Factors Affecting Loan Repayment Performance of Smallholder Farmers: The Case of Microfinance Institutions in Toke Kutaye District, West Shoa Zone, Ethiopia

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Abstract
The main purpose of this study was to identify the factors determining loan repayment performance of smallholder farmers; and to evaluate the based performance of the Microfinance Institutions operating in Toke Kutaye district. Primary data were collected using structured questionnaires from 122 randomly selected smallholder farmer clients. Secondary data were obtained from the annual reports and financial statements of the Microfinance Institutions. The data were analyzed using descriptive statistics and binary logit regression models. The results of the descriptive analysis revealed a significant mean difference between the defaulter and non-defaulter households in terms of total annual farm income, expense on social ceremonies, livestock units, and distance from credit sources. Although the repayment status in the study area was insignificant, there was a variation among institutions where the numbers of non-defaulters decline from Oromia Credit and Saving Share Company, Vision Fund Microfinance and Eshet Microfinance successively along with ratio statistics result. The logit model revealed that age, education level, tropical livestock unit, participation in off-farm activities, repayment period suitability, and sex found to be have positive effects whereas expense on social ceremony, family size, loan diversion found to have negative effects on loan repayment performance of the smallholder farmers. Our findings suggest, in order minimizing loan defaults in the study area, microfinance institutions, non-governmental organizations and policy makers have to effectively work on improving the constraining factors.
Keywords: Binary Logit; Customers: Defaulters, Loan repayment; Smallholder farmers
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INTRODUCTION
Ethiopia is a standout amongst the most underdeveloped countries in the world, in spite of its immense natural resource base. The agriculture sector is important to the Ethiopian economy; contributing 46.4% to Gross Domestic Product (GDP), growing at an annual rate of 7%, and employing approximately 85% of the labor force (MoAR, 2012).

Having all these importance, Ethiopian agriculture continued to face a number of problems and challenges namely; adverse climatic conditions, rainfall dependency, lack of finance, lack of appropriate land use system resulting in soil and other natural resources degradation (Belay and Degnet, 2004; Spielman et al., 2010).

However, to recover from these destructive and awful situations of poverty, the Ethiopia government took initiatives to reform the economy by redesigning a number of strategies and approaches. In implementing the recovery steps, initiating the credit scheme through microfinance institutions can be noted as one of the strategies that the government of Ethiopia embraced in 1990th (Garomsa, 2017).

The MFIs have motivated to work with farmer groups and agribusinesses in a chain to comprehend their needs and risks, repayment mechanisms to coordinate the value chain and demand (FAO, 2010). However, failure by farmers to repay a portion or at all of their loans on time has been a serious problem faced by both smallholder farmers (SHF) and agricultural credit institutions (Ayalew et al., 2013)

Due to repayment problem, many of MFIs are not sustainable on their own and too dependent on subsidies. However, MFIs should be sustainable and viable to make sure they can continually provide financing to their clients without depending on donors and governments (Nawai et al., 2012). Hence, one way to tackle the loan repayment problem is to investigate the factors which affect the loan repayment of MFIs. The Oromia Credit and Saving Share Company (OCSSCO), Vision Fund Microfinance Institution (VFMFI) and Eshet Microfinance institution (EMFI) are operating in the study area. Although they are among the legally licensed and registered MFIs aimed to solve the grass root financial problem of the poor farmers, the number of farmers using the service is relatively insignificant portion of the total households of the district.

There are numerous socio-economic and institutional factors impeding loan repayment rates of the borrowers of MFIs. According to Garomsa, (2017) who had studied factors affecting loan repayment performance of

borrowers on selected microfinance institutions in Oromia region has presented that Variables such as screen the utilization of other members in the group, credit timely released, suitable repayment period, repayment on monthly interval and training adequate utilization of the loan for an intended purpose were found to be positively affect the repayment performances.

The study conducted by Fikirte et al. (2011) on determinants of loan repayment performance of borrowers in AdCSI[1] MFI researcher revealed that age, family size, business types, sex, dependence ratio and business experience were found to be significant to influence repayment performance.

Despite the fact that there are a number of studies seen above, there was no available research conducted by researchers to assess loan repayment performance of smallholder farmers which be as well designated as research gap to be filled. Therefore, to alleviate the aforementioned problems the researcher tried tries to assess the factors affecting loan repayment of smallholder farmers in the study area generally. Specifically, it aimed to evaluate the credit service performance of the MFIs regarding loan repayment process and to identify the factors affecting the loan repayment performance of smallholder farmers who are clients of the MFIs in the study area.

