force the borrower to repay the loan if she/he is reluctant to do so (the enforcement problem). By utilizing the information advantages of members belonging to the same community and their potential to exert pressure on borrowers,

borrowing groups under a joint-liability contract are in a better position than formal banking institutions to address these problems (Ghatak, 1999).

Joint-liability, therefore, reduces the costs of screening, monitoring and enforcement of repayments for the creditor. Several theoretical papers have shown the positive contribution of joint-liability programs to reducing screening, monitoring and enforcement costs. Stiglitz (1990) and Varian (1990) have presented models in which peer monitoring within groups reduces moral hazard behavior of individual group members. Group lending programs delegate costly monitoring activities to group members, reducing the costs of lending, which may be translated into lower interest rates the borrowers' have to pay and/or larger loan contracts.

Regarding to the group loan repayment performance, several studies have been conducted in many countries by different authors. Thus, the following sections present the empirical studies and their findings with respect to the relationship between repayment and screening, monitoring and enforcement activities within groups, and on factors of individual/borrower characteristics.

2.1. REVIEW OF THE RELATED EMPIRICAL LITERATURE IN OTHER COUNTRIES

Wenner (1995) studied on the determinants of repayment of groups. He used data of 25 groups from Foundation for International Community Assistance (FINCA), a group-based program in Costa Rica. His analysis indicated that repayment performance of groups improve when groups have written (formal) rules stating how members should behave. This variable indirectly measures screening, monitoring and enforcement activities that take place within the groups. The variable location indicated that if groups are located in remote areas this reduces their possibilities to have access to alternative sources of credit, which stimulates them to ensure group repayment as much as possible in order to have future access to loans.

Matin (1997) examined repayment performance of Grameen Bank borrowers: The Unzipped State. By using data of 246 borrowers from Grameen Bank, he verified the effect of education, landholding, length of membership in years, other source of loans on delinquency. He has found that education and landholding have negative effect on delinquency; whereas length of membership and other credit sources have positive effect on delinquency.

Matin (1998), by using data of 246 borrowers from the Grameen Bank, Bangladesh, also found that members who have other credit sources and who have land use above some threshold level have a higher probability of showing repayment problems. These outcomes may indicate that since these borrowers have other credit opportunities or that they have accumulated substantial assets, they have less interest having future access to loans from the program, which may reduce their screening, monitoring and enforcement activities. This result confirms to the results of Wenner (1995) and Sharma and Zeller (1997) that is if borrowers are more credit rationed and if groups are located in remote areas, these reduces their possibilities to have access to alternative sources of credit, which stimulates them to ensure group repayment as much as possible in order to have future access to loans.

Sharma and Zeller (1997) used data of 128 groups from four group-based lending programs in Bangladesh to study the determinants of repayment. They used a number of variables that may measure screening, monitoring and enforcement activities within groups. They found that repayment problems increase when there are more relatives in the same group. This supports the theory that when people know each other very well and have close social ties, they may be less eager to pressure for repayment (Conning, 2000; Wydick, 1999).

Zeller (1998) has analyzed the repayment performance of six group-based lending programs in Madagascar based on detailed information from 146 groups. He examined measures of social ties between group members and found that groups with stronger ties show higher repayment rates. This supports the assumption that group members with stronger ties have more information about each other and are, therefore, better able to screen, monitor and enforce.

However, this finding is against the findings of Conning (2000), Wydick (1999) and Sharma and Zeller (1997) that is repayment problem increase when there are close social ties and more relatives in the same groups, respectively. Furthermore, he found that groups with internal rules and regulations prove better repayment rates; this finding is conformed to the finding reported by Wenner (1995).

According to Wydick (1999), who used data of 137 groups from Foundation for the Integrated Development of Socioeconomic Programmers (FUNDAP), a group-based lending program in Guatemala. He used lists of variables measuring screening, monitoring and enforcement within groups. He found that the average distance between group members negatively influences repayment performance. Monitoring becomes more difficult if the distance between members increases, whereas the knowledge one member has of the weekly sales of other members is positively related to repayment performance.

Godquin (2002) has tested the explanatory power of social ties, group homogeneity, social intermediation, dynamic incentives and loan characteristics (loan size and loan duration) on group's repayment performance. He used 1629 loan observations of borrowers from the Grameen Bank, Bangladesh Rural

Advancement Committee (BRAC), and Bangladesh Rural Development Board (BRDB) from Bangladesh. Two repayment measures were used: repayment on time with a grace period of three months was used in the whole sample and repayment on time was used in the split sample (one regression by MFI). He found that the effect of social ties within group members on repayment is negative. Group homogeneity in terms of sex showed a positive impact whereas homogeneity in terms of education showed a negative effect on repayment performance. Social intermediation (non-financial services) on repayment performance like access to basic literacy had a negative impact on the repayment of the Grameen borrowers while access to health services proved to have a positive impact on repayment performance. Dynamic incentives have positive impact of on the repayment behavior of the borrowers as credit rationing has a positive significant impact on the repayment performance. The size of the loan portfolio showed significant negative impact on repayment performance; this could be explained by a fall in the manager's time allocated to each group as the loan portfolio increases. The number of weeks the borrower had to wait before receiving his loan had no significant impact on repayment performance.

Habteab, Lensink, and Hermes (2004) conducted a study on determinants of repayment performance of group-based lending program evidence from Eritrea. By using sample of 102 self-help group (SHG) members, they have analyzed whether peer monitoring and social ties mitigate the incidence of repayment problems among group members in two group-based lending programs operating in Eritrea. Their results showed that the variables measuring regular group members' peer monitoring and social ties are found to be statistically insignificant. At the same time, theoretical models on group-based lending emphasized the point that peer screening, monitoring and enforcement activities taking place in groups is performed by all group members. The findings in the case of the Eritrean programs provided results that are in contrast with the existing theoretical models on group-based lending.

Matta (2004) have examined the determinants of group loan repayment in Dominica Republic by using data of 135 members selected randomly from four branches. He tested the effect of group size, information symmetry, social ties, peer pressure, and group solidarity on group loan repayment performance and he has found that loan repayment was increased by smaller group size, peer pressure and group solidarity, and groups composed of family members.

Hermes et al. (2005) examined adverse selection and moral hazard in group-based lending evidence from Eritrea. They have investigated whether peer monitoring and social ties reduce the occurrence of moral hazard in the setting of two group-based lending programs in Eritrea. Their results indicated that regular contact and a short physical distance between the group leader and the other members helps to reduce misuse of loans by individual group members. Moreover, if the group leader knows the other group members before the group is formed and if he has never changed groups, this reduces the probability of moral hazard within the group.

According to Kono (2006), group lending is a good enforcement scheme for achieving high repayment rates as evidenced from framed field experiments in Vietnam. They conducted field experiments in Vietnam to capture the role of joint liability, monitoring, cross-reporting, social sanctions, communication and group formation in borrowers repayment behavior. They found that joint liability contracts cause serious free-riding problems, inducing strategic default and lowering repayment rates.

Al-Azzam and Sarangi (2007) analyzed repayment performance in group lending, evidence from Jordan. They used data from a survey of 160 borrowing groups of the micro fund for women in Jordan. They tested the effect of screening, peer monitoring, group pressure, and social ties on borrowing groups' repayment behavior. The study found that delinquency is reduced by screening, peer monitoring, group pressure, and social ties.

Christian and Robert (2007) carried a study by using repayment dada to test across models of joint liability lending. They used survey data from 262 joint liability groups of the Bank for Agriculture and Agricultural Cooperatives (BAAC) and from 2880 households of the same villages. Their study reported that repayment is affected negatively by the joint liability rate and social ties, and positively by the strength of local sanctions and correlated returns.

