Journal of Innovation and Entrepreneurship

RESEARCH Open Access

Determinants of adoption of female headed household in microfinance program: a case study on Oromia Credit and Saving Share Company (OCSSCO) in Guto Gida district, Ethiopia

Bonsa Hinkosa[1*]

*Correspondence:
bonako74@gmail.com

[1] Banking operation , Cooperative Bank of Oromia , Finfine, Ethiopia

Abstract

Since its introduction in the 1970, the word microfinance is being used very often in the development vocabulary today. It is taken as a strategy to overcome the constraints of conventional bank in reaching the poor and seen as one of the most efficient instruments for livelihood improvement. However, empirically the effectiveness of these programs on the livelihood of household is still inconclusive and debatable. Additionally, the relationships between socio-economic, demographic factors and participation in microfinance program are not seen in the study area and this motivated the researcher to undertake the study. The objectives of this study were identifying the factors that affect female headed household participation in microfinance program. Multi-stage sampling technique was used to draw representative sample and used cross-sectional survey. Cross-sectional survey data were collected from randomly selected 169 female headed household using interview/survey schedules. Descriptive and econometric methods were used to analyze the data. The results of descriptive statistics indicate that the majority of client household use microcredit to purchase agricultural input. Logit results indicate that program participation was significantly affected by seven explanatory variables. Among the variable's family size of the household, livestock ownership and land size affected household participation in the program positively, whereas age of household head, distance of household home from microfinance office, wealth status of the household and household perception of risk have negative effect. Finally, the study recommends that microfinance institutions should broaden their outreach and expand its access in to large.

Keywords: Microfinance program, Determinant logit, Guto Gida Ethiopia

Introduction

Microfinance has been and continues to assume center stage in financial service of many less developed and developing countries (Abdul et al., 2014). Consequently, it provides different financial services to low income and poor peoples (Mueni & Kiiru,

2007). The services provided by the microfinance institutions (MFIs) include credit, saving, payment service, insurance service and other service (Ferka, 2011). Microfinance institutions is by far the largest sector of Ethiopia's economy serving financial service to the poor (Amsalu, 2019). It has been considered as solution to alleviate unemployment and poverty (Ayen, 2016; Mengistu, 2017). It is taken as a strategy to overcome the constraints of convectional bank in reaching the poor and instruments to livelihood improvement and diversification fighting against poverty in poor countries (Chirkos, 2014; Lemesa, 2019). Access to credit through microfinance is crucial for rural poor economy by increasing the willingness financial needs to alleviate poverty cycle (Anyiro & Oriaku, 2008). The sector improves life standards of people by enhancing income of people (Mengistu, 2017).

In Ethiopia the institutions developed by proclamation no. 40/1996 and working in order to solve the problems of poor credit. Since the issuance of this proclamation in July, 1996, 35 microfinance institutions have been legally registered and delivering microfinance service in the country. Among these OCSSCO is one largest institutions established in accordance with the above-mentioned proclamation in 1997 (AEMFI, 2017). OCSSCO is giving credit and savings services in Oromia regional to the low income and poor people with the objectives of achieving household food security, increasing household income via the provision of credit and saving service, and improving the overall conditions of households in the region (Getachew, 2017).

The prevailing operations of conventional financial institutions in Ethiopia are inefficient in creating sustainable credit facilities. The formal financial institution such as bank and insurance that could provide credit service for low income people are very limited due to associated with high risks and costs (Lemesa, 2019). There is controversial argument among the studies with regard to the effect of program on the livelihood of people. Some empirical results revel that program has a positive impact on client livelihood while the others results revel that program has a negative effect on client household livelihood. Microfinance significantly improve household livelihood through an increase in household income, saving, asset building, consumption expenditure, education, health care, employment generations (Alemayehu, 2020; Awunyo-vitor et al., 2012; Ayen, 2016; Chipinge et al., 2018; Debnath et al., 2019; Duong & Thanh, 2017; Eularie, 2017; Ferka, 2011; Habte, 2016; Herath et al., 2015; Kifliehayleeyesus, 2016; Larbi, 2014; Mengistu, 2017; Rahaman et al., 2019; Rahaman et al., 2019; Shete, 2017; Tisdell & Steen, 2020). On the contrary, despite its popularity other studies on microfinance show that microfinance program has a limited of improving their life of poor people (Awaworyi, 2014; Desai et al., 2011; Duvendack et al., 2011; Montoya & Ponce, 2016; Monzur et al., 2016; Stewart, 2012; Tarozzi et al., 2013; Wycliffe, 2016).

Systematic and adequate information on the process of adoption of program were not clearly developed in Guto Gida. In the district there is no well-developed empirical review of literature for microfinance program users. Therefore, this study attempts to investigate the factors affecting participation of microfinance program decision and its impact on the livelihood of women headed households in Guto Gida district. Specifically, to examine the purpose of microcredit taken by the female headed households, to assess the determinants that affect female headed adoption in microfinance program

and to evaluate the impact of participation in microfinance program on female headed households' income and saving in Guto Gida district.

Research questions

- For what purpose female headed households have taken microcredit in Guto Gida woreda?
- What factors affect female headed household participation in the microfinance program in Guto Gida woreda?
- What is the impact of participation in microfinance program on income and saving of female headed household in Guto Gida woreda?

Contribution of the research

The empirical finding of this study is important in many ways. First, it helps to clarify the relationship between the socio-economic, demographic variables and participation in microfinance program in rural Guto Gida woreda. Second, it will help to know whether participation in microfinance program has positive or negative impacts on the livelihood of female headed household in the study area. Third, it will help the microfinance institutions to know whether accomplished their targets in improving the livelihood of client or not and this study helps as an input for OCSSCO to improve their services using the facts from the study. Finally, the result from this study with other previous studies can be used as an input for future empirical studies which will target on determinants of female headed household participation in microfinance program and its impact on their livelihood.

