



Research Journal of  
**Business  
Management**

ISSN 1819-1932



Academic  
Journals Inc.

[www.academicjournals.com](http://www.academicjournals.com)



## Research Article

# Determinants of Loan Repayment Performance of Omo Microfinance Institution: In the Case of Mizan Aman Town, Southwest Ethiopia

Mikir Melese and Milkessa Asfaw

Department of Agricultural Economics, College of Agriculture and Natural Resources, Mizan Tepi University, Tepi, Southwestern Ethiopia

### Abstract

**Background and Objective:** In developing countries like Ethiopia Microfinance institutions are playing an essential role in poverty reduction, to provide the provision of micro-credit, savings and other services to the poor that are excluded by the commercial banks for collateral and other reasons. However, there is a loan repayment problem, which discourages rural finance organizations from promoting and extending credit. The study focuses on identifying the determinants of loan repayment performance of Omo microfinance borrowers in Mizan Aman town, Bench Sheko Zone, Ethiopia. **Materials and Methods:** Both qualitative and quantitative data from both primary and secondary sources were used in this study. Three stage random sampling techniques were used to select 115 sample respondents. Descriptive and inferential statistics and econometric model (logit) were employed to analyze the data. **Results:** The binary logit model result showed that out of 115 chosen respondents, 66 were defaulters and 49 were non-defaulters. A total of 7 explanatory variables were included in the empirical model and out of the total hypothesized explanatory variables involved in the model educational level, annual income and training were positively and significantly influenced loan repayment performance of the borrowers, while loan size negatively and significantly determine loan repayment in the study area. **Conclusion:** The study concluded that the identified significant variables have to be a springboard for further interventions by financial institutions, stakeholders and policymakers to come up with a breakthrough to significantly decrease or even avoid defaulting problems.

**Key words:** Defaulters, loan, repayment, logit, non-defaulters, Bench sheko, Mizan Aman

**Citation:** Mikir Melese and Milkessa Asfaw, 2020. Determinants of loan repayment performance of omo microfinance institution: In the case of Mizan Aman Town, Southwest Ethiopia. Res. J. Business Manage., 14: 7-14.

**Corresponding Author:** Milkessa Asfaw, Department of Agricultural Economics, College of Agriculture and Natural Resources, Mizan Tepi University, Tepi, Southwestern Ethiopia

**Copyright:** © 2020 Mikir Melese and Milkessa Asfaw. This is an open access article distributed under the terms of the creative commons attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

**Competing Interest:** The authors have declared that no competing interest exists.

**Data Availability:** All relevant data are within the paper and its supporting information files.

## INTRODUCTION

In developed as well as developing countries, Micro and Small scale Enterprises (MSE) play an important role in economic and social activities of the people. In Latin America and the Caribbean micro enterprises make major contributions to aggregate employment, production and national income<sup>1</sup>. Also the findings of ILO<sup>2</sup> found that 30% of GDP of Indonesia was contributed by micro and small scale enterprises. In addition, micro and small scale enterprises provide income and employment for significant workers in the rural and urban areas by producing basic goods and services to meet the need of rapidly growing population. However, the MSEs around the world are facing lack of access to financial institutions especially to the conventional sector. Okurut *et al.*<sup>3</sup> finds that lack of access to formal bank credits is one of the important problems faced South African micro entrepreneurs in the informal sectors. Aya and Ahmed<sup>4</sup> confirm that a missing credit market is the main limitation for small businesses to grow.

In developing countries like Ethiopia, the majority of the people live in great poverty. One of the main reasons people in developing countries remain caught in poverty is lack of having access to external finance. The poor loan controlling system causes serious challenge to most micro finance institutions. Every micro finance institution tries to maximize its repayment performance. Improving repayment rates helps reduce the dependence of the MFIs on subsidies, which would improve sustainability<sup>5</sup>. One indicator of effectiveness of MFIs is the loan repayment performance of the borrowers<sup>6</sup>. High loan repayment rates benefits both MFIs and the borrowers<sup>5</sup>. Also it is argued that high repayment rates reflect the adequacy of MFIs' services to clients' needs. High repayment rate helps to obtain the next higher amount of loan<sup>7</sup>.

