

Determinants of Loan Repayment Performance of Micro and Small Enterprises (MSEs) in the Case of Dire Dawa City Administration

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Abstract

The study was conducted in Dire Dawa City Administration and aimed to analyze the extent of loan repayment and the determinants of loan repayment performance of MSEs that were financed by Dire Microfinance Institution. This is because the loan repayment performance of MSE for the successive past ten years analyzed and the last year loan repayment status indicated that 10.2% default rate and averagely the last ten years loan performance indicated that 22.16% default rate in the study area. In the study the determinants of loan repayment were categorized as enterprises, lender and the external related factors and that were analyzed separately in the study. Descriptive and explanatory research designs with quantitative and qualitative data were used. The sample of 367 MSEs leaders were selected by random sampling method and grouped by stratified sampling method from each sectors. Questionnaires were used in order to collect primary data whereas secondary data were collected by reviewing different literatures regarding the research subject. All the sampled MSE's leaders were filled the questionnaire properly. The collected data were analyzed by descriptive statistics and binary logistic regression model. This result indicates that out of fourteen predicted variables used eleven variables were found being significant. These significant variables are; enterprises leaders age, marital status, education level and enterprises business experience, saving habit, training offered by institution, loan follow up or supervision and market accessibility were positively influence loan repayment performance while enterprises leaders gender, enterprises member size and loan interest rate were negatively influenced the loan repayment performance of MSEs in the study area. Based on the findings, the enterprises that attained higher educational level able to pay better than the enterprises that were in lower educational level therefore, DMFI should motivate the involvement of educated enterprises. Building the capacity of enterprises through a comprehensive package of skill trainings, close supervision, and follow –ups enhance the loan repayment performance of enterprises, Dire Microfinance should develop follow up or supervision and provide a comprehensive package of trainings that includes entrepreneurship, business skill development, financial management and bookkeeping. The existence of market access results the higher probability of getting profit and the greater level of enterprises loan repayment performance. Therefore, MSEs should work hard to have market demand for their products and services by preparing of different market exhibitions, which help enterprises to get market access and market linkages for their products and services as well as share good habits of work among them that leads enterprises to sustain in the business.

Keywords: Dire Microfinance institution, loan repayment, Micro, and Small Enterprises

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1. Introduction

1.1. Background of the study

Micro and small scale enterprises are one of the priority areas of action among the programs addressing African development and it can be seen as a means of achieving smooth transition from traditional to modern industrial sectors and has a huge contribution to the growth and development of the country in terms of employment generation with a relative low capital cost (Drbie and Kassahun, 2013). Now days, in almost all economies of the world, MSEs are becoming a crucial and key factor for sustained growth and development and becoming the lifeblood of most economies (Brhane, 2014).

In Ethiopia, like any other developing countries, MSEs has become an increasingly widespread used strategy for its labor intensiveness, suitability to produce more jobs with less capital per job created, its utilization of locally available resources, fostering of linkage within and among various sectors and its resilience to internal and external economic shocks (FeMSEDA, 2012).

There are multi-dimensional problems like extreme poverty, unemployment, low per capita income, and unequal income distribution facing in many developing countries. As a result, different governments are framing different strategies and policies to create job opportunities and to pull these countries out of such problems. In Ethiopia, there is also suffering from severe poverty, unemployment, income inequality and lower per capita

income. In response to the mentioned problem, the Ethiopian government issued the National Micro and Small Enterprises Strategy in 1997 and established the Federal Micro and Small Enterprises Development Agency in 1998. The country's industrial policy in 2003 and the poverty reduction strategic program in 2006 had single out MSEs as major instruments to create a productive and vibrant private sectors and reduce poverty among urban dwellers (Siyum.)

In view of this, the government is implementing different financial and Business development services program in different parts of the country for helping MSEs attain their intended objectives. The support service program for the promotion and development of these enterprises has been launched in Dire Dawa Administration since 2012. The elements of the program include an enabling legal framework and streamlining regulatory conditions and specific support services (financial and business development services).

According to Yednekachew (2016), the MSEs were affected by environmental and internal factors. Environmental factor includes social, economic, cultural, political, legal and technological factors, and internal factors affect the performance of MSEs, which are related to the person's individual attitude, training and technical expertise. He identified many problems that confronted MSEs in Ethiopia similar with other developing countries like unfavorable legal and regulatory environment, discriminatory regulatory practices; lack of access to markets, business information; lack of business premises at affordable rent; low ability to acquire skills and managerial expertise; low access to appropriate technology, poor access to quality business infrastructure, financial problems, lack of qualified employees, lack of proper financial records, inadequate management and business skill, marketing problems, lack of work premises, low level of provision and interest for trainings and workshops. The researcher also highlight that in the past decades the focus of Ethiopian government was mainly on large organizations, but the recent are towards wave of private sector development initiatives ,and it is shifted the policy efforts to MSE's.

Despite the contribution of MSEs is the pillar in poverty reduction, job creation, and sustainable economic growth of both in developed and developing nation, there are numerous challenges face in their activities. As mentioned in above such problem open door for failure of the business and which are input factor for lack of successful loan repayment since this unfavorable business environment creates instability of MSE's business activities. According to Ofgaha (2018), the loan repayment performance of MSE is influenced both directly and indirectly by various factors such as individual characteristics, firm characteristics and loan characteristics.

As a result, the study were tried to analyze the extent of loan repayment and to identify the determinants of loan repayment performance of MSEs that are incorporated in Dire Dawa Administration. Hence, Dire Dawa Micro and Small Enterprises is selected for the study because of that it is the one which has a large coverage and limited study area when compared to others especially for MSEs that is playing a vital role in reducing unemployment portion of the population in the study area.

1.2. Statement of the Problem

Despite MSEs are recognized as vehicles for economic growth and reduce poverty and unemployment (Zemenu and Mohammed, 2014), most of them are facing critical constraints both at the operation and start up level. According to EEA (2015), initial capital for MSEs emanated from diverse sources, the major one being loans. Since most MSEs have Lack of the initial start-up capital, facilitating access to loan would definitely help to establish new MSEs and address working capital problems of existing ones. After the business goes operational, the probability of MSEs becoming profitable and paying back their debts along with accrued interest as scheduled is less (Zelege, 2009).

Tesfaye Ginbare *et al* (2014) was studied on the factors that influence group loan repayment performance of borrowers a case of Dedebit Credit and Saving Institution (DCSI) operating in the manufacturing sector of MSEs by using logit model. The results indicate that the group initiation, peer pressure, suitability of repayment period, loan size and external shocks have statistically significant effect on loan repayment of borrowers; whereas the internal rule and regulation, loan supervision, and training have statistically insignificant effect on loan repayment of borrowers. But, the researchers excluded variables like, experience of the group in the business and group size of the borrowers in the sector.