Literature review

Microfinance and microcredit institutions are used synonymously, but they are indispensable different. Microfinance is a broader term than microcredit and encompasses financial services that provide a greater scope of access for the poor, while microcredit is the provision of one kind of service: credit distribution and collection, and the financial and organizational activities associated with such operations. Therefore, microcredit is a subset of microfinance. Both are crucial to economy in general and in an improvement of the livelihood of the clients in particular (Abdul et al., 2014; Haley, 2002; Kabeer, 2005). Formal microfinance in Ethiopia established by proclamation no. 40/1996 is a recent phenomenon and relatively young as compared to other developing countries. Currently, 35 licensed microfinance institutions (MFIs) are operating in Ethiopia, with an aggregate capital of 10.5 billion birr, and more than 4 million active borrowers (Abddisa, 2017; AEMFI, 2017; Kifliehayleeyesus, 2016).

Today, OCSSCO has 39 branches operating mainly in the regional state of Oromia, Harari, Addis Ababa and Dire Dawa. In the past 21 years, the company has registered miracle achievements in all its operations and capital formation. Its capital and assets have currently been about 2.1 Billion ETB & 8.71 Billion ETB, respectively. OCSSCO is giving credit and savings services in Oromia regional to the low income and poor people with the objectives of achieving household food security, increasing household income via the provision of credit and saving service, and improving the overall conditions of

households in the region (Getachew, 2017). Microfinance target women mainly of rural women than men and hence they are the largest client of microfinance. According to Gobezie (2010), the rate of repayment loan is higher in the case of women than men clients borrowing from the microfinance institutions, the livelihood of a woman is fully dependent on the income generated by the husband and they are the marginalized group from the segment of population. MFIs target women compared to men: women are less mobile, thus more likely to work from home and this makes it easier for MFIs to follow and monitor the investment projects undertaken by women.

Quite several studies have been done with regard to the effect of participation in program intervention on the life standards of women headed household through livelihood indicator variables. There is controversial argument among the authors with regard to the impact of microfinance program on the livelihood of clients. Some empirical findings indicate that microfinance program has a statistically significant positive impact on household livelihood, while others have a significant negative impact on client household livelihood. The growing body of review literature focusing on determinants and effect of microfinance program (Alemu, 2018; Antonides, 2015; Aregawi et al., 2019; Ayen, 2016; Bekele, 2013; Challa & Mansingh, 2015; Chipinge et al., 2018; Debnath et al., 2019; Feleke, 2011; Geleta et al., 2018; Herath et al., 2015; Larbi, 2014; Lemesa, 2019; Rahaman et al., 2019; Tisdell & Steen, 2020). There is a conflict in emperical literature review on the impacts of microfinance program (Awaworyi, 2014; Duvendack et al., 2011; Monzur et al., 2016; Wycliffe, 2016). In general, there is no similar finding among different empirical review of literature on the effect of microfinance on the livelihood of borrowers and their findings are yet inconclusive.

Conceptual framework

Conceptual ideas and available empirical studies have been taken into consideration for developing the conceptual framework. The framework considers context, livelihood assets, existing structures and processes and livelihood strategies which directly and indirectly influence women headed household participation in microfinance institutions. Therefore, women headed household participation in microfinance institutions can be influenced by both socio-economic and demographic variables (distance from microfinance institution to household home, wealth status of the household, age, education level, family size, cultivated land size, household perception to risk, livestock ownership, and occupation of household). Both socio-economic variables and demographic characteristics are expected to hinder or influence women headed household participation in microfinance institutions. If they have access to these services, they will be able to participate in income generating activities. The expected result is rural women livelihood improvement which is manifested through improvement in income and saving (Figs. 1 and 2).

Methods

Study area

This study was employed in Guto Gida district, located in the Oromia regional state of Ethiopia. It is located at about 331 km from Addis Ababa of Ethiopia to the western direction of the country. The Guto Gida district has an agriculturally suitable land

