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Determinants of MFIs Group Loan Repayment Performance: A Case of MSEs' Service Sector in Mekelle City, Ethiopia

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Abstract
Dedebit Credit and Saving Institution (DECSI) has been facing increase in loan default rate from time to time on group owned MSEs for the past five years. Thus, the aim of this study was to identify and analyze the factors that influence group loan repayment performance of the clients of DECSI operating in the service sector as group owned MSEs. This study applied descriptive and explanatory research approach, cross-sectional primary data, stratified sampling techniques, and finally employed binary logistic regression model to identify and analyze the impact of each independent variable on the loan repayment performance. A total of eleven explanatory variables were included in the binary logit regression model test. The binary logistic regression result revealed that among the variables hypothesized to affect loan repayment social ties, business experience, group formation (screening), internal rule and regulation, saving, suitable loan repayment period (loan term), and supervision have statistically significant effect on loan repayment of the group borrowers. Therefore, among others, DECSI should encourage self-screened group borrowers; enhance saving programs, and revise loan term by considering the time required for the service sector to generate income, and regular supervision for borrowers should be in place to increase loan repayment performance of the clients.
Keywords: Binary Logit, DECSI, Determinant, Ethiopia, Group Loan, Mekelle, MFIs, MSEs, Service Sector.

1. INTRODUCTION

Most microfinance institutions provide collateral-free small loans to low income households. These loans are generally expected to use for self-employment and income generating activities (Kono & Takahashi, 2010). Microfinance can be a critical element of an effective poverty reduction strategy (Wolday, 2000).

Microfinance institution has grown in prominence since Mohammad Yunus started the Grameen Bank project in 1976. The Grameen bank of Bangladesh, which was founded by Mohammed Yunus, was one of the first microfinance institutions (MFIs). Mohammad Yunus came up on a group of villagers that were unable to pay off their debt to money lenders. He found that he was able to lend them what they needed out of pocket. He started lending services that avoid high interest rate that the traditional money lenders charged (Cabraal, 2006).

The development of microfinance institutions in Ethiopia is a recent phenomenon. The proclamation, which provides for the establishment of microfinance institutions, was issued in July 1996. Since then, various microfinance institutions have legally been registered and started delivering microfinance services (Wolday, 2000).

DECSI evolved from a program established by the Relief Society of Tigray (REST), a local NGO founded in 1978. In 1993, REST conducted a socio-economic study on rural poverty in Tigray that indicated an unmet demand for finance by the rural poor. Based on this study, the Rural Credit Scheme in Tigray (RCST) was established under REST. Dedebit Credit and Savings Institution (DECSI) was established and registered in 1997 as a microfinance institution (MFI) providing credit and savings services for the rural and urban poor in the Tigray region of Ethiopia. It is one of the most famous MFIs in Ethiopia (Temesgen, 2014).

There are eleven types of loan (products) in DECSI. The size and loan period varies depending on the type of loan. Loan is provided either in group guarantee, individual with third party guarantee or through collateral. The Major types of DECSI's loan are regular loan, agricultural loan, civil servant loan, rural package (household centered) loan, urban package loan, business loan, housing loan, loan for graduates of technical and vocational education training, loan for university and college graduates, equipment leasing and cooperatives. There are many Micro and Small Enterprises in Tigray (MSEs). The most common MSEs financed by DECSI are manufacturing, services and agriculture (Temesgen, 2014).

An extensive effort to reduce unemployment in the city of Mekelle is going on by the

government through organizing those unemployed communities by assuming it is not an option rather it is very essential. Government is taking major role on how those organized peoples can access to loan from Dedebit Credit and Saving Institution (DECSI) microfinance institution.

Microfinance plays vital role in poverty reduction in developing countries. Loans taken from lending institutions vary from country to country, region to region and sector to sector. But most of MFIs in developing countries share the one common characteristic that is suffer from a considerable default rate (Kashuliza, 1993). Due to this reason, a study is needed in order to identify the determinant factors of group loan repayment performance.

2. LITERATURE REVIEW

Microfinance is defined as the attempt to improve access to small deposits and small loans for poor households neglected by banks or is defined as the provision of financial services to the poor involving small deposits and loans and use peer monitoring and joint liability structure to overcome the screening, monitoring and enforcement problems commonly encountered by formal lending institutions (Schreiner & Colombet, 2001).

Microfinance can be also defined as financial instruments, such as loans, savings, insurance and other financial products that are tailored only to the poor. Microfinance is created in the economy for the economic benefit of the poor and to alleviate poverty. Microcredit is the lending side of microfinance. Microcredit loans help the poor to be involved in income generating activities that allow them to accumulate capital and improve their standard of living (Hanim, Gilbert, & Gan, 2007).

Since 1970s, group lending programs have been promoted in many developing countries. The key feature of group lending is joint liability. This means all group members are treated as being in default if any one member of the group does not repay his/her loan. Therefore, each member is made responsible for repayment of loans of his or her peers (Besley & Coate, 1995). Most schemes give subsequent credit only if the group has fully repaid its previous loan. Loan under joint liability shows the threat of losing access to future credit incites members to perform various functions, including screening of loan applicants, monitoring the individual borrower's efforts, and enforcing repayment of their peers' loans (Zeller, 1996).

In analyzing Joint Liability Lending Institutions (JLLIs), economists have agreed that joint liability alleviates the four main problems (i.e., adverse selection, moral hazard, costly audits and enforcement) faced by formal credit institutions that lend to poor borrowers who cannot offer much in the way of collateral (Ghatak & Guinnane, 1999).

2.1. EMPIRICAL STUDIES ON LOAN REPAYMENT PERFORMANCE IN ETHIOPIA

Retta (2000) has examined loan repayment performance of group borrowers in Addis Ababa. His finding was frequency of loan, supervision, suitability of repayment period and other income sources are found to encourage repayment hence reduce the probability of loan default.

Abreham (2002) carried a study on the loan repayment and its determinants in small-scale enterprise financing in Ethiopia around Zeway area. His finding was education and work experience related economic activities before the loan are enhancing loan repayment. While extended loan repayment period influence the repayment performance negatively. In terms of gender composition 12.7% are females while the rest 87.3% are male borrowers. The mean loan-rationing ratio is larger for males while the mean loan recovery rate is less than female borrowers. The proportion of defaulters is 61.5% for females and 69.7% for males. Female borrowers are better payers relative to males. This supports the hypothesis that females feel more responsibility for their family than males.

Jemal (2003) analyzed the microfinance repayment performance of Oromia Credit and Saving Institution (OCSI) in Kuyu, Ethiopia. According to his finding, gender, loan size and number of dependants are negatively related to loan repayment. On the other hand, age was found to be positive. Income from activities financed by loan, repayment period suitability and loan supervision are positively and significantly related to loan repayment performance. Moreover, loan diversion is significant and negatively related to loan repayment rate. The negative sign implies that the use of diverted funds for non-income generating purposes.

Berhanu (2005) studied the determinants of loan repayment performance of smallholder farmers in North Gondar, Ethiopia. His finding revealed that experience and numbers of contacts were found to significantly influence the repayment performance. But, loan amount was found to have insignificant effect on loan repayment performance.

Fikirte (2011) conducted a study on the determinants of loan repayment performance in Addis Credit and Saving Institution (ACSI). She found that age has significant positive effect on the loan repayment performance which means as age increased; the probability of being defaulter is decreased. This implies that the borrowers are more aware on financial management and they feel responsibility as they get elder but education and business experiences had no significant effect on the probability of being defaulter. In the group lending female borrowers have performed worse loan repayment performance than male. Moreover, the percentage of

female defaulters was higher than non-defaulter.

Zelalem, Hassen, and Jema (2013) studied the determinants of loan repayment performance considering 14 explanatory variables. Among these, business experience was found to significantly influence the probability of being non-defaulter. The remaining variables like age, loan size and educational level were found to have no significant effect on the loan recovery rate.

Million, Nyikal, and Wania (2012) conducted a study on the factors affecting loan repayment performance. They found that education is an important determinant of loan repayment. An educated client is able to use modern technologies, perform farming activities based on cropping calendar, and manage resources properly. All these factors boost production, which improves loan repayment.