Similarly, Tesfatsion Sahlu *et al* (2015), studied on the factors influencing MFIs Group loan repayment performance a case of MSEs service delivering sector that are financed by Dedebit Credit and Saving Institution by applying descriptive research approach. The result indicate that; group formation, peer monitoring, loan size, loan term and supervision have significant association with loan repayment performance of borrowers while the business experience, social ties, internal rules and regulations, saving size, group size and training have insignificant association with loan repayment performance of group borrowers. However, the researchers fail to include variables like; Homogeneity of the group and external shocks as well as the researchers could not employ any econometric model.

Gobena Geleta (2018), Studied on the determinants of loan repayment performance of micro and small enterprises the case of Oromia Credit and Saving Share Company branches under Oromia special zone around

Addis Ababa by employing descriptive statistics and logit model. The result indicates that group leader's education level, training offered by the loan officers, loan follow up or loan supervision, market accessibility and technology advancement were positively influence loan repayment while loan interest rate, internal rules and regulations, loan accessibility, lack of experience in business, enterprise size and enterprise formation were negatively influenced the loan repayment performance of MSE's sectors in the study area. However, the author excluded variables like, saving habit of enterprises.

Selam Abera (2016), conducted study on the loan repayment performance of micro and small enterprises in Dire Dawa Administration which financed by Dire Micro finance by using two limit Tobit regression model. The result study indicated that sufficient loan size and repayment periods were negatively related to loan repayment performance of enterprises while Follow up and supervision, access to market, business experience, and trade and service sector types were important factors which affected positively loan repayment performance of the enterprises. The researcher fails to include external variable and not included all sectors.

Since, Dire Microfinance institution is one of the Microfinance institutions among those operating in the country particularly which is found in Dire Dawa City Administration is facing loan repayment problem, which discourages urban finance institutions from promoting and extending loan. Out of the total loan disbursed by institution, the average default rate of the MSEs for the last ten years was reached 22.16% (DMFI, 2019). One way to tackle the loan repayment problem is to investigate the factors that affect the loan repayment performance of MSEs, (Onyeagocha et al, 2012).

Whether loan repayment delay (default) is random and influenced by irregular behaviors or whether it is influenced by certain factors in specific situation, needs an empirical investigation. The researcher initiated to investigate the determinants of loan repayment performance of MSEs in the case of Dire Dawa City Administration by including external factors affect loan repayment performance, by taking all MSEs sectors (manufacturing, urban agriculture, construction, service and trade sectors) and by taking their successive past ten years loan repayment status of MSEs in Dire Dawa City Administration. Hence, the researcher initiated to identify and examine the determinants of loan repayment performance of MSEs in case of Dire Dawa City Administration, by considering factors in to Enterprise related factors, lender related factors and External related factors.

1.3. Objectives of the Study

1.3.1. General objective of the study

The main objective of the study is to analyze the determinants of loan repayment performance of Micro and Small Enterprises (MSEs) in the case of Dire Dawa city Administration.

1.3.2. Specific objectives of the study

For the success of above general objective, the following specific objectives would play an important role.

1. To analyzes the loan repayment performance of MSEs in Dire Dawa city administration.
2. To identify MSEs Characteristics affect their loan repayment performance in study area.
3. To identify the effects of lender characteristics for MSE loan repayment performance in Dire Dawa City Administration.
4. To examine the external factors that affect loan repayment performance of MSEs in Dire Dawa City Administration.

2. Empirical Literature Review

Different researchers carried out some empirical studies at different time on the factors that influence the loan repayment performance of MSEs throughout the country reviewed as flows.

Million *et al*, (2012) studied the determinants of loan repayment performance among smallholder farmers in East Hararghe zone, Ethiopia specifically Kombolcha and Babile Districts. Two-limit Tobit regression models were applied to identify factors that influenced loan repayment. The results indicated that agro ecological zone, off-farm activity, and technical assistance from extension agents positively influenced the loan repayment performance of smallholder farmers, while production loss, informal credit, social festival, and loan-to-income ratio negatively influenced the loan repayment of smallholder farmers.

Tolosa (2014) conducted a study on the Performance of Loan Repayment Determinants in Ethiopian Micro Finances and revealed that the age of respondents negatively and significantly determines the loan repayment performance of borrowers. This indicates that the elder respondents have better repayment performance than youngsters do (as argued by Fikirte (2011) and Mesele Kebede et al (2016). Hence, education level and time laps between loan application and disbursement were positively and significantly influencing borrowers' loan repayment performance at 1% and 5% significance level. Whereas age of respondents, loan size, loan diversion, repayment period, number of dependents within and out household, training, and supervision and advisory visits had influence negatively and significantly the borrowers loan repayment performance at 1% significance level. The researcher employed binary logistic regression model to estimate and analyze the result.

Tesfaye (2014) conducted a study with the objective of identifying and analyzing the factors that influence group loan repayment performance of the beneficiaries of Dedebit Credit and Saving Institution (DECSI) operating in the manufacturing sector as group owned MSEs by using binary logit regression model to analyze the group related factors, lender related factors, and socio-economic related factor that influence group loan repayment. Accordingly, group composition, group initiation, peer pressure, suitability of repayment period, loan size and external shocks had statistically significant effect on loan repayment of the group borrowers.

Firafis (2015) conducted a study in Eastern Hararge Zone of the Harari Regional State, Ethiopia to assess factors affecting loan repayment performance of Harari Microfinance Institution employing binary logit model. Accordingly, saving habit of borrowers, loan size, perception of borrowers on repayment period, source of income, availability of training, business experience, business type, family size, and the purpose of saving significantly influenced loan repayment performance. The econometric result revealed that the probability of default increases as the family size increases, when the borrower has negative perception on repayment period, less training, low business experience, poor saving habit and only single source of income.

Tesfatsion et al (2015) conducted study on the factors influencing MFIs Group loan repayment performance a case of MSE's service delivering sector that are financed by Dedebit Credit and Saving Institution by applying explanatory (descriptive) research approach and employing chi-square test to examine the association of the independent variables with the loan repayment performance of clients. In this study eleven explanatory variables were included which results in group formation (screening), peer monitoring, loan size, loan term and supervision have significant association with loan repayment performance of borrowers while the rest six variables (business experience, social ties, internal rules and regulations, saving size, group size and training have insignificant association with loan repayment performance of group borrowers.