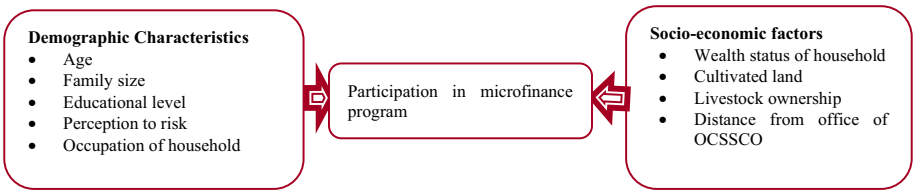

Fig. 1 Conceptual framework

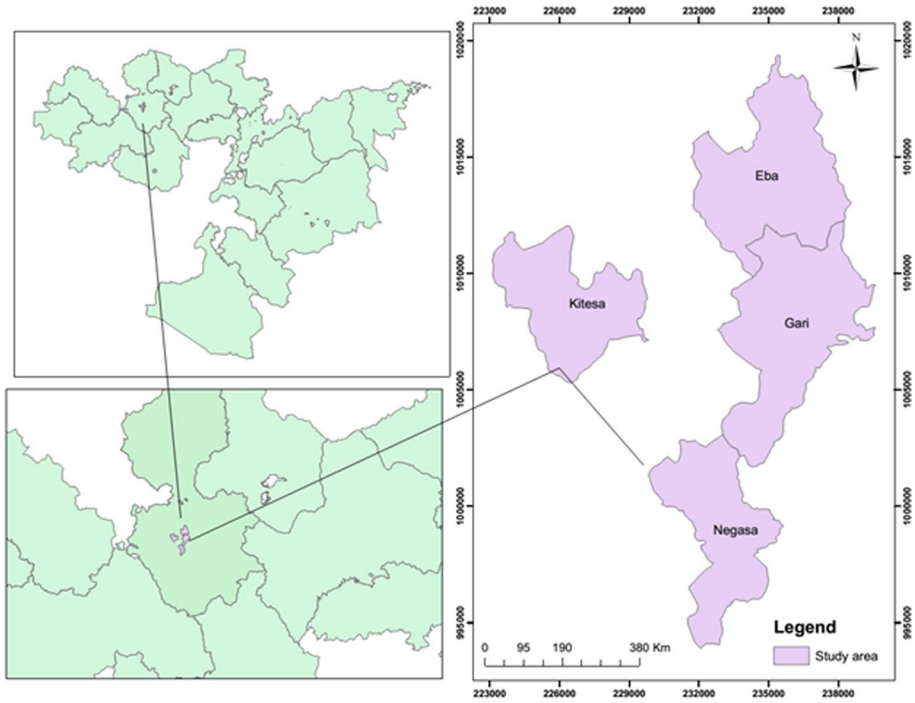

Fig. 2 Map of the study area

in terms of topography. Geographically, the Guto Gida district is classified into: high land 0.26%, midland 46.74% and the low land 53%. The mean annual rainfall ranges from 1600 to 2000 mm. The average annual temperature of Guto Gida slightly greater than 15 °C.

Description of variables

For the purpose of this study, different variables were selected based on economic theory and previous empirical findings from the existing literatures on similar studies. In impact evaluation study, variable choice must be those variables which affect both participants and non-participants (both treated and control groups share characteristics of X covariates). According only variables which affect both program participation and outcome should be included in the estimation of propensity score. Thus, in this study variables which affect clients of OCSSCO and non-clients are selected depending on observable characteristics of respondents in the study area.

Variables code	Definition	Measurement	Type	Expected sign
Dependent variable	Female headed household participation microfinance program	1 for participant and 0 for not participant	Dummy	
Outcome variable	Annual income and saving amount of female headed household	Birr	Continuous	+
AGE	Age of household head(female)	Year	Continuous	−
FSIZE	Family size of household	Number of family	Continuous	+
DHMFI	Distance of household residential from microfinance center	Hour	Continuous	−
EDUC	Educational level of household head(female)	0 = illiterate 1 = grade 1–4 2 = grade 5–8 3 = above grade 8	Categorical	+
WEALTH	Wealth status of household	Birr	Continuous	+
HPR	Household perception of risk	1 if positive and 0 negative	Dummy	−
CULSI	Cultivated land size of household	Hectare	Continuous	+
LSTOK	Livestock owned	TLU	Continuous	−
HOCU	Occupation of household	1 = farmer, 2 = small trader, 3 = firewood and charcoal seller, 4 = local drink seller	Categorical	+

Hypothesis of the study

The study formulated the following hypotheses:

Determinant of female headed household participation in microfinance program.

H_{01}: Age has no influence on participation of female headed household in microfinance program.

H_{02}: Family size of the household does not influence female headed household participation in microfinance program.

H_{03}: Distance of household home from microfinance office has no influence on participation of female headed household in microfinance program.

H_{04} : Educational status has no influence on participation of female headed household in microfinance program.

H_{05}: Wealth status of the household does not influence participation in microfinance program.

H_{06} : Household perception of risk has no influence on participation of female headed household in microfinance program.

H_07: Land size has no influence on participation of female headed household in microfinance program.

H_{08} : Livestock ownership does not influence participation of female headed household in microfinance program.

H_{09}: Household occupation has no influence on participation of female headed household in microfinance program.

Sampling techniques

A multi-stage probability sampling method was employed to select the sample of women headed households' from given OCSSCO. In the first stage: four program user kebeles (Kitesa, Eba, Gari, and Kajela) were randomly selected from 22 OCSSCO credit users Kebeles in the district, based on their credit availability. In the second and final stage: total number of program users (294) was selected from a list of each selected OCSSCO credit users kebeles stratified by adoption status. In the third stage: a total sample size 169 rural women headed households were selected from each stratum using proportionate selecting procedures. The sample respondents from four kebeles would be selected randomly by employing random selecting method. The sample respondents were calculated by the specified formula: $n = N/1 + N\ (e)^{2} = 294/1 + 294(0.05)^{2} = 169$ (Yamane, 1967). Population proportional size ns = (Nh/Ns) *n sampling ways was developed to allocate the sample size of each selected kebeles, where N is total number of rural women headed, e = acceptable error margin, ns are sample size in each stratum, Nh is total population in each stratum, Ns is total population of the sum of strata and n is total sample size (Table 1).

Types and sources of data

Descriptive statistics and econometric methods were employed for the data analysis. Primary and secondary data were used. Qualitative and quantitative of primary data were employed. The primary data collection was included rural women demographic, and socio-economic characteristics, and loan information. The study was supplemented by secondary data obtained from published and unpublished documents, OCSSCO office, administrative office, relevant literature, websites and other relevant organizations. Information obtained from secondary sources includes list of rural women clients and non-clients. Furthermore, interviews were held with key informants such as borrowers, OCSSCO managers of east Wollega zone and branch manager of OCSSCO in Guto Gida district.

Data collection techniques

The data used in this study were primary and cross-sectional in type. This design was adopted because there is no baseline data available that could serve to employ time-series or longitudinal design. Primary was collected using interview questionnaire on

Table 1 Sample OCSSCO credit users-based adoption status

Kebeles	Total women headed households (N_{wi})	Probability proportional sample (PPS) size				
		Participants		Non-participants		Total sample (n_i)
		N_p	n_p	N_{np}	n_{np}	
Kitesa	59	24	14	35	20	34
Eba	60	27	15	33	19	34
Gari	86	37	22	49	27	49
Kajela	91	40	23	51	29	52
Total	296	128	74	168	95	169

n_i = total sample from kebele i ($I = 1, 2, 3, 4$); N_{wi} = total women headed households in kebele i; N_p total number of participants, N_{np} total number of non-participants, n_p participating women headed households selected, n_{np} non-participating women headed households selected

a variety of respondent demographic characteristics and socio-economic variables. The questionnaire was designed in such a way to capture the necessary information on household level livelihood indicators, demographic and socio-economic variables based on the objective of the study. Furthermore, interview was held with manager of OCSSCO in Guto Gida district.