To summarize, training, repayment period experience and loan size are found to have positive impact on repayment performance, but some studies commented that repayment period and loan size have negative effect on the repayment rate, and other studies contended that loan size and experience have no significant effect on loan repayment performance. These show that the empirical evidences portrayed differences in their findings.

2.2. EMPIRICAL STUDIES ON LOAN REPAYMENT PERFORMANCE IN OTHER COUNTRIES

Godquin (2004) tested the explanatory power of models that attribute the performances of MFIs in terms of repayment rate to the use of group lending, social intermediation and dynamic incentives. Age, loan size, and duration showed a significant negative impact on the repayment rate but social ties and professional training of the borrower have expected positive impact on the repayment performance. According to the theory of dynamic incentives, repayment performance increased as loan size increases. The size of the loan showed expected negative sign and is significant in the specifications as in the study by Sharma and Zeller (1997). This negative sign is theoretically explained by the fact that the loan size increases the gain associated with ex-ante and ex-post moral hazard. The negative sign of the loan size of the loan could also be linked to the borrower's difficulty in repaying a larger amount over a given period (usually one year). It could be that, for a given duration, large loans do not meet the borrower's needs and are not suited to the local economy. This statement is related to the positive and significant sign of the duration of the loan throughout the specifications. Social ties inside the group had a significant and unexpected negative impact on the repayment rate. The coefficient of the age of the borrowing group at the due date has a positive and significant coefficient but female borrowers did not prove to have a significantly better repayment performance. Even though the coefficient is positive, it is not significant. It is indeed expected that the social ties and other benefits of the group, such as information-sharing, increase with the age of the group. As previously mentioned, however, the age of the group has a negative impact on repayment performance. If MFIs want to allocate larger loans to group members with whom they have an established relationship, they should also develop specific incentives for their experienced borrowers to have a better repayment performance.

Natukunda (2010) described micro finance credit lending terms and repayment performance and stated the loan sizes in most cases affect the nature of business and type of investment for the borrowers. The small loan size is often advanced by the micro finance institutions as a way of minimizing risks. However, when the clients are not given adequate funds to cater for their business needs, they tend to resort to multiple borrowing. This in turn affects their repayment and increases the risks of the loan. The respondents were divided as to whether Brac Uganda is giving them enough credit to cater for their business needs with some indicating that it was enough while others indicated that it was not. This is in line with the findings by George (2008) who indicated that sometimes the loans issued by MFIs are too small to make an impact on women's businesses. The perception of the respondents as to whether the loan period given by Brac Uganda is appropriate to their business needs indicated that members were satisfied with the loan period of five months. This concurs with Woolcock (2008), who argued that a long loan period may make the client to be extravagant and end up failing to pay back the loan. Clients taking small loans should not be given very long repayment period. From the research findings since the majority of the clients were dealing in small businesses and taking small loans, they need a short loan period for regular recapitalization.

Zeller (1996) analyzed the determinants of repayment performance of credit groups in Madagascar. His finding is groups with higher level of social cohesion have a better repayment rate. Moreover, the programs that provide saving service to their members have a significantly higher repayment rate. This result emphasizes the role of saving services for improving the performance of group credit programs. He also identified that with larger group size, the repayment performance improves. This result is in line with the hypothesized economies of scale, scope, and risk. However, it is to be noted that groups will have increasing costs of coordination, moral hazard, and free-rider problems when group size surpasses manageable levels. The optimal group size will vary with respect to socioeconomic and agro ecological conditions of the participating communities and with program characteristics.

Zeller (1996) assessed repayment performance in group-based credit programs in Bangladesh. Their hypothesis was that the bigger the group, the more imperfect are flows of information likely to be between

members. Hence, problems arising out of asymmetric information make monitoring and enforcing costly and less effective. Rates of default are therefore expected to increase with group size (+). The sign of the coefficient is positive as expected; however, it is marginally insignificant at the 10-percent level. They found that the greater the loan size, the greater the probability of the default (+).

As per empirical analysis on determinants of repayment performance in credit groups by Zeller (1998) implementation of internal rules and regulations by the group members would lead to the better repayment performance that is decrement in the cost of operations of the lender and decrement in the default rate.

Olagunju and Adeyemo (2007) have analyzed the determinants of repayment decision among small holder farmers in Southwestern State of Nigeria. The result showed that the number of visits made by loan officers to the borrowers, higher level of education, and time of loan disbursement would have a better repayment performance. Moreover, borrowers with lower number of household members would meet their repayment obligation better than those with high number of household members. And having access to business related information and providing training to the clients are increasing the loan repayment rate of the borrowers.

Woolcock (2008) observed that if the loan term is too short, the borrower fails to generate revenue to enable him/her make repayments while a longer loan term may make the client extravagant and the client may in the end fail to pay back. For successful results, the loan terms should match the cash patterns to help the client budget cash flows. He also argued that if physical collateral were a requirement for borrowing, most MFIs clientele would be unable to participate due to their extreme poverty levels. Since borrowers do not have physical collateral, MFIs focus on using social collateral via group lending. Group lending encompasses a variety of methodologies, but all are based on the principle of joint liability. In essence, the group takes over the underwriting, monitoring, and enforcement of loan contracts from the lending institution.

Goldmark (2001) indicated that under joint liability each group member is made responsible for the loan of other group members. If one defaults, the other group members are required to cover the loan from their own resources, and if they do not, they lose access to future loans. It is thus in each member's interest to ensure that the other members pay.

George (2008) argued that a large majority of the micro finance institutions were offering very short loan repayment periods without grace periods, thus straining and pressuring them to make quick repayments. The clients did not feel the immediate impact of the loan but instead they felt immense pressure to put all their earnings towards loan repayment. He further indicated that the immense pressure associated with quick loan repayment and short grace period could have led some micro entrepreneurs to sell their land in order to meet the demand for quick repayments.

Hanim et al.(2007) reported that the probability of a loan repayment problem was higher for borrowers who repaid their loans on a weekly basis. As hypothesized, a weekly loan repayment schedule posed problems for borrowers who generated a lower revenue cycle. They have also revealed that age was positive and significant. Borrowers in the 46 to 55 age group had a higher probability of having repayment problems. This finding contradicted with the hypothesis that older borrowers were more responsible in repaying their loans than younger borrowers. This could be because the borrowers in this age group might have higher financial commitments to their family and business expenses. Thus, with higher financial obligations, they could have difficulty in repaying their loans. Borrowers aged between 18 and 25 years old had a higher probability of having a problem in repaying their loans. The age group 18 to 25 years old is the youngest group among borrowers. This finding supports the argument that older borrowers would be more responsible and disciplined in repaying their loans than younger borrowers. Lack of experience in the business involved, which resulted in less income received, might be the reason that the younger group has difficulty in repaying the loan. In addition, younger borrowers are not committed to repaying their loan because they might believe that even if they default; they still can receive microcredit loans from other microfinance institutions because they have more opportunities since they are still young. They found that significant positive sign on the gender variable indicated that the probability of a loan repayment problem was higher for males than for females.

Onyeagocha and Chidebelu (2012) carried a study on determinant of loan repayment performance in Southeast State of Nigeria. They hypothesized that loan size to have a negative relationship with repayment rate. In other words, the higher the loan size given by the institution, the lower was the repayment rate of the clients. Their regression result strongly disagreed with this hypothesis. It stipulated that the higher the size of the loan to clients, the higher the repayment rate. This situation appears to be most unlikely because the amount to be repaid was relatively larger and if the loan was from development oriented institution with subsidized interest rate and little chance of repeat loans, the pressure or inclination of such clients would be to delay repayment.