Bassem (2008) investigated the determinants of successful group loan repayment in Tunisia. He analyzed the internal and external delinquency of a self-designed survey of 286 groups of credit. The results of the estimation showed that repayment is influenced positively by internal rule of conduct, same business, knowledge of other members of the group before formation, peer pressure, self-selection, sex, education, and non-financial services. However, the homogeneity, and the marital status are among the main factors acting negatively on the repayment. He also concluded that the tie with the loan officer positively affects the repayment performance of credit groups.

Groups that were formed using a self-selection process show a better repayment performance. Finally, the results indicated that if borrowers are more credit rationed, this increases repayment performance. This result can be taken as evidence for the fact that group members have more incentives to screen, monitor and enforce if they have no alternative credit sources (Sharma & Zeller, 1997).

Feroze, Chauhan, Malhotra, and Kadian (2011) have made a study on factors influencing group

repayment performance in Haryana. By using data of 120 groups from the state of Haryana, they found that peer monitoring, group size, and female percentage have positive influence, whereas homogeneity and loan amount have negative influence on the repayment performance of the groups.

Kangogo, Lagat, and Ithinji (2013) have researched the influence of social capital dimensions on household participation in micro-credit groups and loan repayment performance in Uasin Gishu County, Kenya. Based on a sample of 174 households, their results on group loan repayment performance revealed that experience in group borrowing, number of visits by loan officer, peer pressure, meeting attendance index and heterogeneity index positively and significantly influenced loan repayment performance while gender, household size, distance to the nearest financial institution and density of membership were significant but negatively influenced household loan repayment performance.

From the above empirical review, most of the studies in countries other than Ethiopia reported that screening, monitoring and enforcement activities among group members significantly and positively influence the loan repayment performance of groups. However, one study reported that regular group members' peer monitoring and social ties are found to have statistically insignificant effect on group loan repayment performance.

2.2. REVIEW OF THE RELATED EMPIRICAL LITERATURE IN ETHIOPIA

Abreham (2002) has researched loan repayment and its determinants in small scale enterprises financing in Ethiopia: a case of private borrowers around Zeway area. Sample of 102 clients were randomly selected. He showed that loan diversion is found to be one of the major determinants adversely affecting the loan recovery rate; borrowers who have other alternative income source were found to show better loan repayment record; business experience in related economic activity and education were found to be significant and positive while repayment period and sex were negatively associated with loan repayment rate; borrowers who have extensive experience in related activity and educated ones show better repayment record while male borrowers and projects with long repayment period show poor repayment record; and borrowers who involved in agricultural sector were found to be relatively defaulters as compared with other sectors.

Jemal (2003) did his study on microfinance and loan repayment performance: a case study of the Oromia credit and savings share company (OCSSCO) in Kuyu. Using sample size of 203, his results revealed that loan diversion was found to be one of the important and significant factors influencing loan repayment performance negatively, i.e., it increases default risk significantly; suitability of repayment period was found to reduce the probability of diverting loan to nonproductive uses that ultimately lead to reduced recovery rate; loan size was found to undermine the repayment performance; and factors like income, value of livestock, availability of other sources of credit and being female were found to enhance the probability of repayment.

Micha'el (2006) has done a study on micro-finance repayment problems in the informal sector in Addis Ababa. A sample size of 225 clients was randomly selected. His result indicated that better repayment performance is strongly and directly associated with educational level of the borrower; insufficiency of the loan granted and unplanned engagements in the business activity do also reduce repayment performance; and government owned and not-for-profit non-government microfinance institutions were found out to face relatively larger non-repayment due to credit attitude of borrowers towards the loan, as if it were grant, instead of a liability at the time of difficulty.

Fikirte (2011) under took a study on determinants of loan repayment performance: a case study in the Addis Credit and Saving Institution, Addis Ababa, Ethiopia. Based on a sample of 200 randomly selected clients, she analyzed the socio-economic factors that influence loan repayment. A total of twelve explanatory variables were included in the regression. Out of these, six variables were found to be significant for the probability of being defaulter. Age and five business types (baltina and petty market, kiosk and shop, services providing, weaving and tailoring, and urban agriculture), sex, and business experience of the respondents were found to be significant determinants of loan repayment performance.

Tnsue (2011) has analyzed determinants of loan repayment in microfinance institution: the case of DECSI QUIHA sub branch. A cross-sectional data were collected from randomly selected 140 (87.7% response rate) sample borrowers and key informant interview was held in the study area. His analysis showed that age, educational status, full disbursement of loan requested by borrowers, supervisory visit, and income from the loan activities financed by DECSI were significant factors that enhance the probability of loan repayment, while violation of loan agreement, distance of the borrowers dwelling from the lending agency, sex, occupation and number of dependents with borrowers were found to significantly increase loan default.

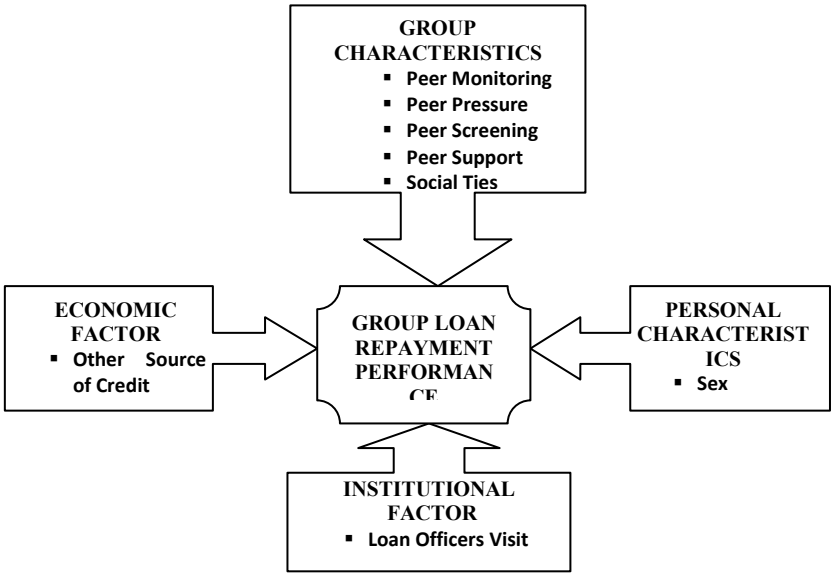
Based on the above review, it can be concluded that most of the empirical studies done in other countries (other than Ethiopia) reported that screening, monitoring, and enforcement activities among group members improves the repayment performance of groups. Whereas, most of the empirical studies made in Ethiopia focus on factors of individual/borrower characteristics.

Accordingly, education, income, loan supervision, suitability of repayment period, business experience

in related economic activity, and age have significant and positively determine the loan repayment performance. However, unplanned engagements in the business activity, loan diversion, loan amount, and number of dependents with borrowers have significantly and negatively determine the loan repayment performance. Moreover, the number of weeks the borrower had to wait before receiving loan and the variables measuring regular group members' peer monitoring and social ties were found insignificant in terms of loan repayment performance.

2.3. CONCEPTUAL FRAMEWORK

Figure 1.Conceptual Framework



Source: Adopted from Al-Azzam and Sudipta (2007), Kangogo et al. (2013), and Mawire (2012).

Figure 1 above presents a conceptual framework of the relationship between the group loan repayment performance (dependent variable) and the factors influencing group loan repayment performance (independent variables).

3. STATEMENT OF THE PROBLEM

Table 1 and Table 2 below present the preliminary data collected that shows the repayment performance for consecutive five years (2009-2013) of DECSI, Mekelle for two sub-branches.