The study was also supplemented by secondary sources. Secondary sources were obtained from published and unpublished documents, obtained from OCSSCO Guto Gida branch office, Guto Gida administrative office, relevant literature and other relevant organizations. After this, quantitative and qualitative data were collected to respond to raised questions in the study area.

Method of data analysis

Data analysis was carried out using descriptive statistics and econometric methods. Descriptive analysis was examining demographic characteristics and socio-economic profiles of the program user and performed using indicators such as frequency, averages, percentages, tables, standard deviation, maximum and minimum values, $\chi 2$ and t-test. Next, we applied econometric methods to provide a more appropriate and in-depth analysis. More specifically, we employ logit model for the purpose of exploring factors affecting the adoption of microfinance program among program user women households:

$$ADOOCSSCO_i = \alpha + \boldsymbol{\beta} X_i + u_i, \tag{1}$$

where $ADOOCSSCO_i$ is the adoption status of women household$i$, which takes score 1 for households who have adopted microfinance program and 0 otherwise.; X_i is vector of covariates including socio-economic, demographic and institutional factors that are presumed to affect adoption status of women household i (Table 2); u_i is the error term of the model such that$u_i \sim N(0, \sigma^2)$; and α, β are model parameters to be determined. Given our dependent variable is dichotomous; the probit and logit models are commonly employed techniques to estimate the technical specification given by Eq. (1). In

Table 2 Definition of explanatory variables and hypothesis

Definition of variable	Nature of variable	Variable definition and measurement	Expected sign
Age of the household head	Continuous	In year	−
Family size of women headed household	Continuous	In number	+
Distance from microfinance center	Continuous	In hour	−
Educational status (EDUC)	Categorical	If 1 literate, 0 otherwise	+
Wealth level of women headed household	Continuous	In Birr	+
Household perception of risk (HPR)	Dummy	1 if positive and 0 otherwise	−
Cultivated land size	Continuous	In hectare	+
Livestock owned	Continuous	TLU	−
Occupation of household	Categorical	1 for farmer, 2 for small trader, 3 for firewood and charcoal seller, 4 for local drink seller	+

Source: Authors hypothesis 2019/2020

this study, the logit model is employed for its simplicity and ease of interpretation of the parameter estimates in probability terms. Investigating the effect of adoption of microfinance program on female household livelihood is the main interest of our analysis.

Impact analysis refers to the analysis of the distributional change of microfinance program on the women headed household's income and saving of the beneficiary. The dependent variable for the binary logistic model is participating microfinance program. Dependent variable is dummy variable, taking the values of 1 if the women headed households are participant and 0 otherwise. The socio-economic and demographic variables are explanatory variables that are affect practice of participating microfinance program, and outcome variables such income and saving. The outcome variables for the PSM model are women headed households' income and saving; variables are continuous variables and measured by birr (ETB).

To assess whether adoption status is associated with differences in female household level livelihood outcomes, the following regression specification may be employed:

$$L_i = \alpha + \gamma \text{ADOOCSSCO}_i + \beta X_i + \xi_i, \quad (2)$$

where L is a measure of women household livelihood; γ is the parameter of interest for estimating the effect of adoption; ξ is the model error term and the rest of the definitions are as in (1).

Results and discussion

Socio-demographic characteristics of respondents

Table 3 shows that summary statistics of the data collected from randomly selected sample of women headed households by type of participating microfinance program. Out of total observations 169 (100%), about 74 (43.78%) of the total women headed households participated microfinance program, which was relatively smaller than those who did not participate 95 (56.22%) during 2019/2020 participating season.

Based on responses open-ended questions put to respondents' lack of personal interest was the main reason cited for not practicing microfinance program. In fact, some of the respondents went to the extent of suggesting the need for government to consider distributing of microfinance credit as a means to improve their livelihood. As the survey data in Table 4 below revealed that in terms of average age participant sample women headed households smaller average age than those who did not participate in microfinance program. The mean age difference between participant and non- participant in OCSSCO is 2.912376 years. Age of sample women headed household is statistically significant. There is large family size on the side of microfinance program participant than controlled. The variable is statistically significant with average difference between

Table 3 Sample women headed households by participation status

Microfinance program	Frequency	Percent
Non-participants	95	56.22
Participants	74	43.78
Total	169	100

Source: Own survey data (2019/20)

Table 4 Household characteristics by adoption status (continuous variables)

Variables	Total sample	Treated	Control group	Mean diff.	*t*-value(*P* > *t*)
	Mean (Std. Dev.)	Mean (Std. Dev.)	Mean (Std. Dev.)		
AGE	40.36686 (6.459238)	38.72973 (5.630877)	41.64211 (6.7963)	2.912376	2.9752 (0.0034) ***
FSIZE	4.088757 (1.639666)	4.391892 (1.63705)	3.852632 (1.610923)	− 0.5392603	− 2.1438 (0.0335) **
DHMFI	65.38462 (23.50279)	59.45946 (21.62203)	70.00 (23.97916)	10.54054	2.9585 (0.0035) ***
WEALTH	14,885.21 (5713.358)	13,609.46 (3315.227)	15,878.95 (6893.844)	2269.488	2.6057 (0.0100) **
CULSI	2.60355 (0.9175468	2.959459 (0.7927616)	2.326316 (0.9160752)	− 0.6331437	− 4.7245 (0.0000) ***
LSTOK	4.701533 (1.366561)	5.211892 (1.296073)	4.303989 (1.291642)	− 0.9079024	− 4.5267 (0.0000) ***