Mesele et al, (2016) conducted a study on the Factors Affecting Loan Repayment Performance of Small Scale Enterprises Financed by Micro Finance Institutions on Private borrowers around Wolaita and Dawuro Zone .They were revealed that out of total of 15 explanatory variables considered in the econometric model six variables were found to be significant. These were age, education level, number of dependents within and out household, Tropical livestock unit, value of equipment, repayment suitability. The coefficients of these all-significant variables were negative and positive. They used a two-limit Tobit model to analysis the result.

Selam (2016) conducted study on the determinants of loan repayment performance of micro and small enterprises in Dire Dawa Administration and two limits Tobit regression model used to identify factors that affect loan repayment performance. The result indicated that sufficient loan size and repayment periods were related significantly and negatively to loan repayment performance of enterprises. Follow up or supervision, access to market, business experience, and trade and service sector types were important factors that affected loan repayment performance of the enterprises positively and significantly.

Balamurugan (2017) assessed the credit default risk in Oromia credit and saving share company (OCSSCO). His finding outcomes revealed that the OCSSCO default rate increased over the review period. The major causes of default were found to be poor business performance, in terms of low profitability or business losses. Besides, credit diversion to unprofitable uses, poor timing, inadequate supervision to borrowers, inadequate loan size, unfair screening mechanism, non-flexibility of the nature of repayment period, not quick process were other factors that caused credit default and in addition natural disaster, poor infrastructure, poor management and presence of negligent staffs were identified and taken as causes for credit default risk. Further, the inference results of the descriptive statistics show that awareness creation is important and significant factors that enhance the credit repayment performance. He used stratified sampling method and collected the primary data by using structured and unstructured questionnaires. The researcher employed Descriptive statistics and SPSS version 20 software to analysis the collected data.

Abreham (2017) was conducted a study on the assessment of factors affecting loan repayment performance of borrowers on selected microfinance institutions in Oromia region. The researcher concluded that income from other sources, monitoring utilizations of other members in a group, credit timeliness, repayment time suitability, repayment trend on monthly basis and training adequacy are found significant and positively influence loan repayment performance of borrower. While loan utilization for the intended purpose, repayment trend on irregular basis and visit & follow-up on irregular basis was found negatively influence the repayment performance of borrowers. In addition, he revealed that male borrowers in a given enterprise were found to be more defaulters than females although they have relatively higher utilization rate of the loan for the intended purpose as compared to that of females (as cited by Jemal 2003, as opposed by Fikirte 2011 and supported by Tenishu 2014). The researcher has used multistage sampling methods and he has collected the primary data by using the structured questionnaires, semi-structured interviews and focus group discussions. The descriptive statistics analysis and probit regression model was employed to estimate the model and analyze the results of findings.

Tesfaye (2018) studied on the factors influencing loan repayment performance of micro and small enterprise financed by Oromia credit and saving. The result shows that eight variables including constant:

monitoring utilization of other members in a enterprises, loan disbursement timeliness, repayment schedule suitability, repayment trend on monthly basis, repayment trend in irregular basis supervision on monthly basis and training adequacy are found significantly influence loan repayment performance of borrowers. The study revealed that the proportion of female and male defaulters were found as male borrowers are relatively higher defaulters than that of female borrowers, which is consistent with Abafita (2003), Abreham (2016), Dula (2016), and other finding. Borrower's ages with the age category of 30 and above had less likely to be defaulters than that of youngsters (less than 29) which is significant at 10%. It is also consistent with Fikirte (2011), Abafita (2003) and Abreham (2016) study results. The data were collected using a structured questionnaires, and interviews. The descriptive statistics analysis and probit regression model were employed to estimate the model and analyze the results of findings.

Gobena (2018) conducted study on determinants of loan repayment performance of micro and small enterprises: the case of Oromia credit and saving share company branches under Oromia special zone around Addis Ababa. Thus, the result of this study indicates that the loan repayment performance of MSE sectors were positively influenced by various factors like; education level of MSE leaders, Training provided by OCSSCO, loan supervision undertaken by OCSSCO, market accessibility and technology advancement in the study area. Whereas loan interest rate charged by OCSSCO, internal rules and regulations, the chance for additional loan from OCSSCO, enterprise leaders lack of experience in the business area, enterprise members group size and enterprise group formation by other bodies influenced the loan repayment performance negatively in the study area. Structured and interview based questionnaires were used in order to collect primary data whereas secondary data were used from published and unpublished documents of their office and this study were employed both the descriptive and logit model in order to identify the factors that determine loan repayment performance of MSE sectors.

2.1. Empirical Gap

As mentioned above, in empirical related literatures review different authors were conducted study both inside and outside of the country on the determinants of loan repayment performance of MFIs. Various studies basically focused on the investigation of the determinants of loan repayment performance of all target customers of microfinance borrowers.

However, except Tesfatsion (2015) and Gobena (2018) nothing was conducted study on the factors influencing the loan repayment performance of MSEs by analyzing successive past ten years loan repayment performance of MSE to identify whether loan repayment delay (default) is random and influenced by irregular behaviors or whether it is influenced by certain factors in specific situations. Also, most of the researchers not included or considered external factors those influence loan repayment performance of MSEs during their investigations and no anyone researchers conducted study on determinants of loan repayment performance of MSEs by including all sectors (manufacturing, trade, service, construction and urban agriculture) of MSEs except Gobena (2018).

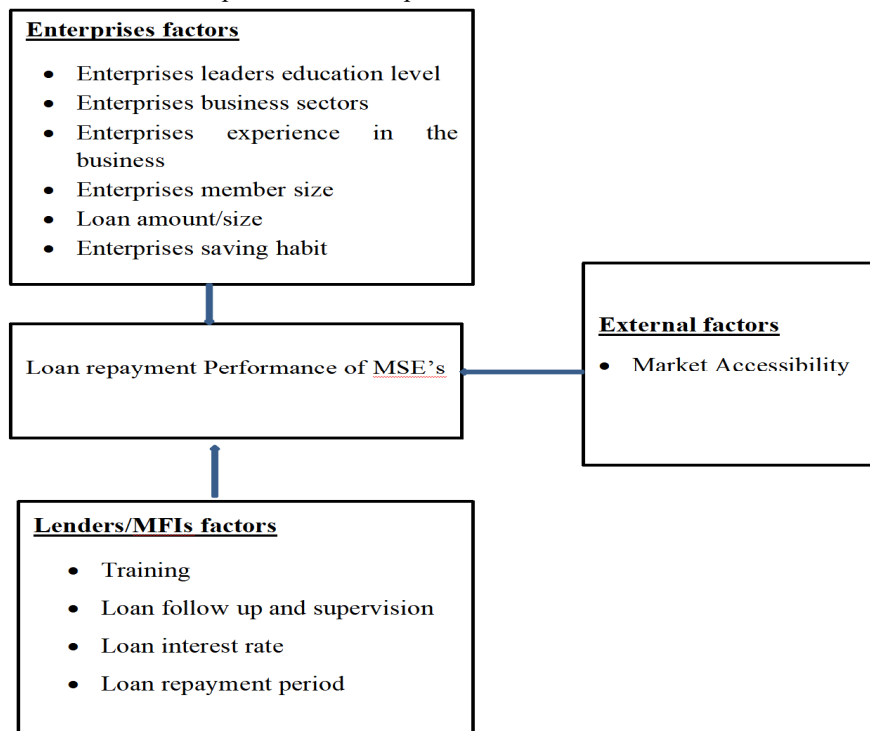
However, it's important to conduct a further investigation on the determinants of loan repayment performance of Micro and Small Enterprises in the case of Dire Dawa City Administration by including external factors that affect loan repayment performance, by including all MSE sectors and by analyzing their successive past ten years loan repayment might provide an additional picture of the gap for the microfinance practitioners to improve their lending strategies.