Sylvester, Okpara, and Chukwudi (2013) assessed the determinants of loan repayment performance. The coefficient of age of clients was significant at 1% but negatively signed indicating that age has an inverse relationship with repayment rate. This may be as they get old, in that they take less risk and invest less but think

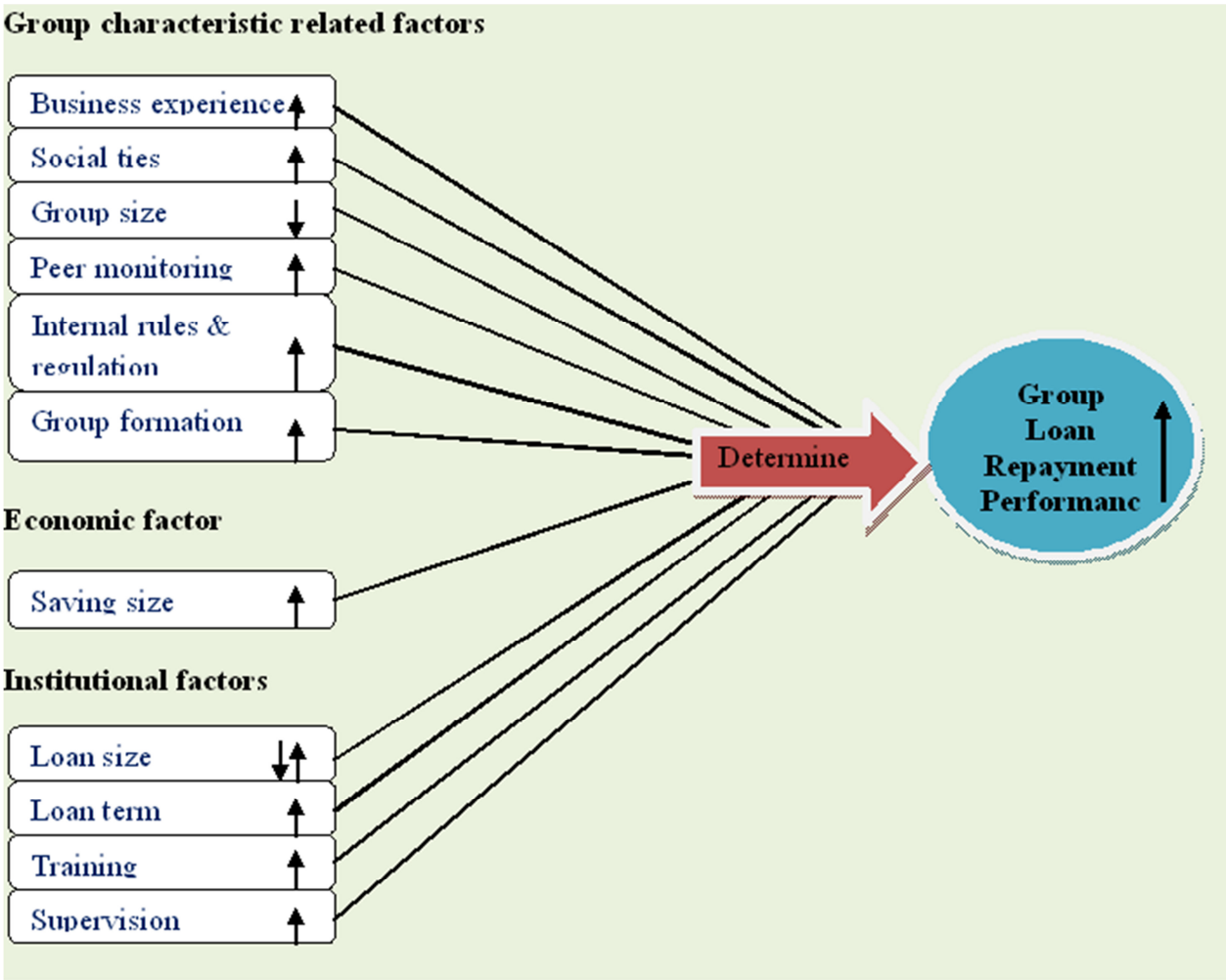
or concentrate more on their daily consumption activities without thinking of collecting loans. Experience coefficient is also significant at 1% and positively signed. This means that a client with higher business experience stands a better chance of repaying more loan than with those of lower business experience. The reason for this may be attributed to improvement in managerial skill which makes for higher profitability which in turn induces the need for more financial resources to further enhance profitability. The educational level coefficient had a positive sign indicating that education has direct relationship to the repayment rate and this showed that as level of education increases, borrowers enhances their ability to access, evaluate, and understand new production techniques. This underpins the assertion that educated farmers are more amenable to risk taking and change than the non-educated ones. The result of this study showed that the higher the literacy level of the clients, the higher will likely be non-default.

To sum up, the empirical evidences showed that there are many factors that affect the group loan repayment performance positively or negatively. In most studies described that loan size, loan term, training, social ties, saving, experiences, peer monitoring, supervision, internal rules and regulation and group formation (screening) are found to positively affect group loan repayment performance; group size is found affecting negatively the group loan repayment performance; however, in some studies loan size found to have negative impact on the repayment performance and in some other studies loan size and experiences are found to have no significant effect on group loan repayment performance. This shows the empirical evidences revealed that the impact of the factors on the loan repayment performance differs in terms of the group characteristic related factors, economic and institutional factors.

2.3. CONCEPTUAL FRAMEWORK

Figure 1 below demonstrates the conceptual framework of the relationship between the dependent variable (group loan repayment performance) and the independent variables (those factors that determine loan repayment performance) mentioned above.

Figure 1. Conceptual Framework



Source: Adapted from Jemal (2003), Fikirte (2011), and Ghatak and Guinnane(1999)

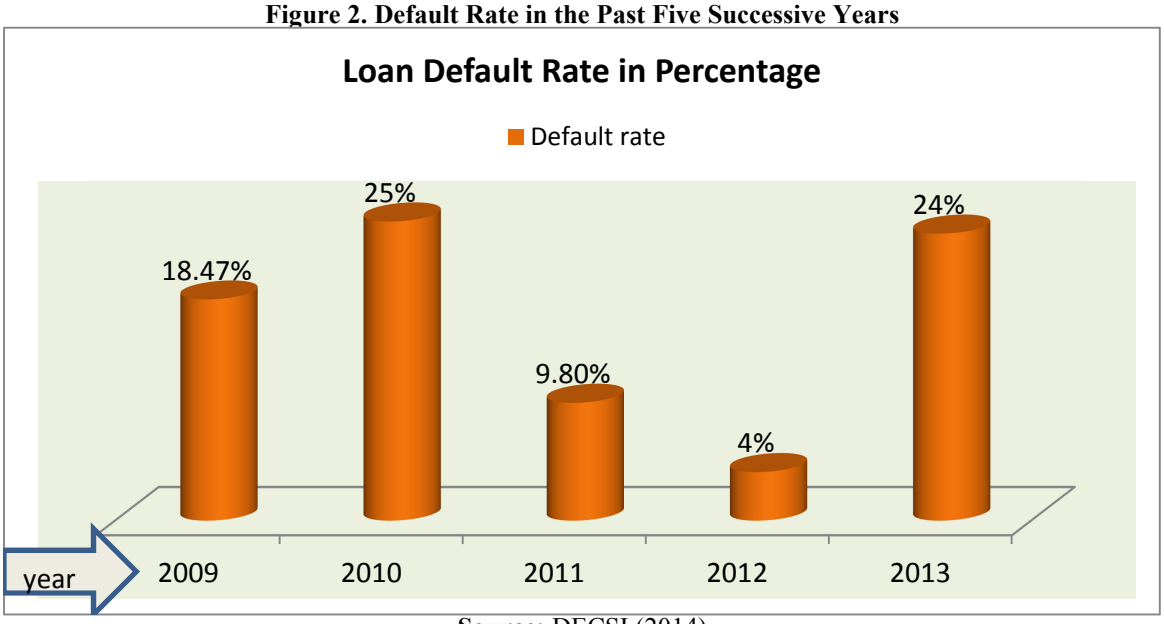
3. STATEMENT OF THE PROBLEM

Although the performance of the MFIs in Ethiopia has been impressive since their establishment, they are not free of default problems as can be observed in the following table. Hunte (1996) argued that default problems destroy lending capacity as the flow of repayment declines, transforming lenders into welfare agencies, instead of a viable financial institution. Loan default may also deny new applicants access to credit as the microfinance institutions management problems augment in direct proportion to the increasing default problem.
One indicator of effective MFIs is the loan performance of the borrowers (Sengupta & Aubuchin, 2008). High repayment rates are associated with the benefits for both MFIs and borrowers (Godquin, 2004). If there is high repayment rate, the relationship between the MFIs and their clients will be good (Bond & Rai, 2009). In contrast, if there is low repayment rate, both the borrowers and MFIs will be adversely affected. So if the MFIs are not viable because of default problem, borrowers will not have access to loan and suffer from poverty, as a result affects the development of the country as whole.