Source: Own survey data (2019/20), ***, and ** implies significant at 1%, and 5% probability level, respectively

Table 5 Household perception of taking loan if the risk happens

Category	Participants	Percent	Non-participants	Percent	Total sample size	Percent	Pearson chi2 (*P*-value)
Yes	41	55.41	72	75.79	133	65.6	
No	33	44.59	23	24.21	56	34.4	7.8011
Total	74	100	95	100	169	100	(0.0050)

Source: Own survey data (2019/20)

treated and controlled of − 0.5392603. The average difference of wealth between participant and non-participant is 2269. 488. Therefore, the result of these statistical analyses indicated that participant households are less wealthy than non-participant households and their mean difference is statistically significant. The summary statistics reveals that there is significant variation between treated and controlled of OCSSCO in use of cultivated land. The mean difference is − 0.6331437 hectare. This implies that participant households have more cultivated land size than non-participant households. Analyzing the significance of the average variation of cultivated land size between participants and non-participants showed that significant probability level. The result of these statistical analyses indicates that participant households have more livestock population than non-participant household in average and the mean difference is statistically significant.

According to the data in Table 5, the result shows that majorities (65.6%) of the respondents feared the risk of default to take loans. When we see the comparison of women headed households between participant and non-participant, out of 100%, 55.41% participant households and 75.79% non-participant households were fear of risk default to take loan. The result of statistical analysis showed that household perception of risk affects participation in microfinance program significantly at 1% probability level. In Table 6, education is categorical dummy variable. Variable can be categorized in to four categories: 0 for illiterates, 1 for grade 1–4, 2 for grade 5–8 and 3 for above grade 8. According to the result of the sample data, the majority of the female household head on average attained grade 1–4 (38. 95%). About 64.02% of the sample women household

Table 6 Educational level of sample household head

Category	Participants	Percent	Non-participants	Percent	Total sample size	Percent	Pearson chi2 (*P*-value)
0	27	36.49	34	35.79	61	35.79	
1	27	36.49	37	38.95	64	38.95	0.979
2	18 m	24.32	21	22.11	39	22.11	(0.9628)
3	2	2.70	3	3.16	5	2.96	
Total	74	100	95	100	169	100	

Source: Own survey data (2019/20)

Table 7 Occupation of sample household head

Category	Participants	Percent	Non-participants	Percent	Total sample size	Percent	Pearson chi2 (P-value)
1	48	64.86	52	54.74	100	59.17	
2	14	18.92	28	29.47	42	24.85	3.2096
3	8	10.81	12	12.63	20	11.83	(0.360)
4	4	5.41	3	3.16	7	4.14	
Total	74	100	95	100	169	100	

Source: Own survey data (2019/20)

heads are literate while 35.98% of the sample women headed households are illiterate. The statistical result showed that there was no significant variation between treated and controlled of households in status of education and the level of education of women headed households was found statistically insignificant. As shown in Table 7, occupation is also categorical dummy variable. It can be categorized in to four categories: 1 for farmer, 2 for small trader, 3 for firewood and charcoal seller and 4 for local drink seller. According to the data, from the total sample of women headed households (59.8%) of the sample respondents were farmers, (24.195%) of the sample respondents were small trader, (11.72%) of the sample respondents were firewood and charcoal seller and (4.28%) of the sample respondents were local drink seller. According to the result of the sample data, the majority of the household head on average are farmers (59.8%) followed by small trade (24.195%), firewood and charcoal selling (11.72%) and local drink seller (4.28%). When we see treated with controlled, the mass of both treated and controlled households head on average are farmer and this is 64.86% and 54.74%, respectively. The statistical result showed that there was no significance variation between treated and controlled of household head in terms of occupation and the occupation of household head was found statistically insignificant.

Econometric results

Model estimates for the determinants of women headed household decisions to adopt the microfinance program are presented in Table 8. Accordingly, seven of the nine variables included head's age, family size, distance from microfinance center, head's wealth, perception of risk, cultivated land size and livestock ownership were found to have significant association with the level of microfinance program. Specifically, age was found

Table 8 Estimates of the determinants of female headed households' participation decisions

Variable	Coef.	SE	*Z*	*P*>|*Z*|	dy/dx
AGE	− 0.1679528***	0.0456204	− 3.68	0.000	− 0.0233115
FSIZE	0.6052681***	0.1681431	3.60	0.000	0.0840101
DHMFI	− 0.0224028**	0 0.0100786	− 2.22	0.026	− 0.0031095
EDUC	0.1024833	0.2680984	0.38	0.702	0.0142245
WEALTH	− 0.0001224**	0.0000503	− 2.43	0.015	− 0.000017
HPR	− 1.518804***	0.4756425	− 3.19	0.001	− 0.2108072
CULSI	0.898382***	0.2435992	3.69	0.000	0.1246938
LSTOK	0.738928***	0.190198	3.89	0.000	0.1025618
HOCU	− 0.2240883	0.2555827	− 0.88	0.381	0.1025618
Cons	2.540425	2.314438	1.10	0.272	− 0.031103
LR chi2 (9)	87.55	Pseudo-R2	0.3779		
Prob > chi2	0.0000	Log likelihood	− 72.058534		

Source: Computed from own survey data (2019/20); ***, and ** shows significant at 1%, and 5% probability level, respectively

to have a strong negative association with adoption decisions. Keeping other factors fixed, each extra year of the head's age is expected to result in a 2.3% reduction in the probability of adoption, a statistically significant association ($P<0.01$). Put differently, households whose heads are on average 10 years older are expected to be 23% less likely to adopt microfinance program than their younger counterpart, which is quite significant. From all seven significant variables head's age, family size, perception of risk, cultivated land size and livestock ownership were statistically significant at 1% probability level, whereas distance from microfinance center and head's wealth were at 5% significant level. This result is consistent with findings of Abrahim, 2019; Cepeda et al., 2017; Debnath et al., 2019; Bekele, 2013; Geleta et al., 2018; Habte, 2016; Ayen, 2016; Alemayehu, 2020; Tesfaye et al., 2019; Asfaw, 2013; Amsalu, 2019.