2.2. Conceptual Framework

According to Jonker & Pennink (2010), conceptual model can be helpful in structuring the problem, identifying relevant factors and then providing the connections that make it easier to map and frame the problem. The conceptual model of this study is to examine the determinants of loan repayments performance of MSEs in Dire Dawa City Administration. From literature review, various empirical studies reviewed by the authors cite probable factors that influence loan repayments. This study has focused on enterprises factors (enterprise leader's education level, enterprises experience in the business, enterprise member size, loan amount and enterprises saving habits), Lender/MFI factors (training, follow up and supervision, loan interest rate and loan repayment period) and external factors (market accessibility) as an independent variables whereas loan repayment performance is a dependent variable, which is a measure of loan repayment performance and depends on the occurrences of the stated independent variables.

The following model was estimated to depict the relationship between dependent and independent variable to solve the factors affecting loan repayment performance.

Figure2. 1: Conceptual Frameworks of the study
 Relation between dependent and independent variables:



(Source: Own construct based on summary literature review, 2020)

3. Data and Methodology

3.1. Research Design

The study employed explanatory and descriptive research design with quantitative and qualitative methods. The descriptive analyses approach were employed to explain the overall primary data collected from the respondents using the structured questionnaires. The qualitative data method were employed to collect the primary data by using questionnaires from the sample respondents in relation to the enterprises related factors, lender or MFI related factors and external related factors that influences the repayment performance of MSE sectors. Whereas, the quantitative data approaches were utilized to collect the relevant information from various sources such as the MFI, MSEs, and National Bank of Ethiopia. Also, the study employed explanatory research design to analysis the effects of explanatory variables on dependent variable, loan repayment performance of MSEs in the study area.

3.2. Data Source and Types

To conduct the study the researcher has been used both qualitative and quantitative types of data. The qualitative data method was employed to collect the primary data from the sample MSE's leaders. Whereas, the quantitative data approaches were employed to gather the relevant information from various sources such as the lending institutes, micro and small enterprises and National Bank of Ethiopia. Regarding the sources of the data the study was conducted based on both primary and secondary sources data. The primary data was collected from the selected MSE's leaders by questionnaires. The questionnaires of this study included both closed and open-ended questions. While the secondary data was collected from published and unpublished documents of DMFI, NBE, and other related literatures concerning determinants of the loan repayment performance of MSE's sector levels in the study area.

3.3. Data collection instruments

To collect sufficient and relevant information the study has been used both primary and secondary sources of data. Primary data were collected through questionnaire and structured face-to-face interviews. The questionnaires of this study included both closed and open-ended questions. The questionnaires were prepared in English language then translated into Amharic and Afaan Oromo to make easier for MSE's leaders. The questionnaires were self-administered to the sampled MSE's leaders because it was simple method that enables the respondents to read the questions and filled in the answers by themselves. In addition, the self-administration technique is an appropriate since the researcher have been able to rectify any questions at the ground and make

sure all the questions had been responded to. While the secondary data were collected from published and unpublished documents of DMFI, National Bank of Ethiopia, and MSEs regarding the determinants of loan repayment performance of MSE's sectors in the study area.

3.4. Target Population

The study was carried out on the determinants of loan repayment performance of MSEs in Dire Dawa City Administration. There are 7, 698 Micro and Small Enterprises which was active in the program at the end of 2019 and they are the target population of the study area. These populations are classified into the sectors in which they are involved and the total numbers of each sector: manufacturing 304, construction 145, urban agriculture 1,270, service 1,808, and trade 4,171 (DMFI, 2019).

3.5. Sampling Method and Sample Size

3.5.1. Sample size determination

There are several approaches to determine the sample size. These include using a census for small populations, imitating a sample size of similar studies, using published tables and applying formulas to calculate a sample size (Salem, 2016). To determine the appropriate sample size, the basic factors to be considered are the level of precision required by users, the confidence level desired and degree of variability.

Sample size was determined by using simple random and stratified sampling methods to select the MSE's Leaders that represent the overall population of study area. The target populations (MSE's sectors leaders) were grouped by stratified sampling method i.e. manufacturing, construction, urban agriculture, and trade and service sectors. The study collected information from selected enterprises leaders. Because the enterprises leaders is one who know required information concerning their members and enterprises in detail.

Lastly as per loan list survey, total of 7,698 MSEs are active in program during 2019. To select representative sample from this population, first, the initial sample size will be determined by using the following binomial distribution formula:

$$n = \frac{Z^2 * (p) * (q)}{e^2} \quad \text{Then, } n_0 = \frac{1.96^2 * (0.5) * (0.5)}{0.05^2} = 385$$

Where;

n: Proposed sample respondents.

Z²: Level of confidence interval at 95%; i.e. ~1.96

P: Estimated proportion of sample defaulters

Q: Estimated proportion of sample non-defaulters

e²: Standard Error

Cochran's (1977) correction formula has been used to calculate the final sample size. This calculation was done as follows:

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} \quad n = \frac{385}{1 + \frac{(385 - 1)}{7698}} = 367$$

Where, 'N' is the total population and 'n' is sample size of the study. The researcher has selected 367 from MSE's leaders. This sample size can be used as representative of the micro and small enterprises, because of MSEs under similar strata have homogenous characteristics and have common environment in which they exposed for similar problems.