Figure 2 below indicated that average default rate of the borrowers for the last five years is about 16% which is greater than the Ethiopian National Bank (NBE) minimum requirement set for all financial institutions, i.e., <5 percent (or >95 percent expected to be collected). In 2009 the default rate was 18.47% and increased to 25% in year of 2010. Though the default rate was decreasing to 9.8% and 4% in the years of 2011 and 2012, respectively, finally it increases to 24% in the year of 2013.

Besides, the repayment performances of the group borrowers have been significantly fluctuating from time to time. Thus, whether default is random and influenced by erratic behavior or whether it is influenced by certain factors in a specific situation, needs an empirical investigation.

Figure 2. Default Rate in the Past Five Successive Years



Source: DECSI (2014)

4. OBJECTIVE OF THE STUDY

The main objective of this study was to investigate and examine the determinant factors that influence group loan repayment performance of MSEs service sector in Mekelle City. More specifically, the research has the following objectives:

- To identify the major determinant factors that influences the group loan repayment performance in DECSI.
- To examine the magnitude or marginal effect of each determinant factors on group loan repayment performance.

5. MATERIALS AND RESEARCH METHODOLOGY

This section deals with an overview of the study area and research methodology. Specifically it presents selection of the research methods that are used in this study: research approach; data type, source and collection techniques; sampling techniques; data analysis techniques, i.e., the operational definition of variables and specific model that is applied to test the literature driven hypotheses followed by the required model specification and tests.

5.1. DESCRIPTION OF STUDY AREA

The study area is Mekelle city which is located at northern part of Ethiopia, in Tigray regional state. It is located at a distance of 783 kilometers from the capital city of Ethiopia, Addis Ababa. Mekelle is the capital city of Tigray regional state. It is located at latitude and longitude of 13° 29'N, 39° 28'E, respectively, with an elevation of 2084meters above sea level. It is a city with seven sub city administrations. Based on the study conducted in 2010 by Mekelle municipality, the city had an estimated total population of 248,566; of which 120,830 were males and 127,736 were females [Mekelle City Administration (MCA), 2010].

DECSI is located in Mekelle city, the capital city of Tigray. When the institution commenced in 1994, it had branches in 8 Wereda of the region with only 31 employees. Today, it provides services from 165 functionally decentralized offices all over Tigray regional state as well as Addis Ababa and Gondar. The current number of the staff has reached 2,727. The institution delivers major types of loan like regular loan, agricultural input loam, civil servant loan, rural package loan, urban package loan, business loan, housing loan, and cooperative loan. In general, the institution operates in rural and urban Tigray catering the poorest of the poor segment of the community as farmers, youth, marginalized women, disabled veterans, TVETs, graduated students, contractors, Micro-Small Enterprises and agro-industries. Up to now, more than 8 billion Birr loan is disbursed to 3,104,769 clients, out of which 25 million loans is disbursed to 512 cooperative clients (Temesgen, 2014).

5.2. RESEARCH METHODOLOGY

5.2.1. RESEARCH APPROACH

For a similar study, Million et al.(2012) have applied descriptive approach; Paxton (1996) has applied explanatory approach; and Fikirte (2011), Jemal (2003), and Natukunda (2010) have applied both descriptive and explanatory approach. Besides, all the above researchers used a cross-sectional data. Thus, this study used a cross-sectional data, and applied descriptive approach to describe qualitative data collected through unstructured interview and explanatory approach to analyze the factors that determine loan repayment performance.

5.2.2. DATA TYPE, SOURCES, AND COLLECTION TECHNIQUE

Fikirte (2011) and Natukunda (2010) used primary data composed of qualitative and quantitative data collected through questionnaire and secondary data; and Jemal (2003) and George (2008) used primary data only composed of qualitative and quantitative data collected through questionnaire and interview. Therefore, in order to assess the determinants of group loan repayment performance, this study used primary data comprising qualitative and quantitative data obtained by unstructured interview from four management team and six loan officers of DECSI and by structured questionnaire from DECSI clients.

5.2.3. SAMPLE DESIGN

For a similar study, Fikirte (2011) and Natukunda (2010) used a stratified sampling technique to select sample respondents; Jemal (2003) and Godquin (2004) used simple random sampling, and George (2008) used multistage sampling method to select sample respondents.

Currently DECSI Mekelle branch has three sub-branches (loan centers) but the study focused on the two sub-branch (service delivery centers) selected based on default rate of the loan centers. The target populations of the two loan centers were 7 group loaners engaged in service sector consisting of 122 group members. A simplified formula (Yamane, 1967) was applied to determine the sample size at 90% level of significance.

$$n = \frac{N}{1+N(e)^2} \text{---------- (1)}$$

Where N = population size; e = the level of precision.

The sample size was:

$$n = \frac{122}{1+122(0.1)^2} = n = \frac{122}{2.22} = 55.$$

Therefore, the study used stratified proportionate random sampling to select the 55 sample respondents from the two loan centers.

TABLE 1. DETERMINATION OF PROPORTIONATE SAMPLE SIZE

(a) Sub-branch	(b) Activities	(c) Population in a group	(d) = $\frac{c*55}{122}$ Sample size
North	**Janitor**	**65**	**29**
	Car wash	**10**	**4**
	Café	**4**	**2**
	Service	**18**	**8**
South	**Recreation**	**10**	**4**
	Restaurant	**9**	**4**
	Internet	**10**	**4**
Total		**122**	**55**

Source: DECSI's North and South Branch office Report (2014)

The sample size accounts for about 45% of the population and this implies the sample respondents represent the target population.

5.2.4. METHOD OF DATA ANALYSIS

For a similar study, Fikirte (2011) used descriptive statistics such as mean, percentage, standard deviation and frequency distribution in order to analyze the qualitative data; and the logistic regression model to analyze the effect and magnitude of each explanatory variable on the dependent variable. Natukunda (2010) and Paxton (1996) also used descriptive statistics like minimum, maximum, mean, standard deviation, frequency, and percentage for analyzing qualitative data; and logistic regression model to identify the effect and relationship of explanatory variables with that of dependent variable. Therefore, this study described the qualitative data collected through unstructured interview and applied the logit regression model for analyzing the relationship and effect of the explanatory variables on the loan repayment performance.

MODEL SPECIFICATION

Loan repayment performance is a non-continuous dependent variable. In this case the value of dependent variable is 0 and 1, where 1 stands if borrower is a non-defaulter and 0 if the borrower is defaulter. For this kind of binary nature dependent variable, logistic or probit regression model is suitable (Gujirati, 2004; Verbeehk, 2008). Fikirte (2011) employed logit regression model and Jemal (2003) and Paxton (1996) have employed probit regression model to analyze their study. Therefore, this study used logistic regression model for its mathematical simplicity. Mathematical function of the model is:

$$Y(i) = \alpha + \sum \beta i x i + \mu i \text{ ---------- (2)}$$

Where,

Yi = loan repayment performance (0, 1) is dependent variable where 1 stands for non-defaulter and 0 defaulter.

α = constant (intercept)

Xi = independent variables (gender, age, educational level, experience, social ties, saving loan size group size credit period and training).

βi = parameters to be estimated and μi = disturbance term (Million et al., 2012).

MODEL TEST

Before running the logit model, explanatory variables should be checked for existence of multicollinearity heteroskedasticity and misspecification problems. The existence of such problems were tested by using ***Variance Inflation Factor*** (VIF) used to diagnose the multicollinearity (i.e., violation of classical assumption that states no independent variable is a perfect linear function of one or more other independent variables); ***ovtest*** used to diagnose the existence of omitted variable; ***hettest*** used to diagnose the violation of homoskedasticity classical assumption; and ***link test*** used to diagnose model specification (Hosmer & Lemeshow, 1980).