On the other hand, factors such as head's age, distance from microfinance center, head's wealth and perception of risk had all significant negative associations with households' adoption decisions, whereas family size, cultivated land size and livestock ownership had all significant positive associations with households' adoption decisions, with marginal effects ranging between 0.0017% to 21% on average (citrus paribus). More specifically, an extra unit of head's perception of risk, cultivated land size, livestock ownership and family size were, respectively, associated with a 21%, 12.45%, 10.25% and 8.4% higher probability of adoption on average, all else remaining the same.

As shown in the above table, the output of logistic regression shows that seven variables significantly influence the probability of female headed household participation in OCSSCOs. These are age of the household head, family size of the household, and distance of household home from microfinance office, wealth status of the household, household perception of risk, and size of the household and livestock ownership. The brief description of the variables is shown below.

Age of the household: there is a negative relationship between age of the household and participation in the OCSSCOs and the variable is statistically significant at 1 percent probability level. The marginal effect is -0. 0233115. This implies that all other variables being equal, as age of the household head increase by one year, the probability of the

household to participate in the OCSSCOs decrease by 2.33115 percent. The result of this data also shows that younger household heads are more likely to participate in OCSSCOs as compared to older household heads. These result is consistent with findings of Debnath et al. (2019), (Lemesa, 2019).

Family size of the household: this variable has positive relationships with participation in the OCSSCOs and statistically significant at 1 percent probability level. Marginal effect is 0. 0840101. This implies that all other things being constant, as the family size of the household increases by one person, the probability of the household to participate in OCSSCOs increases by 8.40101 percent. This suggests that large family size is the major variable in influencing decision of household head to participate in microfinance program. These results coincide with the finding of Borga (2011), Geleta et al. (2018), Habte (2016).

Distance of household home from microfinance office: this variable is negatively related with participation in microfinance program and significant at 5 percent probability level. The marginal effect is − 0. 0031095. This result indicates that keeping the effect of other variables constant, as the distance traveled between household home and microfinance office increase by one hour, the probability of the household to participate in OCSSCOs decrease by 0.31095 percent. Households located far from microfinance program are less likely to access microcredit program than those located nearby. These results are consistent with the finding of Ayen (2016), (Eularie, 2017).

Wealth status of the household: this variable was found to have negative relationship with participation in microfinance program and statistically significant at 5 percent probability level. The marginal effect is -0. 000017. This implies that keeping the effect of other variables constant, as households become wealthy, the probability of household to participate in microfinance program decrease by 0.0017 percent. This suggests wealthy households are fewer participants in OCSSCOs as compared to those household who are less wealthy. These findings are in contrast with the finding of Tesfaye et al.(2019).

Household perception of risk: this variable is negatively related with participation in microfinance program and significant at 1 percent probability level. The marginal effect is − 0.2108072. This implies that, the probability of being participant in microfinance program decrease by 21.08072 percent for those households who fear to take loan, holding other variables constant. These findings coincide with the finding of Alemayehu (2020).

Land size: this variable is positively related with participation in microfinance program and significant at 1 percent probability level. The marginal effect is 0.1246938 and this result shows that hectare increase in cultivated land size increases households' participation in microfinance by 12.46938%, keeping other variables in the model constant. The finding of this study coincides with that of Abdul-Jalil et al. (2014), who found that cultivated land size has a positive and significant effect on households' decision to participate in microfinance.

Tropical livestock unit: livestock ownership is positively related with the probability of household participation in microfinance program and significant at 1 percent probability level. The marginal effect is 0.1025618. This indicates that a unit increase in tropical livestock size increases households' participation in microfinance program by 10.25618 percent, keeping other variables constant. Households who owned large number of

livestock are considered as safe client by lending institution and borrowers themselves are more confident in obtaining loan from the lending institution. During group formation, members prefer to be together with household who have large number of livestock. In a scenario, if they become defaulter, they can repay their loan by selling out their livestock. This result coincides with the finding of Amsalu(2019); Alemu (2018)

Conclusions and policy implications

Conclusions

This study was focused on investigating the determinants of microfinance program adoption in Guto Gida district, Ethiopia. The objectives of the study were assessing the current microcredit participation of female headed household; identify the factors that influence female headed household participation in microfinance program. Multistage sampling technique was used to draw representative sample and used cross-sectional survey. Cross-sectional survey data were collected from randomly selected female headed household using interview/survey schedules. Descriptive and econometric methods were used to analyze the data. Under econometric method, logit was used. The result of descriptive indicated that the majority of participant household took microcredit to finance agricultural input and the less to purchase oxen. The result of logit indicated that out of nine independent variables hypothesized to influence female headed household participation in microfinance program, seven of them were found to have significant effect on their participation in the program. Among the variable's family size of the household, cultivated land size and livestock ownership affected the likelihood of participation in the program positively, whereas age of household head, distance of household home from microfinance office, wealth status of the household, and household perception of risk have negative effect.