Contrary to this, if there is low repayment rate, both the borrower and the microfinance institutions will be affected. In this case the borrowers will not be able to obtain the next higher loan and the lender will also lose their customer. Default rates are the amount of loans not collected on current and past loan maturity period. Loans taken from credit institutions vary from country to country, region to region, sector to sector. However, almost all credits of developing countries were found to share one common-characteristic, all suffer from a considerable amount of default rate<sup>8</sup>. Therefore, the objective of our study was to identify the main determinants of loan repayment performance of Omo Microfinance institution borrowers in Mizan Aman town, SNNPR Ethiopia.

## MATERIAL AND METHODS

**Description of the study area:** Mizan Aman town is located in southern part of Ethiopia in SNNPR state in Bench Sheko zone at distance of 586 km from Addis Abeba, 836 from Hawassa the regional capital, 50 km from Tepi and 230 km from Jimma town. The study takes place in 2018/19. Based on the 2007 census conducted by CSA Mizan Aman has total population of 34,080, of whom 18,138 are men and 15,942 are women.

**Sampling procedure and technique:** This study employed three stages random sampling techniques to select the sample respondents. In the first stage, from the 5 credit user's kebeles of Omo microfinance institution 2 kebeles (Addis Ketema and Edget) were randomly selected. In the second stage, households were stratified into credit users and non-credit users. Finally, 115 credit users sample households were selected by using simple random sampling techniques. To obtain a representative sample size, the study employed the sample size determination formula given as follow (Eq. 1):

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

Where:

n = Sample size

N = Total number of credit user household heads in the selected Kebeles (443) and

e = Desired level of precision (8%)

**Data types and collection methods:** Both quantitative and qualitative data types were used in this study. This quantitative and qualitative data types were collected from both primary and secondary data sources. The primary data were collected by using structured questionnaire from the borrowers of the sampled Omo microfinance institution in Mizan Aman town. Secondary data was collected from articles, websites, reports and different published and unpublished documents.

**Method of data analysis:** To analyze the data, descriptive and inferential statistics and econometric methods were employed. According to Hejase and Hejase<sup>9</sup> descriptive statistics deals with describing a collection of data by condensing into simple representative numerical quantities or plots, such as percentages, frequencies, mean and standard deviation values of variables were computed. In addition to this, inferential statistics also known as confirmatory data

analysis<sup>9</sup> like Chi-square and independent samples t-test were used to test whether there is significant difference between defaulters and non-defaulters in terms of a certain binary and continuous variables used in the study.

**Econometric analysis:** Dichotomous discrete choice models (Logit and Probit) were used when the dependent variable is dummy that takes a value of zero or one, depending on whether or not a borrower has defaulted. This model assumes that individuals are faced with a choice between 2 alternatives and that the choice depends on identifiable characteristics<sup>10</sup>. The main difference between the logit and probit model is on assumptions of probability distribution. The logit model assumes cumulative logistic probability distribution whereas, the probit model assumes the cumulative normal probability function.

When the dependent variable is qualitative, the aim is to find the probability of happening of the event. The maximum likelihood (ML) estimation technique, than the ordinary least square (OLS) is a commonly used method in estimating the parameters that have discrete dependent variables. In this study, the logit model, one of the econometric models that use ML, to estimate the parameters of loan repayment performance was applied. The reason why binary logit model was selected for this study over the probit model is because it has some advantage when sample size is small.