From each stratum of MSE's Sectors i.e. manufacturing, construction, urban agriculture, service and trade sectors, proportionate sample size was taken. The reason for using proportionate sample is to give equal chance for all respondents. To determine sample size from each stratum, the following sample size determination formula has been used:

$$nh = \frac{Nh}{Ns} * n$$

Where: **nh** = sample size from each stratum, **Nh** = Total population in each stratum, **Ns** = Total population of the sum of strata for study and **n** = Total sample size from the study population Israel G. (1992). Based on this formula, sample size from each stratum is provided in the table 3.1 as follows.

Table3.1: Determination of selected sample size from MSE's

Types of sectors	Total Number of MSEs	Proportionate sample size
Manufacturing	304	14
Construction	145	7
Urban agriculture	1,270	61
Service	1,808	86
Trade	4,171	199
Total	7,698	367

Source: Author design based on DMFI, (2020).

3.5.2. Sampling method

As it was discussed in the previous section, the target population of this study is micro and small enterprises leaders. The sample for this study categorized in to sectors i.e. urban agriculture, manufacturing, construction, service and trade sectors. In this technique sample size were selected from each stratum, and the sample selected from each stratum was based on simple random sampling or stratified random sampling with proportionate stratified sampling.

3.6. Methods of data Analysis

After data collection, editing and coding both quantitative and qualitative data was analyzed by using descriptive and econometric methods. The descriptive statistics such as percentages, frequency, Mean and Standard deviation are used for comparing defaulters and non-defaulters in various explanatory variables. The Econometrics analysis, the binary logistic regression model was employed by using STATA software version 14.00. Finally, the analyzed data was presented in the form of table and the presented data also interpreted to provide detailed conclusions and recommendations regarding to the effect of explanatory variables (independent variables) on the dependent variable, that influence the loan repayment performance of MSE's sectors in the study area.

3.7. Description of the study Variables and their scale of measurement

The study variables composed of both dependent and independent variables through which the independent variables have effect on the dependent variable.

Dependent Variable

Loan repayment performance for the purpose of analysis, the dependent variable of the study is loan repayment performance (LRP) that are classified into two groups of enterprises as; non-defaulter who repaid the loan on time and defaulter enterprises who could not pay the loan in full for three months (90 days) from the past due date. As it discussed earlier under the statement of the problem the average default rate of the MSE's of different sectors financed by DMFI for the last ten years was reached about 22.16% on average which is greater than the National Bank of Ethiopia (NBE) minimum requirement set for all financial institutions, i.e., <5 percent default rate or >95 percent expected to be collected. This shows there is the loan repayment performance problem that needs to be solved by the following independent variables.

The independent variables

The independent variables that are expected to influence the dependent variable or Loan repayment performance of Micro and Small Enterprises were selected based on the existing literature on the determinants of loan repayment performance of micro and small enterprise's sectors. The explanatory variables selected for this study were broadly categorized under enterprises factors, lender (MFIs) factors and external factors. The loan repayment performance could be affected by these factors either positively or negatively. Therefore, a description of the explanatory variables and their influence on the loan repayment performance is summarized as follows:

Table3.2: Summary of variables description, symbol, types and their measurement units

Variables descriptions	Symbol	Types	Units of measurement
Loan repayment Performance	LRP	Dummy	0= Defaulters, 1= Non defaulters
Gender of enterprises leader	GEND	Dummy	0= For male, 1= For female
Age of enterprises leader	AGE	Continuous	Number in years
Marital status	MS	Dummy	1= For married, 0 = Otherwise
MSEs leader education level.	LEL	Categorical	0= For lower educational level, 1= For higher educational level
Enterprise business sectors	EBS	Categorical	0= Urban agriculture; 1= Construction; 2= Manufacturing; 3= Services; 4= Trade

Variables descriptions	Symbol	Types	Units of measurement
MSEs business experience	BEXP	Continuous	Number in years
Enterprise Members Size	EMS	Continuous	Number of members
Loan Size	LS	Continuous	Amount in birr
Enterprises Saving Habit	ESR	Dummy	1= If enterprises have saving habit, 0= If not
Training	TR	Dummy	1= If training is provided; 0= If not
Follow up and supervision	FS	Dummy	1= If adequate follow up; 0= If inadequate follow up
Loan interest rate	LIR	Continuous	Interest rates charged on loan by percentages
loan repayment period	LRP	Continuous	Number in months or years
Market Accessibility	MA	Dummy	1= If the existence of market accessibility 0= If not the existence of market accessibility

Source: Author construct, (2020)

3.8. Econometric Model Specification

To examine determinants of loan repayment performance of MSEs, the binary logistic regression model was used to examine the effects of each factor such as enterprises, lending institution and external factors on loan repayment in the study area. This model is selected due to the nature of dependent variable of loan repayment which is dichotomous taking on two values 0 and 1, which is 0 if the enterprisers is a defaulter and 1 if the enterprises is non-defaulter, the dependent variable is dummy variable with only two categories 0 and 1 respectively. According to (Solomon, 2013), the estimation dichotomous values require the use of qualitative response models and the non-linear probability models, logit and probit models are the possible alternatives. However, several estimation problems arise particularly when Ordinary Least Squares (OLS) regression and linear probability models are employed (Aldrich and Nelson, 1984). The OLS regression technique, when the dependent variable is binary, produces parameter estimates that are inefficient and a heteroscedastic error results in the structure. Hence, the logistic or logit model will be selected for this study. In this study, since only two options are available, namely “repayment loan” or “non - repayment loan” (non -defaulting or defaulting) a logit model is set up to define Y=1 for situation where MSEs repay loan to lender and Y=0 for situations where MSEs did not repay the loan to lender.

According to Gujarati, (2004), the cumulative logistic probability distribution model for this study is econometrically specified as follows:

$$P_i (Y_i = 1 | X_i) = \frac{1}{1 + e^{-(\alpha + \sum \beta_i X_i)}} \quad \text{----- (3.1)}$$

Where: P_i is the probability that MSEs repay loans on time. Y represents the dependent variable which is loan repayment performance, X_i represents the i^{th} explanatory variables; α & β_i are regression parameters to be estimated and e is the base of the natural logarithm, which is approximately equal to 2.718.