VIF shows how the variance of an estimator is inflated by the presence of multicollinearity. That is, as the extent of co linearity increases, the variance of an estimator increases, and in the limit it can become infinite. If there is no collinearity between two or more independent variables, VIF will be 1. The larger the value of VIF, the more troublesome or collinear the variables each other or one another. As a rule of thumb, if the VIF of a variable exceeds 10, which will happen if R^2 exceeds 0.90, that variable is said to be highly collinear (Gujirati, 2004).

Hettest is statistical tool to detect heteroskedasticity problem. If the p–value of hettest result is greater than 0.05 (i.e., p>0.05), it does not show strong heteroskedasticity problem (Stock & Watson, 2007).

The link test command performs a model specification link test for single-equation models. Link test is based on the idea that if a regression is properly specified, one should not be able to find any additional independent variables that are significant. Link test creates two new variables, the variable of prediction, _hat, and the variable of squared prediction, _hatsq. The model is then refitting using these two variables as predictors.

_Hat is the predicted value hence; _hatsq shouldn't be significant if the model is specified correctly, which means the squared predictions should not have much explanatory power. That is, wouldn't expect _hatsq to be a significant predictor if the model is specified correctly. So looking at the p-value for _hatsq, if p-value for hatsq is P<0.01, and shows it is significant and this show the model is not correctly specified (Verbeek, 2008).
Thus, before applying the binary logistic regression model, the Hosmer-Lemeshow test of goodness of fit was used to see the overall fitness of the model. Similarly, before estimating the model, various detection and diagnostic tests were done to check for the related econometric problems such as multicollinearity, heteroskedasticity, and model specification bias as discussed in chapter three. The results of these tests indicated that the model is fitted, no severe multicollinearity, and no heteroskedasticity problem.

5.3. HYPOTHESIS AND DEFINITION OF VARIABLES FOR FACTORS AFFECTING GROUP LOAN REPAYMENT PERFORMANCE

Based on the reviewed empirical literature, the explanatory variables selected for this study were broadly categorized under group characteristic related factors, economic and institutional factors. A brief explanation of the explanatory variables selected for this study and their likely influence on group loan repayment are presented below.

5.3.1. DEPENDENT VARIABLE

The dependent variable for this logistic regression model is defined as loan repayment performance valued as 1 and 0, 1 stands for a group paid all installments on until the survey took place, otherwise 0.

5.3.2. INDEPENDENT VARIABLE

The independent variables used in this study were based on the reviewed empirical literature. The hypothesis formulated for the factors and their priori effects are explained below.

A. GROUP CHARACTERISTIC RELATED FACTORS

When loan is not repaid, it may be due to the character of the borrowers, borrowers' unwillingness and /or inability to repay. Business experience, social ties, group size, peer monitoring and internal rules and regulation are considered in this study as group-characteristic related factors that affect group loan repayment. The factors and their effect are discussed below

BUSINESS EXPERIENCE

Business experience is defined as any business practice before. Sylvester et al.(2013) widely used business experience as a factor influencing group loan repayment i.e., with higher business experience stands a better chance of repaying more loan than with those of lower business experience because as borrowers get experience and know how to improve operating their business.

H1: Business experience is predicted to have positive impact on loan repayment performance (EXP).

SOCIAL TIES

Social ties are any relationship like kinship and friendship among the borrowers. If social ties among members are sufficiently strong, the net effect is positive because by defaulting willfully a borrower incurs sanctions from both the lender and the community (Besley & Coate, 1995).

H2: The existence of social ties among group members is anticipated to have positive impact on loan repayment performance (ST).

GROUP SIZE

Zeller (1996) noted that groups will have increasing costs of coordination, moral hazard, and free-rider problems when group size surpasses manageable levels. The optimal group size will vary with respect to socioeconomic and agro ecological conditions of the participating communities and with program characteristics. Thus, hypothesis of this study was loan repayment performance increases as the borrowers have business experience, social ties, and saving but decrease as group size increases.

H3: The existence of small number in a group is expected to have positive relationship with loan repayment performance (GS).

PEER MONITORING

The existing theoretical models of peer monitoring assumes that the repayment performance in group-lending program is positively related to the homogeneity of projects with respect to the riskiness (Stiglitz, 1990).

H4: The strong peer monitoring system practiced by group members, expected to bring good loan repayment performance (PM).

INTERNAL RULES AND REGULATION

As per empirical analysis on determinants of repayment performance in credit groups by Zeller (1998) implementation of internal rules and regulations by the group members would lead to the better repayment performance that is decrement in the cost of operations of the lender and decrement in the default rate.

H5: Internal rule and regulation is predicted to have a higher probability of loan repayment (IRR).

GROUP FORMATION (GF)

Screening is an important function of group formation, and several studies suggest the importance of practical measures in screening. Groups that directly screened members according to their local reputations, or that had adopted a written internal constitution, experienced significantly fewer problems with loan delinquency (Ghatak & Guinnane, 1999).

H6: Groups that form by self-screened are predicted to have good loan repayment performance (GF).

B. ECONOMIC FACTORS

Although there are different socio-economic factors that can affect group loan repayment, this study took the saving habit of borrowers to influence their repayment performance.

SAVING SIZE

Saving can also play a significant role in increasing levels of institutional sustainability and enhancing levels of outreach. Therefore, MFIs that offer saving facilities have a cheap source of funds for further lending to more sustainable operations (Murray & Boros, 2002).

H7: Groups who open an account and save are likely to have positive impact on loan repayment performance (SAV).

C. INSTITUTIONAL FACTORS

Loan defaults arise not only from problems with the borrower but also because of the problems with the lender (microfinance institution). Many studies have found that lender characteristics play an important role in determining loan repayment of the group. These factors can be loan size, suitability of repayment period, loan supervision, and training.

LOAN SIZE

The small loan size is often advanced by the micro finance institutions as a way of minimizing risks. However, when the clients are not given adequate funds to cater for their business needs, they tend to resort to multiple borrowing. This in turn affects their repayment and increases the risks of the loan (Natukunda, 2010).

H8: The larger the loan size disbursed is predicted to have positive and higher probability of loan repayment performance (LS).

LOAN TERM

Woolcock (2008) observed that if the loan term (credit period) is too short, the borrower fails to generate revenue to enable him/her make repayments while a longer loan term may make the client extravagant and the client may in the end fail to pay back.

H9: The longer the grace period is predicted to have positive and high loan repayment rate (LT).

TRAINING

Statham (2008) stated that one of the important requirements for the success of microfinance institutions is to create awareness to potential clients by giving appropriate training to borrowers about loan utilization, loan terms and obligations.

H10: Training is predicted to play a positive and significant role on loan repayment performance (TR).

SUPERVISION

Retta (2000) has examined loan repayment performance of group borrowers in Addis Ababa. His finding was, supervision has found to encourage repayment and Jemal (2003) supported that supervision are positively and significantly related to loan repayment performance.

H 11: As loan supervision is made regarding loan utilization, the probability of loan repayment by the groups is higher (SUP).

So, the complete mathematical function of the study is:

$$Y(i) = \alpha + \beta_1 EXP + \beta_2 ST + \beta_3 GS + \beta_4 PM + \beta_5 IRR + \beta_6 GF + \beta_7 SAV + \beta_8 LS + \beta_9 LT + \beta_{10} TR + \beta_{11} SUP + \mu i \quad \text{----(3)}$$

Where: Yi = repayment performance of loan (1 if the loan was fully repaid within the specified period of the loan contract, otherwise 0)

α = Constant (intercept)

μi = Disturbance error

$\beta_1, \beta_2 \ldots \beta_{11}$ = Slope coefficients of independent variables (the unknown parameters that reflecting the impact of change in independent variables).

6. DATA ANALYSIS AND DISCUSSION

This section presents, analyzes and interprets the response and reactions gathered from the respondents through structured questionnaire and interview. For this purpose, qualitative data collected through interview were described and logit regression model was used to analyze the quantitative data collected through questionnaire. Moreover, this chapter presents the marginal effect of each explanatory variable on the binary dependant variable.

6.1. DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

In this section, the respondents' demographic characteristics are presented with particular reference to gender , age and education level in Table 2 below.