Dichotomous dependent variable is used in this study. Zero is assigned if borrowers were defaulters whereas one is given if the borrowers are non-defaulters. Loan repayment is, a dummy dependent variable that satisfies the key assumptions of the binary regression analysis. Hosmer and Lemeshow<sup>11</sup> agree with the advantage of logistic distribution in the analysis of dichotomous outcome. Therefore, this study employed the binary logit model. The cumulative logistic probability is specified as follows<sup>12</sup> (Eq. 2):

$$P_i = F(Z_i) = F(\alpha + \beta_i X_i) = \frac{1}{1 + e^{-Z_i}} \quad (2)$$

According to Hosmer and Lemeshow<sup>11</sup> the logistic 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 (Pi) that an individual would choose an alternative to the probability (1-Pi) that he/she would not choose it.

Therefore:

$$\frac{P_i}{1 - P_i} = \frac{1 + e^{Z_i}}{1 + e^{-Z_i}} \quad (3)$$

Taking the natural logarithm is (Eq. 4):

$$Y_i = \ln(P_i/(1-P_i)) = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_m X_m \quad (4)$$

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

$$Y_i = \alpha + \sum_{i=1}^m \beta_i X_i + \epsilon_i \quad (5)$$

Where:

- $Y_i$  = Dependent variable
- $\alpha$  = Constant term
- $\beta_i$  = Coefficient of each explanatory variables
- $X_i$  = Independent variables
- $\epsilon_i$  = Error/stochastic term

The unknown parameter  $\beta$  are estimated by likelihood function.

### Variables definition and hypotheses

**Dependent variable:** The dependent variable is loan repayment performance of Omo Microfinance institution which is dichotomous variable as defaulters (0) and non-defaulters (Eq. 1).

**Independent variables:** Age of the household head: Continuous variable, that refers to age of the household head measured in years. It hypothesized as it affects loan repayment positively.

**Family size:** Defined as total number of family members who live under one roof measured in number of people. It was hypothesized as family size affects loan repayment negatively.

**Training:** It refers to the training on business and institutional services given to the borrowers before and after loans to avoid the problems of loan repayment performance. It was measured as dummy variable (1 if yes and zero otherwise). It is hypothesized as it affects loan repayment positively.

**Repayment period:** Repayment period is the period of time during which the entire loan must be repaid which is measured in number of years and hypothesized as it affects loan repayment positively.

**Loan size:** It is a continuous variable and measured by birr. It was hypothesized as it affects loan repayment positively.

**Educational level:** It is a continuous variable which is measured by the year of schooling of the household head and hypothesized as it affects loan repayment positively.

**Annual income:** It is a continuous variable which represents total annual income of the household head and measured in birr. It was hypothesized as it affects loan repayment positively.

## RESULTS

**Loan repayment status of the borrowers:** The loan repayment statuses of borrowers of the respondents were taken as the primary way to group the borrowers into defaulters and non-defaulters. Accordingly, 49 out of 115 of the respondents were non-defaulters who were repaying the loan on time while 66 were defaulters.

### Demographic characteristics of sample households

**Age:** Age is one of the main factors which determine management experience of individuals. The average age of the total sampled households during the survey period was 37.43 years (Table 1). This implies that most of the household heads were within their productive age. When we compare the average age of non-defaulters with defaulters in the study area it is 35.47 and 38.88 years which shows non-defaulter households are somewhat younger than defaulter households. The t-test value shows there was no significant mean difference between defaulters and non-defaulters based on their age. That is, there is no significant mean age difference between defaulters and non-defaulters in the study area.

**Family size:** The average family size of the sample households is 5.09 persons, which is almost in the range of family size per households in our country. The average family size of defaulter's credit users was 4.98 while that of non-defaulter's credit users is 5.22. With this, there is no statistical mean difference between defaulters and non-defaulters as shown in Table 1.

### Socio-economic characteristics of sample households

**Educational status:** Education is a tool to enhance the quality of labor through improving the managerial skill and the tendency to adopt new technologies. According to the survey result, the average years of formal schooling of the sampled respondents were grade 3. When we compare the mean

educational level of non-defaulters with defaulters the non-defaulters have more education than their counterparts. The mean difference is statistically significant at less than one percent significance level as shown in Table 1. This shows as higher educational level enable borrowers to realize more complex information, go on business records, perform basic cash flow analysis and make the right business decisions that enables them as being non-defaulter.