For simple description, we write equation (1) as follow:

$$P_i = \frac{1}{1 + e^{-z_i}} \quad \text{----- (3.2)}$$

Where $z_i = \alpha + \sum \beta_i X_i$ and represent loan repayment for the i^{th} enterprise

According to Hosmer & Lemeshew (1989), the binary logistic regression model could be written in terms of the odds and log of odds, which enables one to understand the interpretation of the coefficients. The odds ratio implies the ratio of the probability that MSEs would repay loan on time (P_i) to the probability that MSEs would not have repay loan on time ($1 - P_i$).

$$\frac{(P_i)}{(1-P_i)} = \frac{1 + e^{-z_i}}{1 + e^{z_i}} = e^{z_i} \quad \text{----- (3.3)}$$

Or

$$\frac{(P_i)}{(1-P_i)} = \frac{1 + e^{-z_i}}{1 + e^{z_i}} = e^{(\alpha + \sum \beta_i X_i)} \quad \text{----- (3.4)}$$

Therefore, we can write and taking the natural logarithm of equation (4) yields:

$$Z_i = \ln \left(\frac{P_i}{1-P_i} \right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n \quad \text{----- (3.5)}$$

If the disturbance term U_i is taken into account, the logit model becomes:

$$Z_i = +\beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + U_i \quad \text{or} \quad Z_i = \alpha + \sum \beta_i X_i + U_i \quad \text{----- (3.6)}$$

The dummy variables, also known as indicators and bound variables, characterize dichotomous responses. The dichotomous response variable Z_i (Y_i) = 1 or 0. In this study, since only two options are available, namely “repay the loan ” or “not repay the loan” a binary logistic regression model was set up to define $Y_i=1$ for

situation where MSEs repay the loan on time and $Y_i=0$ for situations where MSEs did not repay the loan on time to the lending institutions .

Therefore, the logistic regression model in this study can be specified as:

$$Y_i = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + U_i \dots \dots \dots (3.7)$$

Where: Y_i is a dependent variable (the observed variable, representing the proportion of loan repayment); $X_1 \dots n$ are explanatory variables; $\beta_1 \dots \beta_n$ are the slope coefficients;
 α - Constant (intercept) and U_i - is error term.

The finally employed model has the following form:

$$LRP = \alpha + \beta_1 GENDE + \beta_2 AGE + \beta_3 MS + \beta_4 LEL + \beta_5 EBS + \beta_6 BEXP + \beta_7 EMS + \beta_8 LS + \beta_9 ESH + \beta_{10} TR + \beta_{11} FS + \beta_{12} LIR + \beta_{13} LRMP + \beta_{14} MA + U_i \dots \dots \dots (3.8)$$

Where, LRP – refers to the loan repayment performance of MSE sectors while the symbols of independent variables already explained in the table 3.2. U_i - error terms in the study, α - refers to the intercept (Constant) and $\beta_1, \beta_2, \beta_3 \dots \beta_{14}$ refers to coefficients of the parameters to be estimated (Agresti, 2007).

4. Results and Discussion

Accordingly, after the diagnostic test has been conducted such as Normality, Multicollinearity, Autocorrelation, model specification test, link test model were proven that there is no evidence of violation.

Table 3 below presents the result of Binary Logistic Regression Model that examines the effect of explanatory variables on loan repayment. Hence, explained variable is loan repayment performance (LRP) whereas; demographic related, Enterprises related, Lender related and others external are explanatory variables. The results of Binary Logistic Regression model analysis through STATA software have been shown below.

Table4. 8: Summary of binary logistic regression result

Logistic regression

Number of obs	=	367
LR chi2 (17)	=	250.13
Prob > chi2	=	0.0000
Pseudo R2	=	0.5256

Log likelihood = -112.88664

LRP	Coef.	Std. Err.	Z	P>z	[95% Conf. Interval]	
GEND	-.949345	.3602966	-2.63	0.008*	-1.655513	-.2431766
AGE	.0512832	.0182677	2.81	0.005*	.0154792	.0870871
MS	1.29801	.3749235	3.46	0.001*	.5631738	2.032847
LEL	3.08655	.3882554	7.95	0.000*	2.325584	3.847517
EBS						
Construction	.3452203	1.46984	0.23	0.814	-2.535614	3.226054
Manufacturing	1.119646	1.336686	0.84	0.402	-1.50021	3.739501
Service	-.3962608	.6729874	-0.59	0.556	-1.715292	.9227703
Trade	-.5962912	.5964166	-1.00	0.317	-1.765246	.5726639
BEXP	.3315931	.1598823	2.07	0.038**	.0182296	.6449566
EMS	-.2877894	.1129123	-2.55	0.011**	-.5090934	-.0664853
LS	.000039	.000024	1.63	0.104	-7.96e-06	.000086
ESH	1.310635	.3688193	3.55	0.000*	.5877622	2.033507
TRG	1.47616	.3571349	4.13	0.000*	.7761888	2.176132
FS	1.146534	.3621628	3.17	0.002*	.4367074	1.85636
LIR	-1.884181	.8403056	-2.24	0.025**	-3.53115	-.2372125
LRMP -	.1842143	.3908425	-0.47	0.637	-.9502516	.581823
MA	.9373316	.3636711	2.58	0.010*	.2245493	1.650114
_cons	18.83091	10.64135	1.77	0.077	-2.025754	39.68757

Source: computed from the survey data, 2020

*and** indicates that the level of significance are at 1% and 5% respectively.

As presented in the table 4.8 above, by considering all factors considered in this study at once in the model. Out of fourteen independent variables regressed in the model, eleven coefficients of the explanatory variables

found as statistically significant at 95 percent confidence level. These variables such as; leaders age (AGE), leaders marital status (MS), leaders educational level (LEL), enterprises saving habits (ESH), training (TR), market accessibilities (MA) and follow up or supervision (FS) found to positively influence the loan repayment performance at 1% significance level, while business experience (BEXP) found as positively influence the loan repayment performance of enterprises at 5% significance level. The enterprises member size (EMS) and loan interest rate (LIR) negatively influence the loan repayment performances at 5% significance level and negatively respectively, whereas enterprises leaders gender (GEND) found as negatively influence the loan repayment performances at 1% significance level in study area. The probability effect of the explanatory variables on the dependent variable, loan repayment performance interpreted as follows.

4.1.1.1. Effect of demographic characteristics on LRP of MSE's

In this case, the effects of the variables listed under the demographic characteristics of MSE's leaders interpreted based on the sign of each independent variable. As observed in the table 4.8 above demographic characteristics; GEND (gender), age (AGE), MS (marital status), and LEL (education level) of MSE's leaders significantly influence loan repayment performance of the MSEs in the study area.

With regard to gender, the finding shows that female enterprises leader have higher probability of being defaulter. The involvement of the female enterprises leaders decreases the probability of being creditworthy by 28% at 1% significance level, other things held constant. The probability effects of this variable did not predetermined in the hypothesis. Assigned female for MSE's leaders are more defaulter than the male. Further assessment and efforts on selecting the female enterprises leader should be the considerable issues to be taken into account by the members of enterprises. This is agreed with the finding result of Abafita (2003) and Ann mukono (2015). However, argued with the reports revealed by Abreham (2017) and Tesfaye (2018).