Table 1: Summary of Loan Repayment Performance in DECSI South Sub Branch

Year	Loan Disbursed	Loan Collected	Loan Defaulted	Default Rate in %
2009	8,484,070.89	6,675,315.23	1,808,755.66	21
2010	9,663,664.59	7,098,997.91	2,564,666.68	27
2011	4,219,778.03	2,000,589.68	2,219,188.35	53
2012	3,872,388.63	1,253,000.00	2,619,388.63	68
2013	4,623,862.25	2,006,184.54	2,617,677.71	57

Source: DECSI (2014)

Table 1 above illustrates group borrowers of South Sub Branch DECSI repayment performance. The default rate has been increasing for the subsequent four years, i.e., 2009, 2010, 2011, and 2012 with default rate of 21%, 27%, 53%, and 68%, respectively and 57% for year 2013.

Table 2: Summary of Loan Repayment Performance in DECSI North Sub Branch

Year	Loan Disbursed	Loan Collected	Loan Defaulted	Default Rate in %
2009	7,831,517.26	6,499,473.21	1,332,044.05	17
2010	7,283,394.87	5,840,361.11	1,443,033.76	20
2011	3,384,093.09	1,788,464.24	1,595,628.85	47
2012	3,024,245.33	1,284,316.08	1,739,929.25	58
2013	2,981,135.80	1,292,927.55	1,688,208.25	57

Source: DECSI (2014)

Table 2 above shows group borrowers of North Sub Branch DECSI's loan repayment performance. The default rate is increasing for the subsequent four years, i.e., 2009, 2010, 2011, and 2012 with default rate of

17%, 20%, 47%, and 58%, respectively and 57% for the last 2013 year.

Based on the above Table 1 and Table 2, the two sub branches of DECSI group loan repayment performance is decreasing form time to time that can badly affect its financial sustainability of DECSI microfinance institution. This leads to increase in the overall annual default rate that is higher than the rate that the National Bank of Ethiopia (NBE) set for all financial institutions, i.e., <5 percent (or >95 percent expected to be collected).

According to Samuel (2012), a series of defaults could lead to liquidity problem in the MFIs and would consequently limit the ability of the MFIs to extend credit/loan to other applicants. Thus, based on the above default problem existed on DECSI, it is worthy to conduct empirical investigation on factors influencing group loan repayment performance in order to examine what factors influence group repayment performance for DECSI so that the findings can be used to employ its credit programs for the better by considering the impact of a number of different variables which concerns group repayment performance such as group characteristics, personal characteristics, institutional factors and economic factors.

4. OBJECTIVES OF THE STUDY

The objective of the study was to analyze the association of the determinant factors with the group loan repayment performance of Dedebit Credit and Savings Institution (DECSI), Mekelle - Tigray.

5. MATERIALS AND RESEARCH METHODOLOGY

This section presents description of the study area and an outline on how the research was carried out, that is the data type and source, sampling design, data collection instruments, data processing and analysis techniques.

5.1. DESCRIPTION OF THE STUDY AREA

The Federal Democratic Republic of Ethiopia (FDRE) is administratively divided into nine national regional states and two administrative councils. The Tigray National Regional State (TNRS) is one of the nine National Regional States. The city of Mekelle was established in the 1870s, and selected as Ethiopia's capital by Emperor Yohannes. Previously, it had been the site of several small settlements. The city's strategic location in a large valley in the Ethiopian highlands placed it at the crossroads of the ancient salt trade in the Afar region to the east, and within easy access of the Red Sea, 200 km to the northeast (Cannon, 2009).

Mekelle is the sixth largest city in Ethiopia and the capital of Tigray State. It is located approximately 780 km from the capital, Addis Ababa, in the Ethiopian highlands. Mekelle city enjoys a mild highland climate with an average temperature of 25°C. The rainy season in Mekelle city is from June to September, while the dry season is from October to May. The average annual rainfall is approximately 579mm (KPMG International, 2010).

According to the 2007 census, the population of Mekelle was 215,546 of which 51.3 were Women. The 2013 census population, assuming a 5.4 percent growth rated, is projected to reach around 300, 000.The city also has an airport, the Alula Aba Nega international Airport, which offers several daily flights to Addis Ababa and other locations in Ethiopia. It also has cargo cold-storage facilities that should be very useful for perishable export cargo (Millennium Cities Initiative [MCI], 2011).

The study was carried out in the city of Mekelle, five sub-cities in the two sub branches of urban group borrowers of Dedebit Credit and Savings Institution (DECSI): Ayder, Semien, Hadnet, Adi-Haqi and Kedamay Weyane.

5.2. RESEARCH METHODOLOGY

This section deals with research approach, data type and source, sampling design, data collection instruments, and data processing and analysis techniques.

5.2.1. RESEARCH APPROACH

For a similar study, Abreham (2002), Fikirte (2011), Habteab et al. (2004), and Kangogo et al. (2013) have applied explanatory approach; and Mawire (2012), Micha'el (2006), Tnsue (2011), and Zelalem, Hassen, and Jema (2013) have applied both descriptive and explanatory research approach. Therefore, this study has applied an explanatory approach for the quantitative data collected through questionnaire.

5.2.2. SAMPLING DESIGN

According to a similar empirical studies, Abreham (2002) and Tnsue (2011) adopted simple random sampling; Michael (2006) two-stage cluster simple random sampling; Fikirte (2011) a stratified sampling technique; and Habteab et al. (2004) a multi-stage sampling method.

This study was conducted in DECSI, Mekelle, Tigray region. A two-stage sampling procedure was adopted for the study. The first stage was the selection of sample sub cities of the two sub branches of DECSI. Two sub cities from branch 1(Semien) and three sub cities from branch 2 (Debub) were selected. The second stage was the selection of sample respondents from the selected sub cities. Finally, a sample size of 87groups

(i.e., 49 female and 38 male group borrowers) proportional to the group numbers in each sub cities, were randomly selected from the list of clients that was provided by Mekelle sub–branch office of DECSI.

A simple random sample (SRS) of borrowing groups was produced by a scheme which ensures that each sub cities have an equal probability of being chosen as the sample for the desired sample size of 87.

There were 680 (i.e., 388 female and 292 male group borrowers) borrowing groups in DECSI, Mekelle. Two sub branches provide regular (group) loan to the five sub cities of the city of Mekelle. The total sample size of borrowing groups was 87 out of 680 borrowing groups (population) based on the following formula.

In order to get adequate and representative sample of respondents, the sample size was determined by using the formula of Yemane (1967). The reason for using this sampling method was that the sizes of the borrowing groups are known. Among the several method of sample size determinations to determine the required sample size is at 90% confidence level and level of Precision = +10%,this means that , if a 90% confidence level is selected , 90 out of 100 samples have the true population value within the range of +10%, precision (sampling error).

$$n = \frac{N}{1+N(e)^2} = \frac{680}{1+680(.10)^2} = 87 \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where, n = sample size; N = population size (targeted population) = 680 groups; e = sampling error/level of precision = 10%. Based on the above formula, the total sample size of borrowing groups was 87 (Table 3).

Table 3: Determination of Sample Size

(a) Sub Branch	(b) Sub Cities	(c) Number of Groups (Population)	(d) Female	(e) Male	(f) (d*87)/680	(g) (e*87)/680	(h) = f+g (Total Sample Size)
North	Ayder	113	64	49	8	6	14
	Semien	183	105	78	14	10	24
South	Hadnet	101	58	43	7	6	13
	Ad-Haki	54	31	23	4	3	7
	K/ Weyane	229	130	99	16	13	29
Total		**680**	**388**	**292**	**49**	**38**	**87**

Source: DECSI (2014).

In summary, the study was made by using simple random sampling because it is considered the simplest, most convenient and bias free selection method. It enables every member of the population to have an equal and independent chance of being selected proportionately as respondents. The study considered 12.8% (i.e., 87/680*100%) sample size of the target population chosen from each of the group whereby the target population was divided into sub cities. This ensured that all the sub cities within the study area were included in the study.