The Conceptual Framework

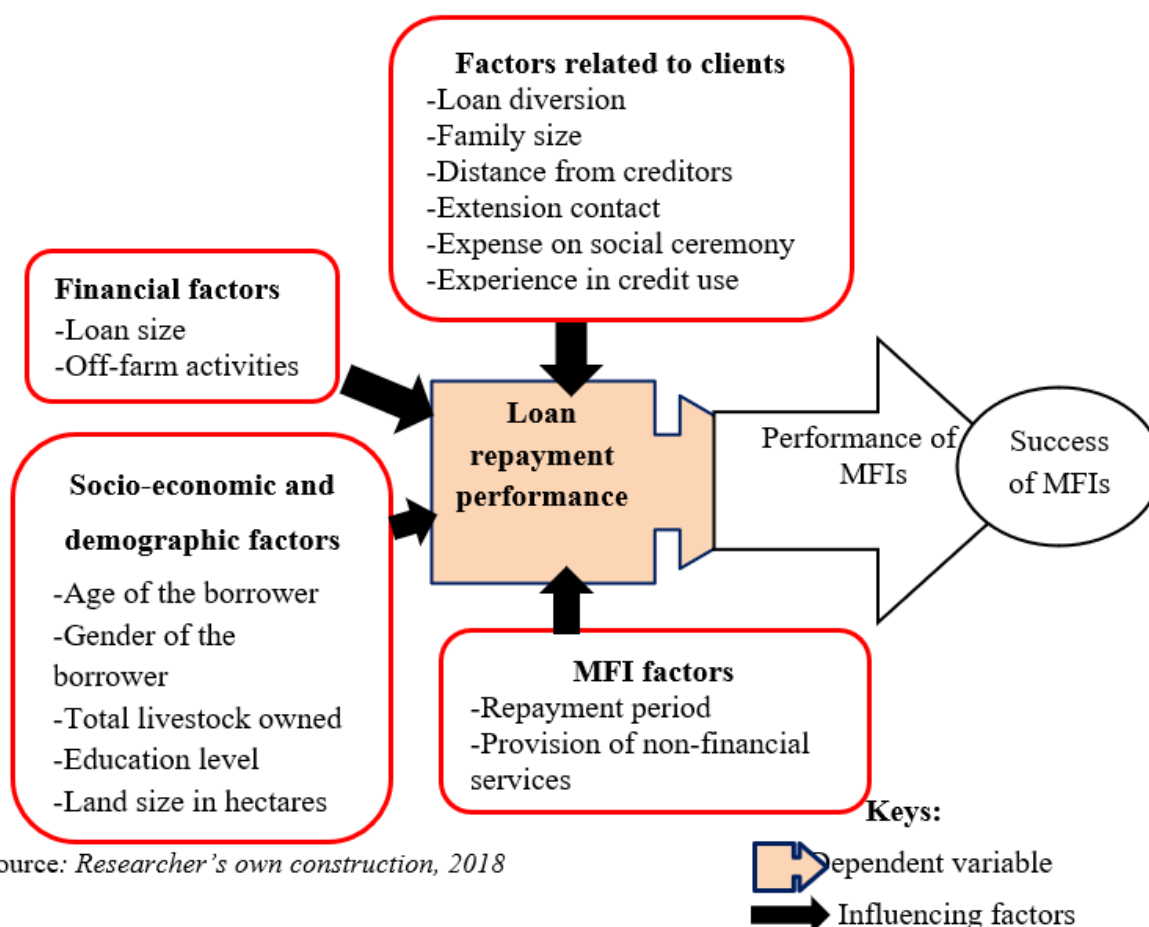The conceptual framework for the study was indicated as follow:

Figure 1 Conceptual framework

2. Data and Methods

2.1. The study area

The study area, Toke Kutaye district, is one of the 21 districts of the West Shoa Zone of Oromia Regional State of Ethiopia with the total area of 513.13 square kilometers (51313.19 hectares). The land use pattern of the district includes 35209.09 ha of agricultural cultivated land; 8017 ha of grazing land, 2846 ha of forest and 5241.1 ha residence areas and others arable lands (WOAD, 2017).