**Annual income:** The mean annual income of all the respondents during the study period was 5420.0 birr. Comparing non-defaulters with defaulters based on their annual income the annual income of non-defaulters are higher than defaulters which is 6,489.0 and 4626.3 birr, respectively (Table 1). The t-value revealed as there is a mean significant difference between non-defaulters and defaulters in the study area. This shows as an individual's level of income has important effect on his/her behavior of loan repayment.

**Loan size:** The average loan size of the respondents in the study area was 3907.8 birr. As shown in Table 1, the mean loan size of defaulters is greater than the mean loan size of non-defaulters. However, the t-value shows that there is no significant mean difference between defaulters and non-defaulters in the study area.

**Repayment period:** Repayment period is the period of time during which the entire loan is repaid. The mean number of years of repayment periods of Omo microfinance borrowers' was 4 years. In addition, almost the mean number of years of repayment of both non-defaulters and defaulters in the study area was not far from each other which are 3.88 and 3.92 years, respectively (Table 1). The t-value also shows that there is no mean significant difference between non-defaulters and defaulters in the study area.

**Training:** Training enables the borrowers to increase their knowledge and improve their skills. As shown in Table 2, 77.39% (89) of the respondents received training on loan repayment activities, like how they use the loan effectively and efficiently, whereas 22.61% did not taken any training. Moreover, Chi-square test shows that there is a statistically significant difference between defaulters and non-defaulters in terms of training in the study area.

Table 3 shows the logit regression output which identifies significant factors determining loan repayment performance of the respondents in the study area.

Table 1: Summary statistics of continuous variables

Variables	Sample respondents						Total respondents (n = 115)	
	Non-defaulters (n = 49)		Defaulters (n = 66)		t-value	p-value	Mean	SD
	Mean	SD	Mean	SD				
Age	35.47	7.40	38.88	8.50	-2.249	0.088	37.43	8.18
Education	5.96	3.58	1.65	2.39	7.294	0.000	3.49	3.64
Annual income	6489.00	2098.80	4626.30	641.12	6.010	0.000	5420.00	1716.10
Loan size	3271.43	1446.10	4380.30	4794.00	-1.566	0.120	3907.80	3779.90
Repayment period	3.88	0.97	3.92	0.98	-0.253	0.800	3.90	0.97
Family size	5.22	2.22	4.98	1.73	0.650	0.517	5.09	1.95

Source: Own survey (2019)

Table 2: Comparing non-defaulters with defaulters

Variable	Description	Loan repayment		p-value
		Non-defaulters	Defaulters	
Training	Yes	43	46	5.241 (0.022)
	No	6	20	

Source: Own survey (2019)

Table 3: Determinants of loan repayment performance

Logistic regression		Number of obs. = 115			
Log pseudo likelihood = -37.5875		Wald chi2 (7) = 32.61			
		Prob. >chi2 = 0.0000			
		Pseudo R2 = 0.5209			
Loan repayment	Coefficient	Odds ratio	Robust standard error	z	P>z
Age (years)	-0.0486	0.9525	0.0428	-1.10	0.26
Education (grade completed)	0.5070***	1.6603	0.1099	4.61	0.00
Total income (birr)	0.0009***	1.0009	0.0002	4.78	0.00
Loan size (birr)	-0.0003*	0.9997	0.0002	-1.90	0.06
Training (1 = if yes, 0 otherwise)	1.2225*	3.3955	0.6939	1.76	0.08
Repayment period (years)	0.1629	1.1769	0.3166	0.51	0.61
Family size (No.)	0.0536	1.0550	0.1510	0.35	0.72
Cons	-6.0994	0.0022	2.1664	-2.80	0.01