5.2.3. DATA TYPE AND SOURCE

For a similar study Abreham (2002), Habteab et al. (2004), and Mawire (2012) have used both primary and secondary data, and cross sectional type; and Micha'el (2006) and Jemal (2003) have used primary data and cross sectional type.

Therefore, this study has collected primary data comprising quantitative data. The quantitative data was collected through questionnaire from group borrowers of DECSI.

5.2.4. DATA COLLECTION INSTRUMENTS

As per a similar study, Nathan and Alfred (2009) have employed semi structured questionnaire; Kangogo et al. (2013) structured questionnaire; and Tnsue (2011) a structured questionnaire and unstructured interview.

The aim of this research was to examine the association of the group loan repayment with the factors influencing the loan repayment performance in the DECSI, Mekelle. Thus, in order to answer the research questions, primary data was collected through questionnaire. The questionnaire written in English was translated to the local language, Tigrigna, for convenience to the respondents. The questionnaire was also pre-tested to evaluate for consistency, clarity, avoiding duplication, and to estimate the time requirement during data collection. On the basis of these comments, the questionnaire was further modified.

Accordingly, questions were asked about group characteristics (i.e., the existence of peer-monitoring, peer- pressure, peer screening, peer support, social ties); personal characteristics (i.e., sex of borrowers); economic factor (i.e., availability of other source of credit); and institutional factor (i.e., loan officer visits). The primary data collection was carried out between April 2014 - May 2014. From the total 87 questionnaires distributed, only 83 that is 95% (response rate) were collected.

5.2.5. DATA PROCESSING AND ANALYSIS TECHNIQUES

For a similar study, Jemal (2003) has applied descriptive statistics, T-test and Chi-square test statistics and probit

model; and Kangogo et al. (2013), Habteab et al. (2004), Fikirte (2011), and Bassem (2008) have applied a logit model.

In this study, chi-square test was applied. Accordingly, the collected data was edited, coded, classified and tabulated after carefully checked for completeness and consistency in order to make them ready for analysis by using STATA. This was followed by analysis and interpretation of findings.

6. DATA ANALYSIS AND DISCUSSION

This section presents, analyzes and interprets the responses gathered from the respondents through structured questionnaire. For this purpose, the chi-square statistics was employed to compare non-defaulter and defaulter groups with respect to their variables in order to analyze the association of group loan repayment with the explanatory variables.

6.1. CHARACTERISTICS OF SAMPLE RESPONDENTS

The group sex and group representative's personal characteristics are presented with particular reference to education and age in Table 4 below.

Table 4: Characteristics of Sample Respondents

Category	Number	Percept
sex		
Male group	35	42.17
Female group	48	57.83
Total	**83**	**100**
Education level		
Illiterate	19	22.89
1-4	10	12.05
5-8	11	13.25
9-10	7	8.43
11-12	8	9.64
TVET	3	3.61
Diploma	23	27.71
First degree and above	2	2.41
Total	**83**	**100**
Age		
18 to 30	31	37.35
31 to 40	25	30.12
41 to 55	24	28.92
55+	3	3.61
Total	**83**	**100**

Source: Own Computation (2014)

According to the Table 4 above;

- The sample was composed of both male and female group borrowers. Of the total sample, 35(42.17%) were male groups and 48(57.83%) were female groups.
- Of the total sample of the group borrowers, 23(27.71%) groups have attended diploma; 3(3.61%) TVET; and 2(2.41%) first degree and above. Of the remaining groupborrowers,19(22.89%), 10(12.05%), 11(13.25%), 7(8.43%), 8(9.64%) were within the education category of illiterate, 1-4, 5-8, 9-10, 11-12, respectively.
- Group borrowers in the age category of 18 to 30; 31 to 40; 41 to 55 and above 55 accounts 37.35%, 30.12%; 28.92% and 3.61%, respectively.

6.2. RESULTS, ANALYSIS AND DISCUSSIONS

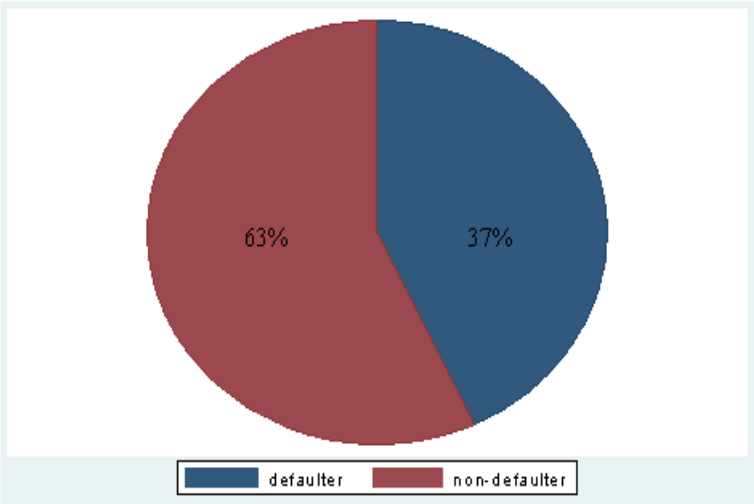
6.2.1. STATUS OF GROUP LOAN REPAYMENT

To know the loan repayment status, group borrowers were asked whether they have fully repay loans on time or not in the form of "Yes" or "No" response question. Such an objective response and direct measurement of the binary dependent variable (i.e., group loan repayment performance equal to "1" if groups were non-defaulters and "0" otherwise) was used to determine the factors that affect group loan repayment performance in a similar studies of Kangaroo et al. (2013), Habteab et al. (2004), and Bassem (2008).Therefore, both group defaulters and non-defaulters were taken into analysis for the identified common explanatory variables.

Out of the total respondents, 52(63%) groups were non defaulter, i.e., they repay their loan fully on

time, and the remaining 31(37%) group respondents were defaulter (Figure 2). As it was discussed in the literature, the problem of loan default reduces the lending capacity of microfinance institutions and it may also deny new applicants access to credit as the bank's cash flow management problems increase in a direct proportion to the increasing default problem (Godquin, 2004). Regarding this matter, annual reports of DECSI indicated that the loan default rate for DECSI is increasing from time to time (i.e., 21 %, 27 %t, 53 %, 68 % and 57 % in 2009, 2010, 2011,2012 and 2013 and 17%, 20%, 47%, 58% and 57% in 2009, 2010, 2011, and 2012 and 2013) in both the south and north sub branches, respectively, particularly in the group lending (DECSI, 2014). This result also found 37% default. Therefore, this high loan default rate might adversely affect the financial sustainability of DECSI.

Figure 2: Status of loan repayment by the group borrowers



Source: Own Computation (2014).

6.2.2. CHI-SQUARE RESULTS, ANALYSIS, AND DISCUSSIONS

In this section, the association of the dependent variable against the explanatory variables is examined by using the chi-square test. Thus, the results are analyzed and discussed as follows below.

6.2.2.1. LOAN REPAYMENT AND PERSONAL CHARACTERSTICS

Among the personal characteristics, only "sex" of borrowers is considered for analysis. The respondents are representative of the male as well as female group borrowers. Thus, personal characteristics of representatives such as age and education were ignored for analysis because the representatives' characteristics other than sex do not represent the group members. The description of sex provided below indicated the association of sex (female and male groups) with defaulters and non-defaulters of group borrowers in terms of loan repayment performance. Thus, Table 5 below shows the association of loan repayment performance with sex.

Table 5: Distribution of Sample Group Borrowers by Sex

Sex	Defaulter	Non defaulter	Total
Female	17	31	48
%	54.84	59.62	57.83
Male	14	21	35
%	45.16	40.38	42.17
Total	31	52	83
%	37.35	62.65	100.00
	100.00	100.00	100.00
Pearson chi2(1) = 0.1817 Pr = 0.670			

Source: Own Computation (2014).