The age of enterprises leader positively and significantly influence loan repayment at 1% significance level. This indicates an increase of the enterprises leaders' age in one year increases the probability of the loan repayment performance by 48.7%, holding other variables constant. This means that MSE leaders those higher age categories, the more likely to be repaying their loan timely at the repayment schedule than lower age categories in the study area.

The marital status of enterprises leader was positively and significantly influence loan repayment at 1% significance level. A married enterprises leader increases the probability of the loan repayment performance by 21%, holding other variables constant. This means that MSE leaders those have married marital status, the more likely to be repaying their loan timely at the repayment schedule than not.

The enterprises leaders education levels were positively and significantly influence loan repayment performance at 1% significance level. For a change in category of leader's education level from lower educational level to higher educational level, the loan repayment performance of enterprises are increased by 4.4% in the study area. Thus, as the education level increases the probability of repaying the loan increases and the probability of not repaying the loan decreases. This suggests that more educated MSE's leaders may have access to business information, efficient in resource allocation and easily adapt to changing circumstances. This is agreed with the prior expectation and with the finding result of Nancy and Mohamed (2014), Ann mukono (2015), Tolosa (2014), Mesele et al, (2016), Ababiya et al (2015), Benjamin et al (2017) and Gobena (2018).

Generally, enterprises leaders' age, marital status and education level were found to influence loan repayment performance of MSE's positively at 1% level of significance. Whereas enterprises leader gender were found to influence loan repayment performance of MSE negatively at 1% significance level in the study area.

4.1.1.2. Effect of enterprises related factors on LRP of MSE's

In this case the effect of the variables listed under the enterprise related factors were interpreted based on the sign of each independent variables included in the study area and analyzed in the table 4.8 above.

The enterprises experience in the business found to influence loan repayment performance positively and statistically significantly at 5% significance level. Holding other variables constant an increase enterprises business experience in a one year, increases the probability of the loan repayment performance by 42% in the study area. With the enterprise experience in the business, the more likely to be the MSE sectors non-defaulter, which means that the enterprise those have experience in the business would be the more likely repay their loan timely at the repayment schedule in the study area. Having more experience leads to non-defaulter category of MSE's loan repayment performance status whereas lack of experience leads to defaulter category of MSE loan repayment performance status. This result is agreed with the prior expectation and in line with the study made by Ann mukono (2015), Firafis (2015), Selam (2016), and Gobena (2018). However, the result is not agreed with the result of Ababiya *et al* (2015).

The enterprises member size negatively and statistically significantly influences the loan repayment performance at 5% significance level. Holding other variables constant, an increase in a one individual in the enterprise members would decrease the probability of the loan repayment performance by 57% in the study area. This means that MSE sectors those have higher members size would be more likely to fail to repay their loan

timely at the repayment schedule in the study area. This result is the same with the prior expectation and supported by the finding of Benjamin (2017) and Gobena (2018).

The enterprises saving habits were found positively and significantly influence the enterprises loan repayment performance. It became significant predictor of enterprises loan repayment performance at 1% significance level. Holding other variables constant, enterprises those have saving habits the higher the probability of loan repayment performance by 21.2% in the study area. This means MSE sectors those have saving habit was found to repay their loan timely, whereas MSE's sectors that do not have saving habit fail to repay their loan timely. This result is similar with the prior expectation and supported by Firafis (2015).

Generally, both enterprise saving habits and enterprise experience in the business found to influence loan repayment performance of MSE's positively at 1% and 5% level of significance respectively. While enterprises members' size found to influence loan repayment performance of MSE negatively at 5% level of significance.

4.1.1.3. Effect of lenders related characteristics on LRP of MSE's

Under this the effect of the variables listed under the lenders related factors were interpreted based on the sign of each independent variables included in the study area.

Training provided by lender found to determine loan repayment performance positively and statistically significantly at 1% significance level. Holding other variables constant, the delivering of well-organized and sufficient training provided for MSE's increases the probability of being creditworthy by 18.6% in the study area. The adequate training delivered by the loan officer improves the loan repayment performance of MSE sectors. In another words this means that the enterprises with sufficient and adequate training, the higher possibility of being creditworthy than others who did not. This result is similar with the prior expectation and with the result of Firafis (2015), Abreham (2017), Ababiya et al (2015), Tesfaye (2018) and Gobena (2018). However, it contradicts with the result of Tolosa (2014) and Mesele et al (2016).

The follow up or supervision of loan found that positively and statistically significantly influence loan repayment performance at 1% significance level. Holding other variables constant, as a regular follow up and supervision made by the loan officer of DMFI in the business leads to increase the probability of MSE repaying the loan by 24%. In other case when a follow up or supervision activity provided by the loan officers of DMFI the probability of default decreases. Also this result is in line with the prior expectation and with the result of Firafis (2015), Tesfatsion et al (2015), Selam (2016) and Gobena (2018). But, this result is not agreed with the result of Tolosa (2014), Abreham (2017) and Balamurugan (2017).

Loan interest rate was found to determine loan repayment performance negatively and statistically significantly at 5% significance level. Holding other variables constant an increase a one unit in the loan interest rate charged by the lenders would decrease the probability of loan repayment by 86.8% in the study area. Which means that with the higher loan interest rate charged by lenders institution, the MSE sectors fails to repay their loan at its repayment schedule. As the interest rate charged by lender increased the probability of default to be increase. This result is similar with the prior expectation and supported by the result of Nancy and Mohamed (2014), Ann mukono (2015) and Gobena (2018). However, this result is inconsistent with Benjamin et al (2017).

Generally, both training and loan follow up or supervision positively influences the loan repayment performance of MSE sectors at 1% significance level. While the loan interest rates negatively influence loan repayment performance of MSE sectors at 5% significance level.

4.1.1.4. Effect of external related characteristics on LRP of MSE's

Under this, the effect of the external variable interpreted based on the sign of independent variable included in the study area and analyzed in the table 4.8 above.

The market accessibility of MSE's products and services found that positively and statistically significantly determine loan repayment performance at 1% significance level. Holding other variables constant, an existence of market accessibility for in -put and out- put material in the working area for MSE's increase the probability of MSE loan repayment performance by 28.1% in the study area. With the higher market accessibility for in -put and out- put material in terms of demand, proximity to customers, distribution, pricing and advertising for MSE sectors the more likely to be increases the probability of loan repayment performance in the study area. This result is similar with the prior expectation and with the result of Ababiya *et al* (2015), Selam (2016) and Gobena (2018).