\*\*\*, \*\*\*, \* Level of significance at 10 and 1%, respectively, Source: Model output (2019)

Table 4: Challenge faced by borrowers

Challenges	Critical		Major		Moderate		No Problem at all	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Market problem	41	38.7	49	42.6	21	18.30	-	-
High interest rate	-	-	50	43.5	62	46.30	-	-
Lack of loan disbursement	-	-	48	41.7	58	50.40	6	5.2
Poor customer handling of the institution	-	-	-	-	8	6.90	107	93.0
Lack of knowledge to keep accounting record	-	-	57	49.5	54	46.90	-	-
Distance from OMF	-	-	12	10.4	24	20.90	79	69.6

Source: Survey data (2019)

Table 4 shows that the respondents ranked problems that hinder the loan repayment process. Accordingly, 38.7% (41) of sample borrowers reported that market problem was the critical, while 49 (42.6%) of respondents identified it as a major problem and 18.3% (21) of respondents categorized it as moderate challenge. About 43.5% (50) of respondents identified high interest rate as major problems, while 46.3% (62) of respondent identified as moderate.

Lack of loan disbursement was identified as major problems by 41.8% (48) of respondents, while 50.4% (58) of

respondents said moderate and 5.2% (6) of respondents considered it as no problem at all. Lack of knowledge to keep accounting record was identified as a major problem by 49.5% (57) of the respondents. The 10.4% (12) of respondents identified distance of microfinance institution office as major problem and 20.9% (24) of respondents said moderate. This implied that market problem is critical one and high interest rate, lag of loan disbursement, lack of knowledge to keep accounting record, distance of micro finance institution office are the major problems.

## **DISCUSSION**

To identify the determinants of loan repayment performance logit model was employed. The overall model is significant and shows good fit to the data. The model result shows, out of seven independent variables regressed in the model; four variables were found to be statistically significant in affecting the loan repayment performance of the borrowers in the study area. From the four significant variables, educational level and annual income of the respondents positively and significantly influenced loan repayment of the borrowers at 1% significance level. Training positively and significantly affected loan repayment at 10% significance level. Moreover, loan repayment performance of the borrowers was negatively and significantly influenced by amount of loan received from the lenders at 10% significance level (Table 3).

The finding of the study shows that educational level of the household head had a positive and statistically significant effect on loan repayment performance of the sampled respondents at <1%, significance level (Table 3). This implies there is a positive association between education level and loan repayment. This shows that as the level of education increases, borrowers enhance their ability to access business information, evaluate and understand the information and use it for different activities. This implies that a borrower will likely have greater loan repayment ability when he or she has a higher educational level and vice versa, *ceteris paribus*. This may perhaps be due to the understanding on the part of the educated respondents the importance of prompt repayment of the loan obtained. The odds ratio of education shows that, for a one unit increase in educational level of the respondents, the odds of being non-defaulter increase by a factor of 1.66. This result is consistent with the findings of Samuel<sup>13</sup>, Sileshi *et al.*<sup>14</sup>, Solomon<sup>15</sup>, Jote<sup>16</sup>, who found a positive and significant effect of education on the loan repayment performance of the borrowers.

The coefficient of annual income was statistically significant and positively affected the loan repayment performance of the borrowers at <1% significance level (Table 3). This shows as there is a positive association between annual income and loan repayment performance of the borrowers. Moreover, the result of the model revealed, for one unit increase in income of the respondents, the odds of being non-defaulter increase by a factor of 1.0. The research findings of Amare<sup>17</sup>, Belay<sup>18</sup> and Pasha and Negese<sup>19</sup> also reported as an increase in the income of the borrowers increases the probability of being non-defaulter.

The logit model result shows as a positive association between training and loan repayment performance of the borrowers. It shows as training positively and significantly influenced loan repayment performance at 10% significance level (Table 3). This implies that borrowers who have got training on business management, saving cultures, credit management and others have high possibility of being creditworthy borrowers than others who did not get it. The result of odds ratio pointed out that, those household heads with clear understanding about the credit management system by getting training was 3.39 more likely to become non-defaulter than household head with not getting training.