As Table 5 above shows, the sample was composed of both male and female group borrowers. Of the total sample groups 35(42.17%) were male groups and 48(57.83%) were female groups. About 14(45.16%) male groups and 17(54.84%) female groups were defaulters, while 21(40.38%) and 31(59.62%) of non-defaulters were male and female groups, respectively.

In this study, it is hypothesized that female borrowers have positive effect on repayment performance than male borrowers. However, the Chi-square statistics analysis (Chi^2 (1) = 0.1817, Pr = 0.670) shows there is

no statistically significant association between group loan repayment performance and sex. This result is in contrast to the empirical evidences which stated that female borrowers are better payers than male borrowers, taking into consideration their being more entrepreneurial, social ties and family responsibilities (Feroze et al., 2011; Kangogo et al., 2013).

6.2.2.2. LOAN REPAYMENT AND ECONOMIC FACTOR

The following Table 6 shows the association of loan repayment performance with other source of credit (i.e., an economic factor).

Table 6: Distribution of Sample Group Borrowers by Other Source of Credit

Other source of credit	Defaulter	Non defaulter	Total
Yes	9	21	30
%	29.03	40.38	36.14
No	22	31	53
%	70.97	59.62	63.86
Total	31	52	83
%	37.35	62.65	100.00
%	100.00	100.00	100.00
Pearson chi2(1) = 1.0845 Pr = 0.298			

Source: Own Computation (2014).

As Table 6 above shows, out of the total sample respondents 30(36.14%) of borrowers have responded that they had other source of credit and 53(63.86%) borrowers have responded that they had no other source of credit. About 9(29.03%) defaulter group borrowers and 21(40.38%) of the non-defaulters group borrowers had other source of credit.

In this study, it is hypothesized that where group members have other sources of credit, it has negative effect on the probability of loan repayment performance. However, the Chi-square statistics analysis (Pearson chi^2 (1) = 1.0845, Pr = 0.298) shows no statistically significant association between group loan repayment performance and other source of credit. This result is in contrast to the empirical evidences which stated that group members who have other sources of credit may feel careless in settling their loan if they decide to take no more round of loan from the same source because they can get loan from the alternative sources. This result is also in contrast to the empirical evidences which stated that when borrowers have other sources of credit, it significantly has positive effect on loan repayment performance; because borrowers who have other sources of credit use these sources to be able to settle their loan obligation in case they want to continue borrowing from the same source (Matin, 1997; Samuel, 2012; Zeller, 1998).

6.2.2.3. LOAN REPAYMENT AND GROUP CHARACTERISTICS

Group characteristics are composed of factors related to peer monitoring, social ties, screening variables, group pressure, and peer support/group solidarity. The description of these variables is provided below which indicates the association of group characteristics with defaulters and no defaulters of group borrowers in terms of loan repayment performance.

PEER MONITORING

The following Table 7 shows the association of loan repayment performance with group members knows for what purpose the other members have used the loan.

Table 7: Distribution of Sample Group Borrowers by Loan Purpose

Loan purpose	Defaulter	Non defaulter	Total
Yes	17	44	61
%	54.84	84.62	73.49
No	14	8	22
%	45.16	15.38	26.51
Total	31	52	83
%	37.35	62.65	100.00
%	100.00	100.00	100.00
Pearson chi2(1) = 8.8398 Pr = 0.003*			

*Significant at 1 percent level

Source: Own Computation (2014).

As Table 7 above shows, out of the total respondents, 61(73.49%) groups knew for what purpose the group members have used the loan and 22(26.51%) groups did not know for what purpose the group members have used the loan. About 17(54.84%) defaulter group members and 44(84.62%) non-defaulter group members knew for what purpose the members have used the loan.

In this study, it is hypothesized that the group members know for what purpose the other members have used the loan positively affect the probability of loan repayment performance. Furthermore, the Chi-square

analysis (Pearson $chi^2(1) = 8.8398$, Pr = 0.003) shows that there is a significant association between group loan repayment performance and group members know for what purpose the other members have used the loan at 1 percent significance level.

Group members know for what purpose the other members have used the loan is a proxy for peer-monitoring. If the group members know for what purpose the other members have used the loan helps the group members follow the other members to use the loan on productive activities that generate more income and helps repay their loan. Group members may use all or part of their loan for consumption or nonproductive activities that create problem on repaying loan. This indicates higher monitoring activities in the group that helps members will repay their loans in time and, therefore, the probability of loan repayment performance increases.

This finding is in conformity with the empirical evidence which stated that credit diverted to non-productive uses have a negative impact on repayment performance or increase credit default (Samuel, 2012).

Consequently, it is possible to say that existence of group members know for what purpose the other members have used the loan proves to be positive and meaningfully contribute to improve the group loan repayment performance.

The following Table 8 shows the association of loan repayment performance with group members know the monthly sales of the group members.

Table 8: Distribution of Sample Group Borrowers by Monthly Sales

Know monthly sales	Defaulter	Non defaulter	Total
Yes	4	19	23
%	12.90	36.54	27.71
No	27	33	60
%	87.10	63.46	72.29
Total	31	52	83
	37.35	62.65	100.00
	100.00	100.00	100.00
Pearson chi2(1) = 5.4161 Pr = 0.020**			

**Significant at 5 percent level

Source: Own Computation (2014).

As Table 8 above shows, 23 (27.71 %) group members knew the monthly sales of the other group members and 60(72.29%) group members did not know the monthly sales of the other group members. About 4(12.90%) of the defaulter group members and 19(36.54%) of non-defaulter group members knew the monthly sales of the other group members.

In this study, it is hypothesized that the group members know the monthly sales of the other group members positively affect the probability of loan repayment performance. The Chi-square analysis (Pearson $chi^2(1) = 5.4161$, Pr = 0.020) shows that there is significant association between group loan repayment performance and group members know the monthly sales of the other group members at 5 percent significance level.

The variable "group members know monthly sales of the other group members" is a proxy for peer-monitoring which indicates higher monitoring activities in the group. If group members know the monthly sales of the other group members, it helps group members to have information about members' monthly income. Such information may help group members to enforce repayment in case a group member fails to pay her/his obligations or help group members face difficulty of repayment. Therefore, this increases the probability of higher repayment performance of the group. Moreover, this result is in agreement with the empirical evidences which stated that the knowledge one member has of the weekly sales of other members is positively related to repayment performance (Habteab et al., 2004; Wydick, 1999).

The following Table 9 shows the association of loan repayment performance with the presence of an internal rules and regulations.

Table 9: Distribution of Sample Group Borrowers by Internal Rules and Regulation

Rules &Regulation	**Defaulter**	**Non defaulter**	**Total**
Yes	29	49	78
%	93.55	94.23	93.98
No	2	3	5
%	6.45	5.77	6.02
Total	31	52	83
	37.35	62.65	100.00
	100.00	100.00	100.00
Pearson chi2(1) = 0.0160 Pr = 0.899			

Source: Own Computation (2014).

The presence of an internal rules and regulation is another proxy for peer-monitoring which help the members fulfill their obligations on time by having rules like penalty imposed if member defaults. As Table 9 above indicates, out of the total sample respondents, 78(93.98%) groups had an internal rules and regulation and 5(6.02%) groups had not rules and regulation on how to run the group. About 29(93.55%) of the defaulters groups and 49 (94.23%) of non-defaulter groups had rules and regulation.