Table 2: Demographic Characterizes of Respondents

Category	Number	Percent
Gender:		
Male	25	50
Female	25	50
Total	50	100
Age:		
18-25	15	30
26-35	19	38
36-45	8	16
46+	8	16
Total	50	100
Educational level:		
Secondary	9	18
Diploma	13	26
Degree	28	56
Total	50	100

Source: Own Computation (2014)

As indicated in Table 2 above, among the 50 respondents;

- 25(50 percent) of the respondents were female borrowers and 25(50 percent) respondents were male borrowers.
- Respondents in the age category of 18-25, 26-35, 36-45 and 46+ accounts for 30 percent, 38 percent, 16 percent and 16 percent, respectively.
- Majority (56 percent) of the respondents have attended first degree followed by diploma holder (26 percent). The remaining respondents (18 percent) had secondary school.

6.2. RESULTS, ANALYSIS AND DISCUSSION

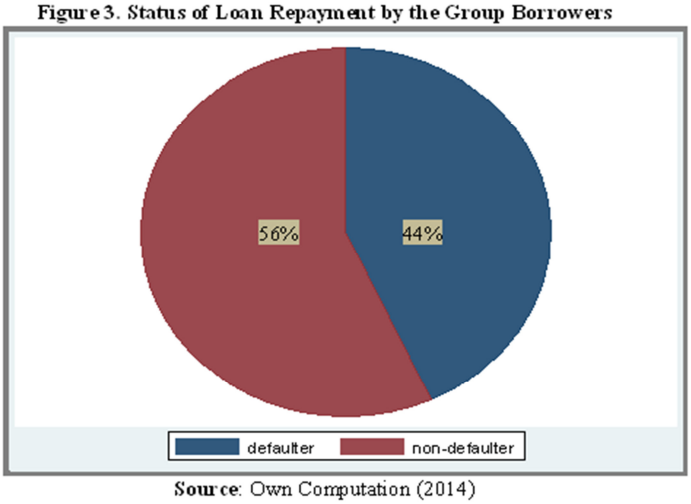
6.2.1. STATUS OF GROUP LOAN REPAYMENT

To know the loan repayment status, group borrowers were asked whether they have paid back fully and on repayment with arrears (i.e., 30, 60, 180, less than 360 days past due), or not paid successfully (defaulted, i.e., greater than 360 days past due) 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 equal to "1" if groups were non-defaulters and "0" otherwise) was used to determine the factors that affect group loan repayment performance in similar studies of Paxton (1996) and Million et al.(2012).

Out of the total respondents 28 (56 percent) were able to repay the loan within the given maturity period, and hence they are creditworthy. Whereas the remaining 22 (44 percent) respondents have defaulted (i.e., greater than 360 days past due) on their loan and this implies that the borrowers are not creditworthy.

The following Figure 3 shows the status of loan repayment by the group borrowers.

Figure 3. Status of Loan Repayment by the Group Borrowers



Source: Own Computation (2014)

Default problems destroy lending capacity as the flow of repayment declines, transforming lenders

into welfare agencies, instead of a viable financial institution. Loan default may also deny new applicants access to credit because the micro finance institutions management problems augment in direct proportion to the increasing default problem (Hunte, 1996). Concerning this matter, annual reports of DECSI indicates that the loan default rate for DECSI is fluctuating from time to time as summarized in Figure 2 above, especially in the years of 2010 and 2013. This result also found 44 percent default rate. This implies that high loan default rate might threaten the financial sustainability of DECSI.

6.2.2. LOGISTIC REGRESSION RESULT, ANALYSIS, AND DISCUSSION

Group loan repayment has been affected by numerous variables that were tested in many of the previous empirical evidences. Similarly, in this study, the selection and incorporation of the explanatory variables was guided by the conceptual framework discussed in the literature review (Figure 1). Due consideration was given in including variables that are possibly determine group loan repayment performance and tested in this study. The binary logistic regression was used to identify the determinant factors and to estimate their potential effect of each explanatory variable on the loan repayment rate of group borrowers. The explanatory variables include group characteristic related factors, economic and institutional factors.

Before applying the binary logistic regression model, the Hosmer-Lemeshow test of goodness of fit was used to see the overall fitness of the model. Similarly, before estimating the model, various detection and diagnostic tests were done to check for the related econometric problems such as multicollinearity, heteroskedasticity, and model specification bias as discussed in chapter three. The results of these tests indicated that the model is fitted, no severe multicollinearity, and no heteroskedasticity problem.

Table 3 below presents the binary logistic regression results, i.e., shows the odd ratios (probability of loan non-default/probability of loan default**),** the p-value, and the marginal effect of explanatory variables included in the model.

Table 3: Logistic Regression Estimation Result

Variables	**Odds ratios**	**p>|z|**	**Marginal effects (dy/dx)**
Group characteristic related factors	2.52673	0.461	0.2118738
Group size	0.0028087	0.025**	-0.8286518
Social ties	8.308234	0.025**	0.4694825
Business experience	4.474295	0.271	0.322647
Peer monitoring	23.88643	0.020**	0.6273108
Group formation (screening)	0.1756475	0.098***	-0.4008809
Internal rule and regulation			
Economic factor	16.51643	0.027**	0.5497403
Saving			
Institutional Factors	73.72195	0.000*	0.7904858
Loan term	0.1500182	0.375	-0.4301928
Loan size	5.241702	0.139	0.3810333
Training	41.87587	0.021**	0.7251103
Supervision			
Statistics:			
Number of observations = 50			Prob > chi^2 = 0.0033
Wald $chi^2(9)$ = 27.91			Pseudo R^2 = 0.6801

*, **, *** Level of significance at 1 percent, 5 percent and 10 percent, respectively.
Source: Own Computation (2014)

HYPOTHESIS TESTING

The interpretation of estimation results (i.e., logistic regression output) of the explanatory variables are presented bellow followed by tests of research hypotheses.

According to the Table 3 above, the most influential explanatory variables from group characteristic related factors in determining group loan repayment performance are social ties, business experience, group formation, and internal rules and regulation with significant estimated odds ratio value of 0.0028 (P-value of 0.025); 8.31 (P-value of 0.025), 23.89 (P-value of 0.02), and 0.18 (p-value of 0.098), respectively; saving, the only economic factor, is one of the influential factor with the odd ratio value of 16.52 (P-value of 0.027). From institutional factors, suitability of loan repayment period (loan term) and supervision are found significant in influencing dependant variable (loan repayment) with an odds ratio value of 73.72 (P-value of 0.000) and 41.88 (P-value of 0.021), respectively.

H2: The existence of social ties among group members is anticipated to have positive impact on loan repayment performance.

Table 3 above shows that the first group characteristic variable found significant in this study is

social ties. The result indicates that the social ties has a negative effect on the probability of group loan repayment. Similarly, the odd ratio shows that the probability of loan repayment decreases by 0.0028 times for group borrower that have social ties as compared to group borrowers who have not social ties, other things kept constant. The marginal effect of this variable is -0.829 indicating that the probability of group loan repayment for group borrower with social ties decreases by 82.87 percent as compared to group borrowers who did not have social ties.

This may be due to the social ties or relationship; there may not be tight control and enforcement at the time of loss. Hence, the research hypothesis which says "the existence of social ties among group members is anticipated to have positive impact on loan repayment performance." is rejected at 5 percent level of significance, i.e., the alternative hypothesis (the existence of social ties among group members have negative impact on loan repayment performance) may be accepted.

The result is inconsistent with the empirical studies of Besley and Coate (1995) who found that if social ties among members are sufficiently strong, the net effect is positive because by defaulting willfully a borrower incurs sanctions from both the lender and the community. With sufficient social capital, a borrowing group enforces repayment better than would take place with individual liability. Godquin (2004) also stated that social ties and professional training of the borrower have expected positive impact on the repayment performance.

Thus, it can be concluded that the probability of group loan repayment decreases as group borrowers have a social ties because of weak enforcement at the time of default.

H3: Business experience is predicted to have positive impact on loan repayment performance.

The other group characteristic variable found significant at 5 percent is business experience (Table 3). In line with the expectation, holding other factors constant, business experience has more likelihood of loan repayment. The result shows an odd ratio value of 8.31. This indicates that the probability of group loan repayment is 8.31 times higher for group borrowers who have business experience than those who have not. The marginal effect of this variable is 0.47 indicating that the probability of group loan repayment for borrowers with business experiences increases by 47 as compared to group borrowers with no business experience.