According to the WOAD bureau population July 2017 projection the total population of the district was estimated (see Table 1):

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[1] AdCSI sands for Addis Credit Saving Share Institution

Table 1 Total population of the study area

No	Sex Type	Urban	Rural	Total
1.	Male	13404	49456	**62860**
2.	Female	13389	49409	**62798**
	Total	**26793**	**98865**	**1235658**

Source: WOAD, 2018

The economy of the district depends on agriculture and its produces although some employed in trade. The district is characterized by mixed farming system. The chief crops produced in the district include *Teff*, Wheat, Barely, Maize, Sorghum, Beans, and Oil seeds like *Nug* (WoA, 2017).

The area has three agro-climatic zones: lowlands (desert/*berha*), midland (sub-tropical /*Woina Dega*) and highland (temperate/ *Dega*). These climatic divisions cover 51.31 %, 27.70 %, and 20.99 %, respectively. The average amount of rainfall throughout the year was 800 mm-1100 mm. Regarding temperature the district has maximum temperature 29^0c minimum temperature 10^0c and an average temperature 19^0c with the altitude of 1600m-3194 m. a.sl (WoA, 2017).

2.2. Data collection

Cross sectional research design was used to conduct and obtain the data for its high degree of accuracy, relatively less costly and easy to administer and collect all relevant data at single point in a time (Janet, 2006). In this study, combinations of qualitative and quantitative data were collected. Regarding sources of data, both primary and secondary sources have been used in generating valuable and relevant data.

To select sample respondents for the study, multi-stage sampling method was used. At the first stage, Toke Kutaye district was selected purposely from the West Shoa Zone of Oromia region for the reason that so far there was no scientific studies been conducted regarding to loan repayment. In the second stage, three legally registered and licensed microfinance institutions operating in Oromia National Regional State particularly in the study area were selected viz. OCSSCO, VFMFI and EMFI to assess their repayment performance. In the third stage, in order to decide the number of clients to be included in the sample, the researchers employed Yamane's formula (as cited in Yilma 2005).

In consideration of representativeness initially, the sample size were determined at 95% confidence level, degree of variability of 0.5 and with the 9% level of precision. Hence, in order to select the actual sample size the researchers used the aforementioned formula and obtained sample size as:

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

Where, n is sample size, N is the total number of population, and "e" is the level of precision.

$$n= \frac{7560}{1+7560(0.09)^2} \qquad n=121.5 \approx 122$$

Then, the researchers had taken the sample through disproportionate stratified sampling (allocates elements on the basis of some bias) from each MFI. In this case EMFI is over sampled due to relatively small number of clients.

Primary data were collected from smallholder farmer clients through direct interview by means of well-trained enumerators by researchers' supervision. To check for the fitness of the collected data the questionnaires were pretested whereas secondary data were obtained mainly from documents like audited financial reports, annual reports, MFIs yearly book, and other relevant materials.

2.3. Method of data analysis

Descriptive statistics such as percentages, mean, frequency, ratio statistics and inferential statistics like t-test and chi-square tests were employed to compare the performance of the three MFIs concerning their repayment. Binary logit econometric models were also used to analyze the data. Regression which involves yes or no is a dummy dependent variable regression model (Gujarati, 1995). Here, loan repayment performance in this study is a dummy variable, which assumes a value of zero or one depending on whether or not the borrowers default while the various socio-economic and lender related factors were considered as independent variables.

Thus, the most widely used and appropriate method of analysis for binary response dependent variables are logit and probit models (Verbeek, 2008). Assume that there exists a latent (unobserved) variable such that:

$$\hat{y}i = \beta X_i + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

$$y = \begin{cases} 1, \ if \ \hat{y}_i > 0 \\ 0, \ if \ \hat{y}_i \leq 0 \end{cases} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2)$$

Where; $\hat{y}_i$=a vector of the latent variable that is not observed for values less than zero and greater than one; y= the observed variable, representing the proportion of loan repayment; β= the unknown parameters reflecting the effects of change in variable X; X_i= explanatory variables that determine the dependent variable; ε_i= error terms that is distributed normally with mean 0 and variance σ^2; i= 1, 2...n, represents the number of observations.