In this study, it is hypothesized that the group members have internal rules and regulations positively affect the probability of loan repayment performance. Even though the majority of groups have rules and regulation, the Chi-square analysis (Pearson chi^2 (1) = 0.0160, Pr = 0.899) shows that there is no significant association between group loan repayment performance and the presence of an internal rules and regulation. This result is in contrary to the empirical evidence of Zeller (1996) and Bassem (2008) which stated that the existence of rules and regulations in a group helps force defaulting borrowers to repay on time and increase the probability of loan repayment performance.

Though most of the groups have internal rule and regulation, from the above result, it is possible to conclude that the presence of an internal rule and regulation in a group has not effect on probability of repaying loan successfully, this is may be due to the group may not exercise the rules and regulation properly.

The following Table 10 indicates the association of loan repayment performance and group members' regularly visits other group members. Out of the total sample respondents 62(74.70%) group members regularly visited other group members and 21(25.30%) group members did not visit other group members. About 19(61.29%) of the defaulter group members and 43(82.69%) non-defaulter group members regularly visited other group members.

In this study, it is hypothesized that the group members regularly visit other group members positively affect the probability of loan repayment performance. Moreover, the Chi-square analysis (Pearson $chi^2(1)$ = 4.7070, Pr = 0.030) shows that there is significant association between group loan repayment performance and group members regularly visits other group members at 5 percent significance level.

The variable group members regularly visits other group members is another monitoring variable, which indicates higher monitoring activities in the group. Since the more group members visits other group members, the higher is the opportunity to have information of each other, which may help the group takes corrective measures to reduce repayment problem of individual group members and, therefore, increases loan repayment performance. This result is similar to the findings of Feroze et al. (2011) and Al-Azzam and Sudipta (2007) which stated that regular visit among group members reduce loan delinquency rate.

From this result, it can be summarized that group members' regularly visits other group members have positive effect on loan repayment performance as expected. This is may be because group members have the chance of higher monitoring activities in the group which increases the loan repayment performance of the group.

Table 10: Distribution of Sample Group Borrowers by Group Members Regularly Visits

Members visits group members	**Defaulter**	**Non defaulter**	**Total**
Yes	19	43	62
%	61.29	82.69	74.70
No	12	9	21
%	38.71	17.31	25.30
Total	31	52	83
%	37.35	62.65	100.00
	100.00	100.00	100.00
Pearson chi2(1) = 4.7070 Pr = 0.030**			

**Significant at 5 percent level

Source: Own Computation (2014).

PEER SUPPORT

The following Table 11 shows the association of loan repayment performance and group members' help.

Table 11: Distribution of Sample Group Borrowers by Group Members' Help

Group help	Defaulter	Non defaulter	Total
Yes	8	24	32
%	25.81	46.15	38.55
No	23	28	51
%	74.19	53.85	61.45
Total	31	52	83
%	37.35	62.65	100.00
%	100.00	100.00	100.00
Pearson chi2(1) = 3.3942 Pr = 0.065* **			

***Significant at 10 percent level

Source: Own Computation (2014).

Group members' help one another in times of need indicate the existence of peer support in the group. As Table 11 above reported, out of the total sample respondents, 32(38.55%) group members helped one another in times of need and 51(61.45%) members did not help one another in times of need. About 8(25.81%) of the defaulter group and 24(46.15%) of the non-defaulter group members helped one another in times of need.

In this study, it is expected that the existence of group members help one another positively affects the probability of repayment performance. Moreover, the Chi-square analysis (Pearson $chi^2(1) = 3.3942$,Pr = 0.065) shows that there is significant association between group loan repayment performance and group help at 10 percent significance level.

Group members' help one another in times of need indicates the existence of peer support for group member/members who has/have problem not to repay on time and, therefore, the probability of loan repayment performance increases. This result is similar to the empirical evidence of Matta (2004) who found that loan repayment performance was increased by group help. But, it is in contrast to the findings of Feroze et al. (2011) which stated that peer support was insignificant.

Therefore, it is possible to say that the existence of help among group members at the times of need or difficulty proves to be positive and meaningfully contribute to improve the group loan repayment performance.

SCREENING VARIABLE

The following Table 12 indicates the association of loan repayment performance and group rejected a borrower who would like to join the group. The variable group has rejected borrowers who would like to join the group indicates screening activities in the group before the group was formed since group members may have rejected non creditworthy borrowers. As Table 12 below indicates, out of the total sample respondents, 24(28.92%) of groups have rejected borrowers who would like to join the group and 59(71.08%) of groups have not rejected borrowers who would like to join the group. About 8(25.81%) of the defaulter groups and 16(30.77%) of non-defaulter groups have rejected borrowers who would like to join the group.

In this study, the variable group has rejected borrowers who would like to join the group is expected to have a positive effect on the probability of repayment performance. However, the Chi-square analysis (Pearson chi^2 (1) = 0.2327, Pr = 0.630) shows that there is no significant association between group loan repayment performance and screening variable, i.e., group rejected a borrower who would like to join the group.

This result is in contrast with the empirical finding of Bassem (2008) who stated that the good choice of borrowers appears as the key for success of the loan repayment and the variable the group rejects a borrower who wants to join it (selection) conformed its positive impact in the improvement of the group repayment performance. Besides, the empirical study of Zeller (1998) confirms with Bassem (2008) who supports the positive role of the selection on the repayment performance. And this is also in contrast with the empirical evidence of Al-Azzam and Sudipta (2007) which stated that loan delinquency is reduced by screening.

Therefore, the insignificant association between group screening and loan repayment performance may imply negligence in selecting creditworthy borrowers due to fear of conflicts and its negative social consequences; for the fact that the group members are from the same Kebele or they may not have detailed information about each other though they are from the same Kebele.

Table 12: Distribution of Sample Group Borrowers by Group Screening

Group reject	Defaulter	Non defaulter	Total
Yes	8	16	24
%	25.81	30.77	28.92
No	23	36	59
%	74.19	69.23	71.08
Total	31	52	83
%	37.35	62.65	100.00
%	100.00	100.00	100.00
Pearson chi2(1) = 0.2327 Pr = 0.630			

Source: Own Computation (2014).

SOCIAL TIES

The following Table 13 shows the association of loan repayment performance and group members knew the other group members before the group was formed.

Table 13: Distribution of Sample Group Borrowers by Group Social Tie

Group member knew before the group was formed	Defaulter	Non defaulter	Total
Yes	20	42	62
%	64.52	80.77	74.70
No	11	10	21
%	35.48	19.23	25.30
Total	31	52	83
%	37.35	62.65	100.00
%	100.00	100.00	100.00
Pearson chi2(1) = 2.7146 Pr = 0.099* **			

***Significant at 10 percent level

Source: Own Computation (2014).

The variable members knew the other group members before the group was formed is a proxy for social ties that indicates the existence of social ties among group members and such information may help group members to screen and monitor each other's behavior before group formation and to use social sanctions against delaying members, which helps to mitigate repayment problems.

As Table 13 above reported, out of the total sample respondents, 62(74.70%) group members knew the other group members before the group was formed and 21(25.30%) group members did not know the other group members before the group was formed. About 20(64.52%) of the defaulter group members and 42(80.77%) of non-defaulter group members knew the other group members before the group was formed.

Group members knew the other group member before the group was formed is expected to have a positive effect on the probability of repayment performance. Furthermore, the Chi-square analysis (Pearson $chi^2(1) = 2.7146, Pr = 0.099$) shows that there is significant association between group loan repayment performance and group members knew the other group members before the group was formed at 10 percent significance level.

This result is similar to the findings of Al-Azzam and Sudipta (2007) and Zeller (1996) who found that social ties reduce the probability of loan delinquency (loan repayment problem).But, it is in contrast with the empirical evidence of Habteab et al. (2004) who found that social ties are statistically insignificant in loan repayment performance.