The reason why group borrowers having business experiences pay their loan in time higher than those who have not may be attributed to improvement in managerial skill which makes for higher profitability which in turn induces the need for more financial resources to further enhance profitability. This motivates the group borrowers to settle their loan and access for future credit. Therefore, the research hypothesis which says "business experience is predicted to have positive impact on loan repayment performance" is accepted at 5 percent level of significance.

Besides, this result is consistent with the finding of Fikirte (2011) and Zelalem et al.(2013) which stated that business experience was found to significantly influence the probability of being non-defaulter.

Therefore, it is possible to say that business experience has statistically significant positive association with loan repayment performance.

H5: Groups that form by self-screened are predicted to have good loan repayment performance.

Group formation refers to the way in which group members formed to engage in their current business activity. It is hypothesized that screening and selecting of creditworthy borrowers is more effective with groups that are formed by the members themselves than the groups that depend on the intervention from an outside agent to be formed. Their loan default is lower for groups that are formed on their own.

The odd ratio of 23.89 for group formation indicates that the probability of loan repayment increases by 23.89 times higher for group borrowers who are self-screened than group borrowers who are screened by an outside agent or promoter. Similarly, the marginal effect of 0.6273 shows, other things remain constant, the probability of loan repayment increases by 62.73 percent for those groups who are initiated by the members themselves as compared to those groups who are initiated by outside agent or promoter.

In line with this expectation, the variable group formation has a positive relation with loan repayment and is statistically significant at 5 percent level of significance. The possible reason as to why the groups initiated by the members themselves have performed better in repaying the loan is that the group members can obtain low cost information regarding the reputation, indebtedness and effort of a group member to ensure the repayment of the loan. The group members might be able to access complex and sensitive information about the group member. Hence, the hypothesis "groups that forms by self-screened are predicted to have good loan repayment performance" is accepted at 5 percent significance level.

The result is consistent with the theoretical models of peer monitoring assumes that the repayment performance in group-lending program is positively related to the riskiness of their projects (Stiglitz, 1990) and Ghatak and Guinnane (1999) suggested that group formation will display positive corresponding under a joint-liability contract. Screening is an important function of group formation, and several studies suggested the importance of

practical measures in screening. Groups that directly screened members according to their local reputations, or that had adopted a written internal constitution, experienced significantly fewer problems with loan delinquency (Ghatak & Guinnane, 1999).

Generally, from this result, it can be concluded that the probability of group loan repayment performance increases as far as group formation is based on members' self-selection because group members can easily identify the creditworthy group member.

H6: Groups which have internal rule and regulation are predicted to have a higher Probability of loan repayment.

Table 3 indicated that the fourth group characteristic variable found significant in this study is internal rule and regulation. The result indicates that the internal rule and regulation has a negative effect on the probability of group loan repayment. The odd ratio shows that the probability of loan repayment decreases by 0.18 times for group borrower that have internal rule and regulation compared to group borrowers who have not internal rule and regulation, other things kept constant. The marginal effect of this variable is -0.4009 indicating that the probability of group loan repayment for group borrower with internal rule and regulation decreases by 40.09 percent as compared to group borrowers who did not have s internal rule and regulation.

Respondents were asked whether their business is successful or not. From 35 which have no internal rule and regulation, 20(57 percent) were successful while 15(43 percent) were not successful in their business. From 15 respondents which have rules and regulation, 8(53 percent) are not successful but only 7(47 percent) were successful in their business.

Respondents also asked their expectation about the contribution of internal rules and regulation. So, among 50 respondents, 34(68 percent) replied that internal rules and regulation has no contribution and 16(32 percent) responded that internal rues and regulation has a contribution on loan repayment performance. Therefore, an internal rules and regulation alone may not have contribution on loan repayment performance unless it is enforced.

Hence, the research hypothesis which says "Groups which have internal rule and regulation are predicted to have a higher probability of loan repayment" is rejected at 10 percent level of significance.

The result contradicts with the empirical findings of Zeller (1998) which stated that implementation of internal rules and regulations by the group members would lead to the better repayment performance that is decrement in the cost of operations of the lender and decrement in the default rate.

From this result, it can be concluded that as group borrowers who launch internal rules and regulation may not have probability of loan repayment performance as compared to those who have not internal rules and regulation. It determines the nature of the business they operate and its profitability.

H7: Groups who save are likely to have positive impact on loan repayment performance.

The logistic regression results indicated in the Table 3 above reveals that saving has a positive relation with loan repayment. The odd ratio shows that the probability of loan repayment is 16.52 times higher for groups who save in incitement of repayment than groups which do not save. The marginal effect of 0.55 implies, holding other variables constant, the probability of repaying the loan increases by 55 percent for those group borrowers who exercise saving on defaulting members as compared to those borrowers who do not exercise saving on defaulting members to enforce loan repayment.

As a result, the hypothesis which states "groups who open an account and save are likely to have positive impact on loan repayment performance" is accepted at 5 percent significance level.

The finding is similar with the findings of Zeller (1996) which declared that delivering saving service programs to their members result in a significantly higher repayment rate. This result emphasizes the role of saving services for improving the performance of group credit programs.

Therefore, it is possible to say that saving proves to be positive and meaningfully contribute to improve the group loan repayment performance.

H8: The longer the grace period is predicted to have positive and high loan repayment rate.

The Table 3 result indicates that the loan term has a positive effect on the probability of group loan repayment. The odd ratio shows that the probability of loan repayment increases by 73.72 times higher for group borrower that perceived the loan term is enough as compared to group borrowers who did not satisfied with the loan term given, other things kept constant. The marginal effect of this variable is 0.79 indicating that the probability of group loan repayment for group borrowers that perceived the loan term is enough increases by 49 percent as compared to group borrowers who did not satisfied with the loan term given.

Hence, the research hypothesis which says "the longer the grace period is predicted to have positive and high loan repayment rate" is accepted at 1 percent level of significance.

The result is consistent with the empirical studies of Woolcock (2008) which stated that if the loan

term is too short, the borrower fails to generate revenue to enable them make repayments while a longer loan term may make the client extravagant and the client may in the end fail to pay back. For successful results, the loan terms should match the cash patterns to help the client budget cash flows. George (2008) also supported that a large majority of the micro finance institutions were offering very short loan repayment periods without grace periods, thus, straining and pressuring them to make quick repayments. The clients did not feel the immediate impact of the loan but instead they felt immense pressure to put all their earnings towards loan repayment.

To sum up, the logistic regression result shows that as the loan term (grace period) increases, the probability of loan repayment performance highly increases because long period of time to pay helps borrowers to generate cash and pay their obligation on time.

H11: As loan supervision is made regarding loan utilization, the probability of loan repayment by the groups is higher.

Table 3 above shows that supervision has positive impact on the probability of loan repayment. The odd ratio of 41.88 for supervision indicates the probability of loan repayment increases by 41.88 times higher for group borrower who were supervised as compared to group borrowers who did not supervised. Likewise, the marginal effect of 0.725 shows that, keeping other factors constant, the probability of group loan repayment increases by 72.5 percent for group borrowers who were supervised as compared to those who didn't supervised.

Therefore, the research hypothesis which says "as loan supervision is made regarding loan utilization, the probability of loan repayment by the groups is higher" is accepted at 5 percent level of significance.

The result is consistent with the previous empirical evidence of Retta (2000) which stated that supervision is found to encourage repayment hence reduce the probability of loan default. Besides, Jemal (2003) has reported supervision is positively and significantly related to loan repayment performance.

From this result, it is possible to summate that continuous follow up to group borrowers have positive impact and meaningfully contribute to improve the group loan repayment performance.

To summarize the regression result, business experience, screening, saving, loan term and supervision have a positive and significant effect on loan repayment performance while social ties, and internal rules and regulation have a negative and significant effect on the loan repayment. But, the other variables like group size, peer monitoring, loan size and training have no statistically significant impact on loan repayment performance.