Lemeshew (1989 cited in Belay, 2002) agree with the advantage of logistic distribution in the analysis of dichotomous outcome. Therefore, the logistic function is selected for this study as specified below (Verbeek, 2008).

$$Pi = E(Y = 1/X) = \frac{1}{1+e^{-Zi}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3)$$

$$Zi = \ln\left(\frac{Pi}{1-Pi}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_n X_n \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4)$$

$$Pi = E(Y = 1/X) = \frac{1}{1+e^{-(\beta_0+\beta i Xi)}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (5)$$

If the error term (ε) is taken in to account, the logit model becomes:

$$Zi = \beta_0 + \sum_{i=1}^{n} \beta_i X_i + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (6)$$

Where, Pi is the probability that an individual make a certain choice (default or non-default) given X_i; e denotes the base of natural logarithms, which is approximately equal to 2.718; X_i represents the ith explanatory variables representing the individuals' socio-economic and institutional factors;

X_1= Age of borrowers (AGB)
X_2= Education Status (EDUS)
X_3= Expense on Social Ceremonies (EXSCR)
X_4= Family Size (FMSZ
X_5=Loan Diversion (LONDV)
X_6=Participation of the Farmers in Off-farm Activities (POFFA)
X_7=Repayment Period Suitability (REPDS)
X_8=Sex of the Borrower (SXB)
X_9=Total Tropical Livestock Unit (TTLU)
Z_i= LR_i = loan repayment for the ith borrower
(LR_i = 0, borrower repaying loan on time; LR_i = 1, otherwise).

In the case of logistic regression, F(X) = P(Y=1|X), the relative effect of each explanatory variable on the likelihood that a farmer will be able to repay his or her loan (marginal effect) is given by:

ME x_k == P(Y=1 |X) * P(Y = 0|X) * β_k ……………………………………… (7)

Where, MEx_k is marginal effect of each explanatory variable X;

The marginal effects for binary categorical variables shows how P(Y = 1) predicted change as X_k changes from 0 to 1 holding all other X_s constant. For continuous independent variables, the marginal effect measures the instantaneous rate of change in P(Y=1) as X_k increases by one.

Table 2 Hypothesized predictor variables on loan repayment performance

No	Factors	Variable type	Measurement	Sign
1	Age of the borrower	Continuous	Measured in number of years	+
2	Distance from lenders office	Continuous	Time (hrs.)	-
3	Educational status of HH	Continuous	Years of schooling	+
4	Expense on social ceremony	Continuous	Amount of birr spent	-
5	Experience in credit using	Continuous	Actual number of years	+
6	Family size	Continuous	No of people under a roof	+
7	Frequency of extension contact	Continuous	Number of visit	+
8	Land size in hectares	Continuous	Total farm size (in ha.)	+
9	Loan diversion	Dummy	1=if diverted 0 =otherwise	-
10	Loan size status	Continuous	Amount of loan in birr	+
11	Number of livestock owned	Continuous	tropical livestock unit (TLU)	+
12	Participation on Off-farm	Dummy	1=participant,0=otherwise	+
13	Repayment period Suitability	Dummy	0= No 1=Yes	+
14	Sex of the borrower HH	Dummy	1=male,0=female	+

3. Result and discussion

3.1. Descriptive results

Table 3 gives the descriptive results of the purposes for which the clients use the credit and the association between the purpose and for the socio-economic characteristics of the respondents and compares defaulters and non-defaulters. Majority of them are found to be defaulters 49 (40.2%) 13.9% non-defaulters and 26.2% defaulters). Thus the statistical result reveals, a strong and statistically significant association between loan diversion and loan repayment at significant level 1% ($\chi2$=21.857, at P = 000).

About 37.7% (12.3% non-defaulters and 25.4% defaulters) have no engagement in off-farm activities. Hence, the chi^2 reveals that participation on off-farm activities and loan repayment performance of borrower are associated strongly and significant at 1 % ($\chi2$=23.083, P=000).

Actually, the number of non-defaulter is higher in case of users compared to the non-users of modern agricultural technologies. Hence, the statistical result chi^2 reveal that use of modern technologies and loan

repayment by smallholders are strongly associated and significant at 1% (2=7.387 p=007).

With respect to having another source of credit about 35.54% (10.74% non-defaulters and 24.79% defaulters) responds that in addition to being client to current MFI they have another formal/informal source of credit.

The result of chi2 ($\chi2$=25.564 P=000) implies there is a statistically significant difference between defaulters and non-defaulters, at 1% significance level. This finding is contradicted to the report by (Stephen, 2014).