Policy implications

Given these findings, a number of implications could emerge from our analysis upon which important suggestions could be made as key recommendations. First, even though the participation of microfinance program is relatively low in Guto Gida district, women headed households who participated could generally enhance their income and saving. Consequently, the participation of microfinance program could be considered as one important way to improve livelihoods of women headed household. Secondly, the positive impact associated with participation necessitates the need for strategies of expanding participation among microfinance program in the study area. In this regard, a better understanding of the factors influencing women headed households' choice of participation microfinance program is quite imperative. More importantly, our findings pertaining to the key factors underlying rural women headed household decisions of participating microfinance program could serve as important input for designing policies and strategies aimed at enhancing participation. For instance, wealth has a strong correlation with the participation microfinance program as it scaling up women headed households' income and saving. Therefore, due emphasis has to be given towards strengthening wealth of women headed households at different levels especially for rural women. Distance of the women headed households' home from microfinance institutions is crucial activities in microfinance

program, through which induce women households' income and saving. The result of this study indicated that treated women household in microfinance program has had a significant effect on women headed household's income and saving. Hence, the microfinance institutions and other concerned body should give attention for women headed households in order to enhance women headed household's participation of microfinance program. Therefore, expansion in the level of participation of microfinance program should consequently finding in substantial women headed households' mean annual income and saving on a sustainable basis.

Limitations and future research directions

The empirical study was carried out on microfinance program by using participation of men headed households who are working in credit and saving Share Company, but it did not include participation of women headed households equally in the study area. Because of this and limited scope of the study area, we may not ensure the indicated results of women headed household's microfinance program in Ethiopia at regional and national level. Further study on the topic can include participation of women headed household's microfinance program and widening scope of the study. Interaction of knowledge, strategy and promoting of the study is another limitation for microfinance program. This study concluded that without high-power distance between Ethiopian regulator and microfinance program executive, microfinance program could not be achieved. This study does not consider the level of Ethiopian microfinance program and does not take in to account the diverse level among the microfinance program in each region of Ethiopia. Therefore, further study considers extending this line of study by expanding scope of the study area and conducting comparisons among different countries.

Abbreviations

ADB	Asian Development Bank
MFIs	Microfinance institutions
OCSSCO	Oromia Credit and Saving Share Company
ETB	Ethiopian birr

Acknowledgements
The authors would like to extend their gratitude to women headed households who participated in the survey and Oromia Credit and Saving Share Company office and staffs there for the secondary data and unreserved support they provided to the study.

Author contributions
The research was done independently. I have carried out the whole work of the study. The author read and approved the final manuscript.

Funding
The author did not receive funding from any organization.

Availability of data and materials
All data are included in the manuscript.

Declarations

Competing interests
The author declares that there are no competing interests.

Received: 16 May 2022 Accepted: 19 November 2023
Published online: 29 November 2023

References

Abddisa, F. M. (2017, February). Filling the breach : Microfinance Filling the breach. Microfinance.

Abdul, S., Pasha, M., & Negese, T. (2014). Performance of loan repayment determinants in Ethiopian micro finance—An analysis. *7*(13), 29–49.

Abrahim, A. M. (2019). Microfinance and rural women ' s empowerment : A cross sectional level analysis (Evidence from Rural Woredas of Harari Region). *2*(2), 152–190.

AEMFI. (2017). Association of Ethiopian Microfinance Institutions (AEMFI) Request for Expression of Interest For the implementation of a Shared Core Banking Software (CBS). 1–3.

Alemayehu, T. (2020). Determinants of Rural Households ' Participation in Microfinance Program : The Case of Omo Microfinance Institution , Sodo Woreda , Southern Nations Nationalities, and Peoples Regional. 11(1), 23–41.

Alemu, A. (2018). Impact of microcredit on selected livelihood assets of rural households : The case of Shebedino District Omo Microfinance Institution, Sidama Zone of Southern Ethiopia. *9*(3), 1–9.

Amsalu, S. (2019). Determinants of rural households â€™ participation in microfinance services : The Determinants of rural households ' participation in microfinance services : The case of Cheliya District , West Shoa Zone, Oromia National Regional State , Ethiopia. https://doi.org/10.5897/JDAE2018.1008

Antonides, F. G. (2015). How microfinance empowers women in Co. 1023–1041. https://doi.org/10.1007/s11150-015-9280-2

Anyiro, C. O., & Oriaku, B. N. (2008). Access to and investment of formal micro credit by small holder farmers in abia state , nigeria . a case study of absu micro finance bank , uturu. 1.

Aregawi, H. T., Patnaik, B. C. M., Satpathy, I., & Litt, D. (2019). Impact of micro finance institutions on livelihood of borrowers poverty reduction : Evidence from Tigray, Ethiopia. *7*, 31–42.

Awaworyi, S. (2014). Impact of microfinance on female empowerment: A review of the empirical literature. 1–22.

Awunyo-vitor, D., Abankwah, V., Kwesi, J., & Kwansah, K. (2012). Women Participation in Microcredit and Its Impact on Income : A Study of Small-Scale Businesses in the Central Region of Ghana. *2*(3), 502–515.

Ayen, Y. W. (2016). Impact of microcredit programs on female headed. *6*(1), 546–555.

Bekele, M. (2013). Impacts of microfinance institution on the living condition of rural women : A case study on the Oromia Credit and Save Share Company in Shirka Woreda , Oromia Region . Mesele Mekuria Bekele. 99108500.

Caliendo M. and Kopeinig S. (2008). Some practical guidance for the implementation of propensity score matching pp. Journal of Economic Surveys, *22*(1), 3172.

Cepeda, I., Lacalle-calderon, M., & Torralba, M. (2017). Microfinance and Violence Against Women in Rural Guatemala. https://doi.org/10.1177/0886260517738780

Challa, T. M., & Mansingh, P. (2015). Full length research article. 5, 6094–6098

Chipinge, Gerald, G., & Clara, M. (2018). Micro Finance Schemes and Rural Women's Livelihoods -*Evidence from*. *123*, 51996–52000.

Chirkos, A. Y. (2014). The Impact of Microfinance on Living Standards , Empowerment and Poverty Alleviation of the Poor People in Ethiopia, A Case Study in ACSI. *5*(13), 43–67.