7. CONCLUSION AND RECOMMENDATION

7.1. CONCLUSIONS

The study was carried out to identify and analyze the factors that influence group loan repayment, particularly those groups functioning in MSEs Service sector and who are beneficiaries of DECSI microfinance, Mekelle branch. All of the eleven explanatory variables were analyzed by using the binary logit regression model. Therefore, based on the research findings, the following conclusions are drawn.

The status of group loan repayment revealed that about 56 percent of group borrowers were non defaulters and about 44 percent of them were defaulters. This result shows that there is high default rate which in turn adversely affect the financial liquidity and sustainability of the DECSI.

The binary logit regression model revealed that among the eleven (11) explanatory variables which were hypothesized to influence group loan repayment, seven (7) variables were found to be statistically significant at 1 percent, 5 percent, and 10 percent levels of significance. These variables are business experience, group formation (self-screening), saving, loan term and supervision had positive and significant effect on group loan repayment performance, while social ties and internal rules and regulation had negative and significant effects. The remaining four variables (i.e., group size, peer monitoring, loan size and training) were found to be statistically insignificant in affecting group loan repayment performance.

The marginal effect of business experience and group formation (self-screening) on loan repayment performance shows 0.47 and 0.63, respectively. This indicates that the probability of group loan repayment increases by 47 percent when the group has relatively more experience and by 62.73 percent for those groups who are initiated by the members themselves, other factors remaining constant.

Saving is found to have positive and significant effect on loan repayment performance with marginal effect of 0.55 showing that, keeping other factors constant, the probability of group loan repayment increases by 55 percent for those who save than those who did not save and saving builds the equity of poor households and protects them against unforeseen economic and personal crisis and also offset interest rates.

Suitable loan repayment period (loan term) and supervision are the variables found statistically significant and have positive impact on group loan repayment performance with the marginal effect of 0.79 and 0.725, respectively. This shows that, keeping other factors constant, the probability of group loan repayment increases by 79 percent for group borrowers that found suitable loan repayment period as compared to those who didn't found suitable repayment period and 72.5 percent for those who are supervised on regular basis.

Whereas social ties, and internal rules and regulations were found to have negative and statistically significant influence on loan repayment performance with the marginal effect of -0.8287 and 0.401, respectively. This indicates that the probability of group loan repayment for group borrower that has social ties decreases by 82.47 percent as compared to group borrowers who did not have social ties and the probability of group loan repayment performance decreases by 40.1 percent for groups which have internal rules and regulation as compared to group borrowers who did not have internal rules and regulation.

7.2. RECOMMENDATIONS

Based on conclusion of research findings, the following recommendations are forwarded:

- ✓ As per the discussion held with the loan officer and coordinators of DECSI, one reason for low loan repayment by MSEs is that same loan term for all sectors and does not consider the nature of business. Sectors return or productive period may differ. So DECSI should set the loan term accordingly.
- ✓ Another reason for low repayment is borrowers are exposed to loss because of their project infeasibility and fail to generate income to pay back their loan. Lack of continuous and relevant training is also the reason for low repayment mentioned by officers. Of course there is induction training but it has no continuity. Then lack of continuous training has its own share why borrowers fail to pay their obligation. Therefore, DECSI should focus mainly on the feasibility of the project and reset the loan term based on the nature of the business/sector and create awareness related to business and how to use loan to clients before disbursing loan through continuous and short training. These help borrowers to be aware about loan and becoming productive and viable to pay their loan. This enables DECSI to exist in a sustainable manner and reach millions of poor people in the region thereby eradicating poverty.
- ✓ The screening and selection criterion in place should be revised and DECSI should have to play major role directly in screening and selection of applicants according to borrowers' interest that is borrowers can screen honor partner if they form themselves because they know one another. This could reduce significantly loan default and make DECSI is sustainable because creditworthy borrower can be selected from the very beginning.
- ✓ Suitable loan repayment period (loan term) was found to have positive significant impact on loan repayment performance. Therefore, DECSI should consider and set the repayment period based on the nature of the sector and expected optimal time that the sector will start generating income (grace period) and set the loan term. Thus, the borrowers will become successful and sustainable which in turn make DECSI financially sustainable.
- ✓ Supervision has a positive and significant impact on loan repayment performance. The logistic regression revealed that those who supervised showed good performance of loan repayment. Thus, DECSI should make continuous follow up and guidance to borrowers on how to use loan in general and pay regular visits to evaluate the loan utilization and repayment, this makes borrowers to discharge their obligation and improve the proper utilization of the loan there by improving repayment performance. Besides, DECSI's continuous supervision may bridge the lack of borrowers' business experience. Supervision also may source information and avoid the adverse selection and moral hazard which is the most important problems in the functioning of credit market which arises from imperfect information.
- ✓ Social ties has a negative effect on the probability of group loan repayment because the group may fail to put pressure on the defaulting members in order not to adversely affect their social relationship. Thus, DECSI should strive to build and promote an entrepreneurial attitude among the group borrowers through training and experience sharing.
- ✓ Business experience has a positive and significant contribution on loan repayment performance. Relatively more business experience among other important factors enhance loan repayment because experienced borrowers know how to allocate their loan to productive business area and settle their loan effectively and clients with higher business experience stands a better chance of repaying loan than with those of lower business experience. The reason for this may be attributed to improvement in managerial skill which makes for higher profitability which in turn induces the need for more financial resources to further enhance profitability. However, considering business experience in DECSI's loan repayment may not be practical because its borrowers are mainly beginners who are willing to engage in self employment. Therefore, DECSI must consider relevant and continuous supervision in order to compensate the gap in business experience.
- ✓ Saving has a positive and significant impact on loan repayment performance. So, DECSI should enhance the existing saving services to borrowers so as to pay their loan on time. Saving can play a significant role in increasing level of institutional sustainability and enhancing level of outreach. MFIs that offer saving facilitation have a cheap source of funds for further lending to more sustainable operations. In addition, saving builds the equity of borrowers and protects them against unforeseen

economic and personal crisis. Thus, saving services improve the repayment rate of the group, increase the financial discipline of group borrowers, and can also serve as loan collateral.

- ✓ Internal rule and regulation has a negative effect on the probability of group loan repayment. Therefore, having an internal rules and regulation alone may not have contribution on loan repayment performance unless it is enforced. So, DECSI should verify whether internal rules and regulations are in practice.

7.3. LIMITATION AND SUGGESTION FOR FURTHER RESEARCH

These study findings may not be used to generalize about the determinants of the MSEs group loan repayment performance because the study has focused on only the MSEs service sector and confined only to the Mekelle city. The study has only throw a light on the factors that determine group loan repayment performance. Thus, comprehensive and comparative studies are recommended in order to have holistic picture on the MSEs group loan repayment performance by considering wide area and all the sectors such as construction, urban agriculture, and manufacturing, and trade.

Within the service sector, there are many factors which are not considered in this study. Factors include group harmony, initial capital, loan frequency, interest rate, access to working premises, and infrastructure. Hence, more fruitful finding may be reached by taking the above mentioned factors in to consideration.

Moreover, this study has employed chi-square test to test the association among the dependent and independent variables. Thus, further research may be conducted by considering optional statistical tools such as mean difference test (t-tests), correlation, and regression models.

7.4. MANAGERIAL IMPLICATIONS

MFIs have immense contribution towards poverty reduction by creating employment opportunity especially in developing courtiers like Ethiopia. One of the key factors for profitability and sustainability of MFI is good loan repayment performance rate. Analyzing this loan repayment performance and setting appropriate solutions is essential to expand the activities of MFI in a sustainable manner.

Thus, the study provides information for a better understanding on the determinants of loan repayment performance of DECSI and the primary advantage of this study is to establish a knowledge base that enables to makes a sound decision and take corrective action. In addition, the study will be useful for policy makers, other lending institutions and Stakeholders. Specially, the study benefits;

- MFIs to have a clue about the association and effect of each explanatory factor on loan repayment performance.
- Borrowers may get awareness on how to use and allocate loan in productive investment, i.e., it supports borrowers to be viable and feasible in their investment and pay their obligation.
- MFIs will exist financially sound.
- Finally, this study will have a contribution to academicians or researchers who will conduct their studies on similar areas.

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