The coefficient of loan size was negatively related to the respondents' ability to repay their loans and is significant at 10% significance level (Table 3). This implies as the amount of loan taken by the borrowers increases the probability of being non-defaulter decreases and vice versa. In other words, this means that the smaller the loan size of the borrowers, the higher the probability that they are able to repay their loans. The binary Logit model result reveals at *ceteris paribus*, the odd ratio in favor of the non-defaulter decrease by odds of 0.99 as the as the loan size of the borrowers increased by a unit. This finding corroborate with the findings of Ugbomeh *et al.*<sup>20</sup>.

The main challenge facing the borrowers in the study area is market problems, lack of loan disbursement and high interest rate (Table 4). Even though every organization planned to be effective through the implementation of different activities, there are challenges that hinder the effective functioning of the organization and needs action for further improvement of the organization. The most typical challenges faced by any MFI are credit risk. Moreover, the cost of debt collection per loan amount is, on average, higher than in formal intermediation, especially in developing countries lending. In addition to this Mizan Aman OMFI's have many problems as an institution.

Lack of adequate man power is one of the major problems facing the institution. Due to this, the officials explore that, the organization is not providing adequate support to its clients. The other problem related to this is shortage of resource. Loan diversion by borrowers is also another problem as MFIs. Some of loan disbursed was not used for the intended purpose, consequently, the loan become in arrears. The officials also identified low collaboration with other organizations as a problem. For instance, the court does not give timely decision on defaulters which in turn leads to wastage of time as well as money.

The MFIs should give more emphasis on the selection of productive age group to young borrowers by continuous follow up and supervision and it should give more emphasis to low income borrowers to make their business more profitable. It is not recommended to motivate to divert loan. The secret behind this is the diverted loan is used on productive purpose and the reason to divert is lack of market. Hence, market study should be conducted before starting the business.

Even though the institution gives training in collaboration with other organization before the disbursement of the loans, the training is focused more on saving. Lack of knowledge to keep accounting records and the marketing problem are still major challenges to borrowers. Hence, training of borrowers before and after receiving loans should be done by focusing on areas such as business management and bookkeeping in addition to saving.

The institution should focus on the repayment challenges which are stated by the borrowers and take corrective actions. Among all, market problems are ranked high, so it is recommended to conduct market study before starting a business. Since clients demand low interest rate, they identify the interest rate of MFI as major problem. The institution should make proper awareness regarding the fairness of MFIs interest rate considering high cost of capital. In order to solve the problems of the institution, individuals should improve their skills which in turn help to solve the subsequent problem of the financial capacity of the institution. The institution also needs to make continuous discussion with other concerned organizations to seek their collaboration when necessary. Taking the recommendation into consideration Mizan Aman town Micro finance Institution should attempt to increase the loan repayment rate of the borrowers.

### **CONCLUSION**

One of the main problems of the poor performance of financial institutions is high rate of no repayment of loan. Mizan Aman of Omo micro finance institution was characterized by the same problem. This study was intended to identify the factors that influence loan repayment performance of micro finance institution. The result of logit model revealed as training, educational level of household heads and total annual income positively affected loan repayment whereas loan size negatively affected loan repayment performance of the sampled borrowers.

### **SIGNIFICANCE STATEMENT**

This study discover the determinants of loan repayment performance of Omo microfinance institution that can be beneficial for the institution and policy makers in order to reduce the default of borrowers that can directly affects the performance of microfinance. In addition, this study will help the researcher to uncover the critical areas of financing institution that many researchers were not able to explore.

### **ACKNOWLEDGMENT**

Special acknowledgment is presented to the respondents, who participated in this study and all workers of Omo microfinance institution of Mizan Aman branch.