Table 3 Association between Economic factors and farmer clients' loan repayment

Description		Defaulter		non-defaulter		$\chi2$- value		Total	
		N	%	N	%			N	%
Do you spend the loan for the intended purpose?	No	32	26.23%	17	13.93%	$\chi2$=21.875***		49	40.20%
	Yes	17	13.93%	56	45.90%			73	59.80%
	Total	49	40.16	73	59.84%		P=000	122	100%
Do you Participate in off-farm activities?	No	31	25.40%	15	12.30%	$\chi2$=23.08***		46	37.70%
	Yes	18	14.80%	58	47.50%			76	62.30%
	Total	49	40.20%	73	59.80%		P=000	122	100%
Do you Use agricultural technologies?	No	17	13.93%	10	8.20%	$\chi2$=7.378***		27	22.13%
	Yes	32	26.23%	63	51.64%			95	77.87%
	Total	49	40.16%	73	59.84%		P=007	122	100%
Do you have other formal/informal source of credit?	No	18	14.88%	60	49.59%	$\chi2$=25.564***		78	64.46%
	Yes	30	24.79%	13	10.74%			43	35.54%
	Total	48	39.67%	73	60.33%		P=000	121	100%

Source: Survey data computation 2018

Motivations to repay loan timely

From the graph below when we compare the number of non-defaulters those motivated to repay in expectation of further loan exceed those in other motives. Then the next motive for the defaulters is the clients understanding that paying loan on time is their obligation.
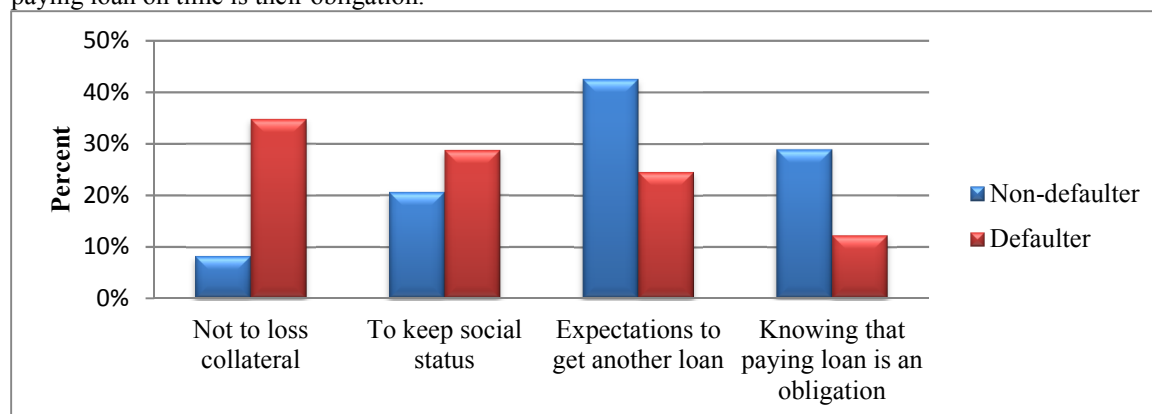
Source: Survey data computation 2018

Figure 2 Factors motiviting the clients to repay their loan on time?

Institutional factors affecting loan repayment

About 20.49 % (5.74% non-defaulters and 14.75% defaulters) are those who reported that they haven't been supervised by any institute body. The chi2=13.176 indicates that there was a significant difference between defaulters and non-defaulters, at 1% significance level. The implication is that the continuous follow up of borrowers reminds them to pay attention toward their production and income generation and able to increase their perception of responsibility toward loan repayment.

Table 4 shows almost all respondents were trained about how to run business that is why chi-square result shows an insignificant association between training and dependent variable at any level of significance.

While 31.15% (2.46% non-defaulters and 28.69%) respond that the repayment period is not suitable. The defaulters explained that, the earliness of this repayment period was a bottleneck to them to sale their crop immediately after peak harvesting time with lower price.

Table 4 Supervision, training before receiving loan and repayment period suitability

Description		Defaulter		non-defaulter		χ^2- value	Total	
		N	% within LRP	N	% within LRP		N	% within LRP
Have you ever been supervised for loan repayment?	No	18	14.75%	7	5.74%	Chi2=	25	20.49%
	Yes	31	25.41%	66	54.10%	13.176***	97	79.51%
	Total	49	40.16%	73	59.84%	P=0000	122	100%
Have you got training before receiving loan?	No	0	0.00%	1	0.82%	Chi2= 1.033	1	0.82%
	Yes	49	40.16%	72	59.02%		121	99.18%
	Total	49	40.16%	73	59.84%	P=0.310	122	100%
Do the repayment period suitable to meet the right marketing time?	No	35	28.69%	3	2.46%	Chi2	38	31.15%
	Yes	14	11.48%	70	57.38%	67.691***	84	68.85%
	Total	49	40.16%	73	59.84%	p=0.000	122	100%

Source: Survey data computation 2018

Descriptive statistics result for continuous variables

The mean farm income of defaulters was 4786.96 at standard deviation 1316.73, whereas of those non-defaulters was 11457.51 at standard deviations 7987.26. Based on this result we realize that those respondents with higher average annual farm income have higher tendency to repay their loan timely. Statistical analysis that investigate the effect of annual farm income on repayment performance of smallholder farmers showed a significant difference between defaulters and non-defaulters group (t-value= 5.786, p = 0.001). This implies that farm income was a contributory factor to the difference in repayment performances of the clients studied.