Generally, from this result, it can be summarized that group members knew the other group members before the group was formed has positive impact on group loan repayment performance. This is may be due to the fact that having adequate information about the borrower help group members to screen and monitor each other's behavior before group formation and helps to mitigate repayment problems.

The following Table 14 shows the association of loan repayment performance and group members' place of born**.** Members' place of born is a proxy for social ties. The more group members same place of born, the stronger social ties among group members and help group members to screen and monitor each other's behavior before group formation and to use social sanctions against delaying members, which helps to mitigate repayment problems.

As Table 14 below reveals, out of the total sample respondents, 58(69.88%) group members were born in the same area (Mekelle) and the remaining 25 (30.12%) group members have been in Mekelle for greater than ten years. About 24(77.42%) of the defaulter group members and 34(65.38%) of non-defaulter group members were born in the same area (Mekelle).

Group members' same place of born is expected to have a positive effect on the probability of repayment performance. Even though majority of the group members born in the same place, the Chi-square analysis (Pearson chi^2 (1) =1.3364, Pr = 0.248) shows no statistically significant association between loan repayment performance and members place of born. It is inconsistent with the study result of Hermes et al. (2005) who found that group members from the same place or short physical distance among members help to reduce misuse of loans by individual group members and improve loan repayment performance. It is also inconsistent with the empirical evidence of Zeller (1998) who found that groups with stronger social ties show higher repayment rates.

From this result, it can be summarized that the relationship between group loan repayment performance and group members' place of born have no effect on the probability of increasing loan repayment performance. This might be due to the fact that people know each other very well and have close social ties may be less eager to pressure for repayment, for example, family or friends may be less eager to use pressure for fear of losing family or friends.

Table 14: Distribution of Sample Group Borrowers by Members Place of Borne

Members place of born	**Defaulter**	**Non defaulter**	**Total**
Born in Mekelle	24	34	58
%	77.42	65.38	69.88
Above 10 years in Mekelle	7	18	25
%	22.58	34.62	30.12
Total	31	52	83
%	37.35	62.65	100.00
	100.00	100.00	100.00
Pearson chi2(1) = 1.3364 Pr = 0.248			

Source: Own Computation (2014).

The following Table 15 shows the association of loan repayment performance and group members have been a member of another group**.**

Table 15: Distribution of Sample Group Borrowers by Member of Another Group

Member of another group	**Defaulter**	**Non defaulter**	**Total**
Yes	7	20	27
%	22.58	38.46	32.53
No	24	32	56
%	77.42	61.54	67.47
Total	31	52	83
%	37.35	62.65	100.00
%	100.00	100.00	100.00
Pearson chi2(1) = 2.2317 Pr = 0.135			

Source: Own Computation (2014).

Being member of another group is another proxy for social tie. If group members have been a member of another group, it increase social ties among group members and help group members to screen and monitor each other's behavior before group formation and to use social sanctions against delaying members, which helps to mitigate repayment problems. Based on the above Table 15, out of the total sample respondents, 27(32.53%) group members were member of another group and the remaining 56(67.47%) group members were not member of another group. About 7(22.58%) of the defaulters group members and 20(38.46%) of non-defaulters group members were member of another group.

Group members have been a member of another group is expected to have a positive effect on the probability of repayment performance. However, the Chi-square analysis (Pearson chi^2 (1) = 2.2317, Pr = 0.135) shows that no statistically significant association between loan repayment performance and group members have been a member of another group. This result is in contrast to the findings of Habteab et al. (2004) who found that group contains one or more people who have been a member of another group has statistically insignificant effect on loan repayment problem.

This implies that the group may not analyze (scan) past performance of the borrowers while screening credit worthy member which helps to mitigate loan repayment problems.

PEER-PRESSURE

The following Table 16 shows the association of loan repayment performance and group members put pressure on other members to repay. In this study, it is hypothesized that peer pressure positively affects the probability of repayment performance. Peer pressure exercised by group members on the defaulting member/members helps in alleviating moral hazard behavior of the borrowers, reduces the number of days of later repayment, and improves

the group repayment performance.

As indicated in the Table 16 below, out of the total sample respondents, 58(69.88%) group members reported that they applied pressure on defaulting group members and the remaining 25(30.12%) group members did not put any pressure on defaulting group members. About 12 (38.71%) of the defaulter group members and 46 (88.46%) of non-defaulter group members put pressure on defaulting members.

The Chi-square analysis (Pearson chi^2 (1) = 22.8399, Pr = 0.000) shows that there is statistically significant association between loan repayment performance and peer pressure at 1 percent significance level. This result is supported by the empirical findings of Al-Azzam and Sudipta (2007), Bassem (2008) and Kangogo et al. (2013), who found that peer pressure on defaulting members is statistically significant and reduce the probability of loan repayment problem.

Table 16: Distribution of Sample Group Borrowers by Group Pressure

Put pressure	Defaulter	Non defaulter	Total
Yes	12	46	58
%	38.71	88.46	69.88
No	19	6	25
%	61.29	11.54	30.12
Total	31	52	83
%	37.35	62.65	100.00
%	100.00	100.00	100.00
Pearson chi2(1) = 22.8399 Pr = 0.000*			

*Significant at 1 percent level

Source: Own Computation (2014).

The following Table 17 shows the association of loan repayment performance and group members feels against defaulting members**.**

It is hypothesized that as group members feel against defaulting member/members, group members have strong desire for repayment. As Table 17 above shows, out of the total sample respondents, 69(83.13%) feel very angry and 14(16.87%) feel neutral (worried) against defaulting members. About 24 (77.42%) of the defaulter group members and 45 (86.54%) of non-defaulter group members feel very angry against defaulting members.

Table 17: Distribution of Sample Group Borrowers by Members Feels Against Defaulting Members

Member Feels	Defaulter	Non defaulter	Total
Very angry	24	45	69
%	77.42	86.54	83.13
Neutral(worried)	7	7	14
%	22.58	13.46	16.87
Total	31	52	83
%	37.35	62.65	100.00
%	100.00	100.00	100.00
Pearson chi2(2) = 1.1518 Pr = 0.283			

Source: Own Computation (2014).

Even though majority of groups feel very angry against defaulting members, the Chi-square analysis (Pearson chi^2 (1) = 1.1518, Pr = 0.283) shows no statistically significant association between loan repayment performance and members feels against defaulting members. Habteab et al. (2004) also found that group members feels against defaulting members which is a proxy for peer-pressure affects the loan repayment performance is statistically insignificant.

This result implies that those group members feel very angry against defaulting members may not be sympathetic towards the defaulting members who might result in conflict and demotivation within the group; and hampers the loan repayment performance.

The following Table 18 shows the association of loan repayment performance and penalty**.**

Table 18: Distribution of Sample Group Borrowers by Penalty

Penalty	Defaulter	Non defaulter	Total
Yes	12	47	59
%	38.71	90.38	71.08
No	19	5	24
%	61.29	9.62	28.92
Total	31	52	83
%	37.35	62.65	100.00
%	100.00	100.00	100.00
Pearson chi2(1) = 25.2313 Pr = 0.000*			

*Significant at 1 percent level

Source: Own Computation (2014).

Penalty is also another proxy for peer-pressure. It is hypothesized that as group members imposed penalty, it improves the probability of repayment performance. Due to fear of penalty (i.e., he/she will be denied subsequent loans, he/she will have to leave the group, and he/she will be reported to the credit officer) group members respect their contract, reduces the number of days of later repayment, and improve repayment performance of a group.

As Table 18 above shows, out of the total sample respondents, 59(71.08%) groups have penalty for defaulting members within the group and the remaining24 (28.92%) groups did not have any penalty within the group. About 12 (38.71%) of the defaulter groups and 47(90.38%) of non-defaulter groups had penalty within the group.