Debnath, D., Rahman, S., Acharjee, D. C., Latif, W. U., & Wang, L. (2019). Empowering women through microcredit in Bangladesh : An empirical study.

Desai, J., Johnson, K., & Tarozzi, A. (2011). *On the impact of microcredit: Evidence from a randomized intervention rural Ethiopia*. Duke University.

Duong, P. B., & Thanh, P. T. (2017). Impact evaluation of microcredit on welfare of the vietnamese rural households. *11*(2), 190–201. https://doi.org/10.5539/ass.v11n2p190

Duvendack, M., Palmer-jones, R., & Hooper, L. (2011). Systematic review What is the evidence of the impact of microfinance on the well-being of poor people ? by (Issue August).

Eularie, M. (2017). Impact of microcredit on small farmers 'livelihoods in Rwanda : an empirical analysis using propensity score matching. *2*(1), 79–96.

Feleke B. (2011). Impact of microfinance services on household income: the case of digaf micro financing company.

Ferka, A. (2011). The impact of microfinance on the livelihoods of women.

Geleta, T. E., Mengistu, A. A., & Gesese, S. A. (2018). Analysing the Impact of Credit on Rural Households 'Income in the Case of Cheliya District , West Shoa Zone , Oromia National Regional State ,. November, 0–8. https://doi.org/10.4172/2375-4389.1000304

Getachew, D. (2017). College of business and economics mba program the effect of micro finance on poverty reduction : college of business and economics.

Gobezie, G. (2010). Empowerment of Women in Rural Ethiopia: A Review of Two Microfinance Models. XXV, 23–38.

Habte, A. T. (2016, March). The impact of microfinance on household livelihoods : Evidence from rural eritrea.

Haley, J. M. B. (2002). Analysis of the effects of microfinance on poverty reduction analysis of the effects of microfinance on poverty reduction.

Herath, H. M. W. A., Guneratne, L. H. P., & Sanderatne, N. (2015). Impact of microfinance on women ' s empowerment : a case study on two microfinance institutions in Sri Lanka. *38*(1), 51–61

Kabeer, N. (2005). Gender equality and women's empowerment: A critical analysis of the third millennium development goal. *Gender and Development, 13*(1), 13–24.

Kifliehayleeyesus, R. (2016). Master ' s Thesis The Impact of Microfinance Institutions on Poverty Alleviation (A Case Study in Ethiopia) Master " s Thesis Ritsumeikan Asia Pacific University In Partial Fulfillment of the Requirements for the Degree of Master of Business Administrat. September.

Larbi, M. (2014, January). The influence of microfinance on the livelihood of.

Lemesa, J. (2019). October, 2019. The impacts of microfinance institution on household's livelihood; The Case of Oromia Credit and Saving Share Company and Busa Gonofa Microfinance Institution of Jeldu Woreda.

Mengistu, N. Y. (2017). The contrasts of microcredit and some unresolved institutional challenges of microfinance: evidence from México. 14.

Montoya, M. C. M. A., & Ponce, L. A. B. (2016). The contrasts of microcredit and some unresolved institutional challenges of microfinance: Evidence from México. 14.

Monzur, M., Bhuiya, M., Khanam, R., Rahman, M. M., & Nghiem, S. H. (2016, January). Impact of microfinance on household income and consumption in Bangladesh : *Empirical evidence from a quasi-experimental survey* impact of microfinance on household income and consumption in Bangladesh : empirical evidence from a quasi-experimental survey. https://doi.org/10.1353/jda.2016j.0111.

Mueni, J., & Kiiru, M. (2007). Zentrum für Entwicklungsforschung (Zef) The Impact Of Microfinance On Rural Poor Households ' Income And Vulnerability To Poverty : Case Study Of Makueni District , Kenya Diese Dissertation ist auf dem Hochschulschriftenserver der ULB Bonn Retrieved from http://hss.ul.

Rahaman, M. H., Sen, T., & Yasmin, J. (2019). Impact of ASA Microcredit on Livelihood Status of Rural Women in Sylhet , Impact of ASA Microcredit on Livelihood Status of Rural Women in Sylhet , Bangladesh. September, 0–9. https://doi.org/10.9734/arjass/2019/v9i230120

Shete, A. U. M. (2017). Impact of microfinance on poverty reduction: The case of gasha microfinance institution abiyot. *9*(2), 95–151.

Stewart, R. (2012). The impact of Microfinance in Sub-Saharan Africa: A systematic review of the evidence. *World Development, 40*(11), 2249–2262. https://doi.org/10.1016/j.worlddev.2012.03.012

Tarozzi, A., Desai, J., and Johnson, K. (2013). The Impacts of Microcredit: Evidence from a Randomized Intervention in Rural Ethiopia.Barcelona Graduate School Working Paper, Barcelona.

Tesfaye, M. M., Abafita, J. & Lew, es. A. Y. (2019). Impact of micro- finance on women ' s economic empowerment : a case study in gimbo woreda , south nation , nationalities and Tesfaye Melaku MERRA , Jemal ABAFITA Esuablew AYALEW Keywords : 1. Background of the Study. 5, 17–30

Tisdell, C., & Steen, J. (2020). Microfinance for Wives. *Fresh Insights Obtained from a Study of Poor Rural Women in Pakistan*. *10*(1), 9–37. https://doi.org/10.22381/JRGS10120201

Wycliffe, N. (2016). Effects of village savings and loans on rural women livelihood outcomes among women groups in kisii county nyamongo wycliffe mochoge a research Project Presented in Partial Fulfillment of the Requirements for the Award of Masters of Science Finance Degree.

Yamane, T. (1967). *Statistics, an introductory analysis* (2nd ed.). Harper and Row.

Publisher's Note