The average walking hours (distance) of the sample respondent from the MFI was 2.116 hrs. with standard deviation of 1.098 with maximum of 5 and minimum 0.5 hrs. The defaulters are far from the MFI at an average distance of 2.483 hrs. with the standard deviation of 1.067 whereas non-defaulters are at an average distance of 1.897 hrs. with standard deviation of 1.018. The mean difference between the average distances traveled by the non-defaulters and defaulters in hours was statistically significant at 1%level of probability (t-value=3.054, P=0.003).

Social ceremonies such as different holidays, wedding, religion days and funeral of family members were celebrated in the study area. According to the survey result, the average amount of money spent by defaulter group was Birr 2259.388 with standard deviation of 1558.89. On the other hand the average amount of money spent by non-defaulter group was Birr 1522.74 with standard deviation of 1242.84. This reveals that celebration of social ceremonies at high cost has its own negative impact on the loan repayment performance of borrowers.

From (Table 5) result we can infer that families with larger number of livestock might get more draft power (Oxen) for the agricultural purpose and also can get additional income from livestock products. The defaulter sample households owned an average livestock of 4.70 TLU with the standard deviation 2.23 and the non-defaulters owned an average of 6.79 TLU and the non-defaulters owned an average of 2.80 TLU. Hence; the mean difference between the TLU owned by defaulter and non-defaulter was statistically significant at, 1% significant level (t-value=4.378, p=0.000).

Table 5 Summary statistics of continuous variables

Variables	Defaulters(49)		Non-defaulter(73)		Total sample(122)		t-value
	Mean	Std.Dev.	Mean	Std. Dev.	Mean	Std. Dev.	
AONFI	4786.959	1316.730	11457.510	7987.262	8778.352	7030.731	5.786***
DSTFCS	2.483	1.067	1.897	1.108	2.116	1.098	3.053***
EXSCR	2259.388	1558.890	1522.740	1242.842	1818.607	1419.383	2.895***
TLU	4.696	2.234	6.788	2.798	5.948	2.775	4.378***

Source: Survey data computation 2018;

Note: ***Indicates significance at the 1% level; std. Dev. = standard deviation; AONFI=Annual on farm income; DSTFCS=Distance from the credit source; EXSCR=Expense on social ceremonies; TLU =Total Livestock Unit

Loan repayment performance in the MFIs

As the survey shows, among 65 OCSSCO clients interviewed, 35.40 and 64.6% are found to be defaulters and non-defaulters respectively. In the same way among VFMFI clients, 45.5% are defaulters and 54.5% are non-defaulters. Similarly, among EMFI clients 45.8% and 54.2% are defaulters and non-defaulters respectively.

Table 6 Summary of loan repayment performance of the MFIs

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Loan repayment performance	OCSSCO		VFMFI		EMFI		Total	
	N	%	N	%	N	%	N	%
Defaulters	23	35.40%	15	45.50%	11	45.80%	49	40.20%
non-defaulters	42	64.60%	18	54.50%	13	54.20%	73	59.80%
Total	65	100%	33	100%	24	100%	122	100.00%

Source: Survey data computation 2018   Likelihood-ratio chi2 (2) = 1.3235   Pr = 0.516

Evaluation of functioning loan process in the selected MFIs

To compare the relative performance of MFIs such that the higher the unpaid loan to total loan issued mean ration of an institution, the lower repayment performance it shows and vice versa. In this case the rank for the MFIs based on the mean ratio could be EMFI, OCSSCO and VFMFI with mean values 0.004, 0.01, and 0.051 respectively.

In the same routine, the ratio of total number of defaulters to total number of clients who received the loan in these given accounting periods(Appendix 1) enables us to easily deduce that the institution with higher ratio mean has lower repayment performance relative to that with lower ratio mean and vice versa. In this case VFMFI took the rank. This might happen perhaps an institution may have less number of defaulters each year, but the amount of loan on the hands of those few defaulters might be higher.