In this study, majority of groups had penalty against defaulting members. Furthermore, the Chi-square analysis (Pearson chi^2 (1) = 25.2313, Pr = 0.000) shows that there is a significant association between loan repayment performance and penalty on defaulting members at 1 percent significance level. This finding is similar with the finding of Al-Azzam and Sudipta (2007), Bassem (2008) and Kangogo et al. (2013) who found that group penalty significantly and positively affects loan repayment performance.

6.2.2.4. LOAN REPAYMENT AND INSTITUTIONAL FACTOR

The following Table 19 shows the association of loan repayment performance and loan officer visit**.**

As Table 19 above shows, out of the total sample respondents, 35(42.17%) groups were visited by loan officer and the remaining 48 (57.83%) groups were not visited by loan officer. About 12 (38.71%) of the defaulter groups and 23(44.23%) of non-defaulter groups were visited by loan officer.

Table 19: Distribution of Sample Group Borrowers by Loan Officer Visit

Loan officer Visit	Defaulter	Non defaulter	Total
Yes	12	23	35
%	38.71	44.23	42.17
No	19	29	48
%	61.29	55.77	57.83
Total	31	52	83
%	37.35	62.65	100.00
%	100.00	100.00	100.00
Pearson chi2(1) = 0.2428 Pr = 0.622			

Source: Own Computation (2014).

Loan officer visit to group members indicates a continuous follow up to the group members' proper utilization of loans after the loan have already distributed to individual members. Thus, it is hypothesized that loan officer visit helps borrowers monitor their obligations and improve proper utilization of the loan thereby improving repayment performance. However, the Chi-square analysis (Pearson chi^2 (1) = 0.2428, Pr = 0.622) shows that there is no significant association between loan repayment performance and loan officer visits. This result is in contrast to the empirical evidence of Kangogo et al. (2013) who found that loan officer visit is statistically significant to increase probability of loan repayment performance.

This implies that loan officers' visit and their monitoring and evaluation measures may not be enforced by the concerned higher body.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1. CONCLUSIONS

The repayment performance of group borrowers is one element of measuring effectiveness of the loan released by microfinance institutions. Repayment performance of the group borrowers is affected by several factors such as the group borrower's characteristics, personal characteristic, economic factor and institutional factor. These factors are believed to have either positive or adverse effect on the loan repayment performance of the group

borrowers. Some of the factors functioned as per the prior expectation, whereas others were determined to be insignificant or contrary to prior expectation.

Hence, this study was conducted to investigate the factors influencing group loan repayment performance in Dedebit Credit and Savings Institution (DECSI), Mekelle, Tigray. All of the 15 explanatory variables were analyzed by using the Chi-square test statistics. Out of which seven variables (loan purpose, group members know the monthly sales of the group members, group members' regularly visits other group members, group members' help, group members knew the other group members before the group was formed, group members put pressure on other members to repay, and penalty) were found to have statistically significant association with loan repayment performance and the remaining eight variables (sex, other source of credit, the presence of an internal rules and regulations, group rejected a borrower/s who would like to join the group, group members' place of born, group members have been a member of another group, group members feels against defaulting members, and loan officer visit) were found to have statistically insignificant association with loan repayment performance.

Based on the research findings, the following conclusions are drawn:

- About 52(63%) groups were non defaulter, i.e., they repay their loan fully on time, and the remaining 31(37 %) group respondents were defaulter.
- The existence of group members know for what purpose the other members have used the loan proves to be positive and meaningfully contribute to improve the group loan repayment performance. This is due to the fact that those group members know for what purpose the other members have used the loan helps the group members follow the other members to use the loan on productive activities that generate more income and helps repay their loan on time.
- The existence of group members know monthly sales of the other group members revealed statistically significant association with loan repayment performance. Group members know the monthly sales of the other group members are most probably repaying loan successfully as compared to defaulter groups and positively related to group loan repayment performance.
- The factor group members' regularly visits other group members have positive effect on loan repayment performance. This is may be because of the facts that it leads to higher levels of information symmetry and monitoring activities among group members, discuss their business activities and solve problems of group members who have repayment difficulty.
- The existence of help among group members at the times of need or difficulty proves to be positive and meaningfully contribute to improve the group loan repayment performance.
- The factor group members knew the other group members before the group were formed has positive impact on group loan repayment performance. This is may be due to the fact that having adequate information about the borrower help group members to screen and monitor each other's behavior before group formation and helps to mitigate repayment problems.
- The group members put pressure on other member/s to repay loan has a positive effect as the result indicated higher non default rate as compared to the defaulter groups.
- The group borrowers who imposed penalty against defaulting members are most probably repaying loan successfully as compared to the defaulter groups and, hence, positively related to group loan repayment performance.

7.2. RECOMMENDATIONS

The default rate of DECSI microfinance institution is increasing from time to time. Hence, It is important to consider what sorts of interventions might be considered to solve repayment problem of the sector that determines financial sustainability of the DECSI microfinance institution in order to increase the lending capacity and new applicants access to credit. Thus, based on the conclusion of the research findings, the study has forwarded the following recommendations:

- ✓ DECSI should encourage to loan officers to continuously follow up and visit borrowers to evaluate the loan utilization, helps borrowers monitor their obligations and improve proper utilization of the loan and loan officers promote borrowers to better solve their repayment problems, thereby, improving repayment performance.
- ✓ DECSI should also encourage by organizing either the loan officer or the head of each group to have enough information on monthly sales of borrowers because information on monthly sales of borrowers helps the group to make decision to help, pressure or impose penalty on defaulting borrower/s that ensures higher repayment performance and reduce willful defaulters.
- ✓ DECSI should take a pro-active role in organizing and facilitating the group members to regularly visit or meet other group members and should also be mandatory and more formal nature where members can discuss their business activities and any problems they might be having.
- ✓ DECSI should encourage group members to help one another when an unforeseen or uncontrollable

situation arises rather than feel uncomfortable (anger) with their group member/s to collect the unpaid loan. This could also lead to improved loan repayment performance.

- ✓ The screening criterion should be revised and DECSI's loan officers should have to play major role directly helping the group formation in screening and selection of applicants. This is because DECSI's loan officers have long experience for effective screening and select creditworthy borrowers.
- ✓ DECSI should have to play major role directly by screening applicants from same area or community that helps information asymmetry among group borrowers and helps to have better information to monitor and more easily pressure for repayment.
- ✓ DECSI's credit officers should have to advocate borrowers put pressure and imposed penalty against will full defaulting borrower/s because in this empirical study the two factors ensured higher repayment performance and reduce delinquency.

7.3. LIMITATION AND SUGGESTION FOR FURTHER RESEARCH

There may be several factors that influence group loan repayment performance besides the factors that are specified in this study which hamper ability of group borrowers to fulfill their loan repayment obligations as per the repayment periods contract. These factors include experience of group borrowers in the sector, group harmony, loan frequency, interest rate, loan amount or size, household size, personal as well as market shock, and dynamic incentives. In addition, addressing the group representative only for the study may affect the quality or reliability of the study because of biasness even if the assumption was that the representative is the one who can represent on behalf of all group members.

Thus, further research should be carried out by addressing the additional factors and by using sample members of the group borrowers, rather than only representatives, to determine the factors influencing group loan repayment performance in order to provide results that can be generalized and give accurate policy recommendations.

7.4. MANAGERIAL IMPLICATIONS

The research output will be helpful for DECSI to evaluate its group lending criteria and revise it accordingly in favor of credit worthy borrowers so as to alleviate loan repayment constraints; and policy makers to formulate successful credit policies and programs that enable them to allocate scarce financial resources to the development of basic sectors of the economy. Besides, it contributes to the existing empirical literature on the area and will also be used as an input for further studies.

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