5. Conclusion and Recommendation

5.1. Conclusion

This study employed both the descriptive and logistic regression model in order to analysis the factors that determine loan repayment performance of MSE by considering demographic, the enterprises, lender or MFI, and the external related characteristics. This study found pertinent factors that affect the loan repayment performance of MSE's. The following conclusion is made based up on the main findings of this study.

The descriptive statistics result indicated that about 64.85 percent of the sampled MSEs were non-defaulters and remaining 35.15 percent are defaulters. The average loan repayment rate for the successive past ten years showed that from disburse loan 22.16 percent were not collected.

A gender of MSE's leaders was found to determine loan repayment negatively and statistically significant. The gender analysis showed that male leaders have high loan repayment performance than female MSE's leaders.

Age of enterprises leaders was positively and statistically significantly influences loan repayment performance of MSE sectors. As the age of leaders increases their loan repayment performance increased in study area. It is possible to say that through a time age MSE's leaders acquire experience in business, more responsible for their activities, became settled and accumulate more wealth than youths.

Marital status of enterprises leader was positively and statistically significantly influences loan repayment performance of enterprises. This study showed us married enterprises leaders have high loan repayment performance. This means that MSE leaders with married marital status, the more likely to be repaying their loan timely at the repayment schedule than others in the study area.

Enterprises leader's education level: The education level attained by the enterprises leaders was statistically significant and had apposite relationship with loan repayment. In this study the leaders with more education was more likely to be successful in MSE sectors. That is the enterprises leaders with higher education level has greater chances of succeeding than those with less education. Enterprises that are more educated know how to prepare business plan, manage expenses, generate revenue, save, invest etc. Therefore, enterprises who attained higher education are repaying their loan better than those attained lower education.

Business experience: business related experience was found that positively and significantly affect loan repayment performance. This shows that enterprises managed by experienced managers have higher probability of success to repay the loan. It has been known that business related experience is one of the determinants that affect the loan repayment rate of enterprises. Having more experience leads to non-defaulter category of MSE's loan repayment performance status whereas lack of experience leads to defaulter category of MSE loan repayment performance status.

Enterprises members' size: The enterprises members' size was statistically significant and negatively related with the loan repayment performance. This study indicated that enterprise those have lower members' size well performed their loan repayment than those have large members' size. The larger members of the MSE sectors results affect their loan repayment activities. Therefore, micro and small enterprise those contains large members size could be fail to repay their loan.

Enterprises saving habit: having its own saving habit was found to determine loan repayment positively and statistically significant. Having its own saving cultures enable the MSEs to run their business properly and effectively. This means MSE sectors those have saving habit was found to be repay their loan timely, whereas MSE sectors those do not having saving habits fail to repay their loan timely.

Training: Training accessibility was found to determine loan repayment positively and statistically significant. Access to training for enterprises refers to the facilitation of different training which assists the operators of the enterprises to perform in a suitable way. Capacity building trainings would better prepare enterprises to perform in the business they engaged. Therefore, enterprises that have sufficient access of training are repaid their loan than those less trained. In other way delivering of well-organized and sufficient training properly to enterprises, lessen the probability of being defaulter.

Loan follow up or supervision: Supervision affects the loan repayment performance positively and statistically significant. Enterprise those who supervised showed good performance to settle their loan because supervision may avoid the problem of diverting the loan for other purpose and encourages the members to make the full effort required for their investment projects to be successful.

Loan interest rate: Loan interest rate negatively and statistically significantly influences loan repayment. This study showed us enterprise more repay their loan if the interest rate charge is less. So rising interest rates can cause the loan repayment failure and discourage business to grow in the sense that a big part of the profit generated goes back to the financial institution to service the loan that once given to the enterprises or borrowers. Generally, if the lender imposes high interest rate it leads to default.

Market accessibility: market accessibility was determining loan repayment positively and statistically significant. Access to market refers to the availability of market demand for the particular product or service. Enterprises create different market access for their products and services, proximity to their customers, appropriate modes of distributing products; pricing and promotion insure the existence of market alternatives for their product. So the higher level of market access results the higher probability of getting profit and the greater level of enterprises loan repayment performance.

5.2. Recommendation

Depending on the findings of the study, the following recommendations are forwarded on the issue of loan repayment performance of MSE's.

From the study point of view, male enterprises leaders are high loan repayment performance than females. I recommend that the female enterprises should be encouraged and provide enough training by concerned body to enhance their loan repayment performance. Regarding marital status of enterprises leader the married enterprises leaders has more loan repayment performance than others do. Therefore, assigning married leaders are better for the MSEs in study the area. The enterprises leader attained higher educational level able to repay loan better than the enterprises leader attained lower educational level. Therefore, lending institutions should motivate educated people.

Enterprises that have high experiences have higher probability of success to repay the loan. Therefore, lender before loan disbursements should assess the MSE's experience in business and they should include experience in their loan criteria.

The enterprises with lower numbers of member's size would meet their repayment obligation better than with high number of members. To avoid this loan repayment defaults and to reduce their cost which in turn affects their loan repayment activities lender (DMFI) should aware the enterprises that the lower member's size, performs well in paying their loan than the larger member's size.

Enterprises that have its own saving habit showed good performance on loan repayment because saving habit may enable the enterprises to deposits from their daily, weekly, and biweekly incomes and encourage the members to make the full effort required for their investment projects to be successfully and repaying their loan timely. Therefore, financial institution in general and DMFI in particular should make awareness to MSEs on how to develop their saving cultures and its importance through by improving their saving frequency.

Capacity building trainings would better prepare enterprises to perform in the business they engaged. Therefore, enterprises that have sufficient access of training repaid their loan than those less trained. In other way, delivering of well-organized and sufficient training decreases the probability of being defaulter by enterprises. Therefore, loan officers DMFI should provide a frequent training activities to MSE sectors and they aware out their financial management activities like the financial statement recording experience that enables them to manage the expense and revenue related activities of their business.

Enterprises that supervised shows a good performance to settle their loan because supervision may avoid the problem of diverting the loan for other purpose and encourages the members to make the full effort required their investment projects to be successful. Therefore, DMFI should make continuous follow up and guidance for enterprises on how to use loan in general and pay regular visits to evaluate the loan utilization and repayment.

Enterprises create different market access for their products and services to insure the existence of market alternatives for their product. Therefore, the higher level of market access results the higher probability of getting profit and the greater level of enterprises loan repayment performance. Therefore, MSE should work hard to have market demand for their product or services by preparing of different market exhibitions that help them to get market access and market linkages for their products and services as well as share good habits of work among them that leads enterprises to sustain in the business.

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