Table 7 Ratio statistics for loan in arrears and number of defaulter outstanding

Name of MFIs	Ratio Stat. for Loan in arrears total loan issued in 2015 − 2017				Ratio Stat. for Total number of individual defaulter / Total number of borrowers from 2015-2017			
	Mean	Minimum	Maximum	Coef. of Dispersion	Mean	Minimum	Maximum	Coef. of Dispersion
OCSSCO	0.010	0.003	0.021	0.900	0.024	0.013	0.035	0.298
VFMFI	0.051	0.002	0.112	0.898	0.022	0.006	0.048	1.094
EMFI	0.004	0.001	0.006	0.438	0.077	0.031	0.133	0.517
Overall	0.022	0.001	0.112	2.912	0.041	0.006	0.133	0.809

Source: *MFIs record (2015-2017)*

3.2. Econometric results

Factors Influencing Loan Repayment of Smallholder Farmers

The logit model studied fourteen explanatory variables among which the significant are;

Age of borrowers (AGB) was found to affect land repayment positively, indicating that the elder clients were more responsible and have better repayment performance than youngsters. Keeping other factors constant, additional one more year to a farmers' age increases his/her likelihood of loan repayment by 5.01 percent. This could be also due to the many years of farming experience the older farmers have. The result is in line with Brehanu and Fufa (2005) who found similar result, but contrary to the findings of Abdul-Majeeb (2014).

Education Status (EDUS) was found to be positive that is farmers with higher education level are more able to repay their loan than those with no/less education. The result showed an increase in years of schooling by one increases the likelihood of loan repayment by 5.32 percent. This result is also supported by the findings of Sileshi et al. (2012). This may be due to the fact that more educated borrowers may have access to business information and have better understanding of their rights and obligations. This result is supported by the findings of Wongnaa and Awunyo-Vitor (2013).

Expense on Social Ceremonies (EXSCR) was found to have negative effect on loan repayment of the farmers. This could be due to the fact that some farmers spent more than what they afford and which in turn declines the capacity to repay. The implication is that each additional birr of expenditure on social festivals increase farmers' probability of defaulting by 0.032 percent, which is in line to the findings of Gebeyehu (2013).

Family Size (FMSZ) was found to have negative effect on loan repayment of the farmer. This means the larger family size the higher the consumption expenditure for the household members, which could be the reason for loan diversion, as the result, borrowers are unable to repay their loan back at the right due date**.** Keeping other factors constant, the additional one person on the household member increases expenditure cost and increases probability of being defaulter by 12.59 percent, this is contrary to the result of a study by Firafis (2015).

Loan Diversion (LONDV) was found to have negative effect on repayment process i.e. an application and diversion of all/part of loan for unintended and non-income generating purposes like maintenance of family

consumption increases the likelihood of defaulting by 32.27 percent. Armendariz and Morduch (2010) stated that moral hazard problem associated with information asymmetry, which means the lenders are unable to ensure that whether the clients are put full effort for the success of the investment. The remaining five variables had no significant effect on loan repayment performance of the sample respondents.

Participation of the Farmers in Off-farm Activities (POFFA) have positive effect such that farmers' who participate in off-farm activities had better repayment performance because, an increase in off-farm income of the households enables them to repay their loan timely. For a discrete change of the dummy variable on behalf of participant from 0 to 1, the probability a borrower to be non-defaulter increase by 53.79 percent. This result is in line with findings of Sileshi et al. (2012) and Mengistu et al. (2013).

Repayment Period Suitability (REPDS) was found to have a positive significant effect on loan repayment of borrowers which implies the suitable repayment period for borrowers the better to meet their sound market time improves the loan repayment performance. The discrete change in this dummy variable for the farmer found that the arrangement of repayment period for borrowers not ideal to those found suitable, the likelihood of a farmer being non-defaulter increase by 97.82 percent cetris paribus for the total sample borrowers matched with the result by (Abdul et al., 2014).

Sex of the Borrower (SXB) was found with positive significant influence on loan repayment which can be inferred as; females default more than male that may be due to the conventional believe that females have less control over the households' assets and males have high involvement in the outdoor activity and better access to information accompanied by high decision power than female. Discrete change in dummy variable from female to male, the probability of being non-defaulter increase by 60.91 percent in line with that result by Ojiako and Ogbukwa (2012) and contrary to result by Wongnaa and Awunyo-Vitor (2013).