### **REFERENCES**

1. Nawai, N. and M.N.M. Shariff, 2013. Loan repayment problems in microfinance programs that use individual lending approach: A qualitative analysis. *J. Transformative Entrepreneurship*, 1: 93-99.
2. ILO., 2019. Financing small businesses in Indonesia: Challenges and opportunities. International Labor Office, Jakarta.
3. Okurut, F.N., A. Schoombee and S. van der Berg, 2005. Credit demand and credit rationing in the informal financial sector in Uganda<sup>1</sup>. *S. Afr. J. Econ.*, 73: 482-497.
4. Aya, E. and M. Ahmed, 2018. Factors influencing loan repayment performance in microfinance institution: The case of Demba Gofa Woreda, Ethiopia. Doctoral Dissertation, Haramaya University. <http://hdl.handle.net/123456789/4403>.
5. Godquin, M., 2004. Microfinance repayment performance in Bangladesh: How to improve the allocation of loans by MFIs. *World Dev.*, 32: 1909-1926.
6. Addisu, M., 2006. Micro-finance repayment problems in the informal sector in Addis Ababa. *Ethiop. J. Bus. Dev.*, 1: 29-50.
7. Bond, P. and A.S. Rai, 2009. Borrower runs. *J. Dev. Econ.*, 88: 185-199.
8. John, B., 2013. Factors affecting the repayment performance of microcredit in Dar es salaam Tanzania: "A case of Tujijenge Tanzania limited". Ph.D. Thesis, Mzumbe University, Tanzania.
9. Hejase, A.J. and H.J. Hejase, 2013. *Research Methods: A Practical Approach for Business Students*. 2nd Edn., Masadir Inc., Philadelphia, USA., ISBN: 9789953137568, Pages: 660.
10. Pindyck, R.S. and D.L. Rubinfeld, 1998. *Econometric Models and Economic Forecasts*. 4th Edn., Irwin/McGraw-Hill, Boston, MA., USA., ISBN-13: 9780079132925, Pages: 634.
11. Hosmer, D.W. and S. Lemeshow, 1999. *Applied Logistic Regression*. 2nd Edn., Wiley-Interscience, New York.

12. Verbeek, M., 2008. *A Guide to Modern Econometrics*. 2nd Edn., John Wiley and Sons, New York.
13. Samuel, S., 2013. Credit default risk and its determinants of microfinance industry in Ethiopia. *Ethiop. J. Bus. Econ.*, 3: 1-21.
14. Sileshi, M., R. Nyikal and S. Wangia, 2012. Factors affecting loan repayment performance of smallholder farmers in East Hararghe, Ethiopia. *Dev. Country Stud.*, 2: 205-213.
15. Solomon, 2013. Factors influencing formal loan repayment performance of urban women in Tigray, a case study of Dedebit credit and saving institution. M.Sc. Thesis, Mekelle University, Ethiopia.
16. Jote, G.G., 2018. Determinants of loan repayment: The case of microfinance institutions in Gedeo zone, SNNPRS, Ethiopia. *Univ. J. Account. Fin.*, 6: 108-122.
17. Amare, B., 2005. Determinants of formal source of credit loan repayment performance of smallholder farmers: The case of North Western Ethiopia, North Gondar. M.Sc. Thesis, Alemaya University, Ethiopia.
18. Belay, A.A., 2002. Factors influencing loan repayment of rural women in Eastern Ethiopia: The case of Dire Dawa area. Master's Thesis, The School of Graduates Studies, Alemaya University.
19. Pasha, S.A.M. and T. Negese, 2014. Performance of loan repayment determinants in Ethiopian micro finance-An analysis. *Eurasian J. Bus. Econ.*, 7: 29-49.
20. Ugbomeh, G.M.M., F.O. Achoja, V. Ideh and A.U. Ofuoku, 2008. Determinants of loan repayment performance among women self help groups in Bayelsa state, Nigeria. *Agric. Conspectus Scient.*, 73: 189-195.