Total Tropical Livestock Unit (TLU) owned by the borrower was found to have positive significant effect on loan repayment performance and revealing that, livestock are important sources of income serving as security against crop failure. Each additional TLU increases the farmers' likelihood to be non-defaulter by 15.43 percent similar to the study by Gebeyehu et al. (2013) on assessing determinants of loan repayment performance of smallholder farmers in Kalu District.

Table 8 Maximum likelihood estimates and marginal effects after binary logit

Variable	Coefficient	Robust Standard error.	Z	P>z	dy/dx
AGB	0.301942	0.087846	3.44	0.001	0.050137***
DSTFCS	-0.70281	0.505223	-1.39	0.164	-0.1167
EDUS	0.320379	0.118562	2.7	0.007	0.053199***
EXPCU	-0.41343	0.416195	-0.99	0.321	-0.06865
EXSCR	-0.00192	0.00046	-4.18	0.000	-0.00032***
FEXCNT	0.318831	0.329918	0.97	0.334	0.052942
FMSZ	-0.75842	0.273273	-2.78	0.006	-0.12594***
LNDSZ	-1.07219	0.698371	-1.54	0.125	-0.17804
LONDV^	-2.18171	1.185573	-1.84	0.066	-0.32274*
LONSZ	0.000156	0.00033	0.47	0.637	2.58E-05
POFFA^	2.907497	0.947089	3.07	0.002	0.537915***
REPDS^	9.172648	3.310813	2.77	0.006	0.978194***
SXB^	3.357716	1.62471	2.07	0.039	0.609114**
TLU	0.929519	0.449197	2.07	0.039	0.154347**
_cons	-13.7758	5.072621	-2.72	0.007	

Logistic regression Number of obs = 122	Marginal effects after logit
Wald chi^2(14) = 51.85	y = Pr(LRP) (predict) = .78974088
Pseudo R^2 = 0.8002	
Prob > chi^2 = 0.0000	
Log pseudo likelihood = -16.422626	

Source: Estimated based survey data 2018

Note: (^) dy/dx is for discrete change of dummy variable from 0 to 1 (***) Indicates significance at the 1% level. (**) Indicates significance at the 5% level (*) indicates significance at the 10% level.   Abbreviation in the table[2]

4. Conclusion and Recommendation

Accordingly, based on the findings of this study the following recommendations were suggested as the possible areas of intervention:

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[2]LONSZ= Loan Size; LNDSZ= Land Size; FEXCNT= Frequency of Extension Contact; EXPCU=Experience of Credit Use; DSTFCS=Distance From the Credit Source; N.B: Definition for significant variables were enlightened in the discussion part

❖ The study revealed that elder clients were more responsible and has better repayment performance than youngsters. On the word of this investigation, the researcher's suggestion is not excluding youngsters, nevertheless care must be taken while screening from applicants throughout repayment periods in each MFIs.

❖ According to the result of this study farmers with higher education level are more able to repay their loan than those with no/less education status. Hence, literacy campaign on behalf of adults and formal education for youngster farmers should be made in which government, NGOs and the whole community should contribute their best effort to support the systems analyst.

❖ Farmers' engagement in off-farm activities have positive significant impact for better repayment such that, all concerned stakeholders mainly the NGOs, government and the MFIs themselves have to train and organize farmers to improve their arrangement to alternative income generating activities that enables them to improve their livelihoods and decrease their default rate.

❖ According to this study, it is not advocate to exclude women from the financial services, but endorses that government and other relevant bodies are more responsible to ensure the society that both rural women and men have equal right to benefit from the financial scheme and retain their access and control over joint agricultural production resources which could enables them to repay their loan timely even during time of bankruptcy and crop loss.

❖ Regarding the positive and significant effect of reimbursement period suitability, the institutions had better to give adequate time to clients. This enables them to work with the loans they borrowed and arrange the time appropriate and suitable to sell their business output.

❖ Based on the empirical result, the larger family numbers the higher consumption which may scramble the repayment capacity. Thus, purposive training should be provided by any concerned bodies viz. government development and health extension agents as well MFIs themselves intended for such borrowers about family planning in order to upgrade their attitude.

❖ Along with the empirical result, more attention should be given to the livestock sector at least in the areas: feed improvement and management; genetic improvement; and development of marketing chain facilities for animal and animal products. However, this needs combined efforts and integrated task of the government, cooperatives, NGOs and the farmers themselves.

❖ Based on the study, lots of social celebrations such as wedding, Easter, x-mas funeral are extensively practiced and are costing the community very high amount of money. Thus, concerned bodies especially the religion and community leaders are expected to teach the community to stop or minimize extravagance expenditure on social ceremonies.

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